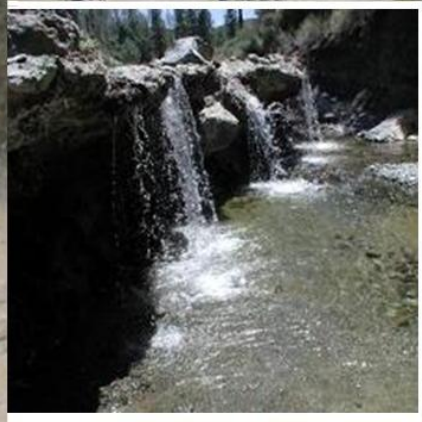
# Clear Creek Management Area
# Draft Resource Management Plan
# &
# Draft Environmental Impact Statement

## November 2009

BLM

Hollister Field Office



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# U.S. DEPARTMENT OF THE INTERIOR

# BUREAU OF LAND MANAGEMENT

# DRAFT

# CLEAR CREEK MANAGEMENT AREA

# RESOURCE MANAGEMENT PLAN & ENVIRONMENTAL IMPACT STATEMENT HOLLISTER, CALIFORNIA

Prepared by the

Hollister Field Office

**November 2009**

***Approved***

**James Wesley Abbott**

**Acting State Director, California**

# United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Hollister Field Office
20 Hamilton Court
Hollister, CA 95023
www.ca.blm.gov/hollister

***November 2009***

Dear Reader:

Enclosed for your review and comment is the Draft Resource Management Plan (RMP) and Environmental Impact Statement (EIS) for the Bureau of Land Management's (BLM's) Clear Creek Management Area (CCMA). This document was prepared by BLM in concert with one cooperating agency, numerous State and local governments, and the Central California Resource Advisory Committee, as well as from public comments received during the scoping phase of this planning effort. The document contains both land use planning decisions and implementation decisions to provide planning structure to facilitate management of the CCMA public lands.

The geographic planning area includes all lands managed by BLM within the boundary of the CCMA, which is located in the southern portion of San Benito County and portions of western Fresno County. The overall intent of the Draft CCMA RMP/EIS is to develop a comprehensive management strategy that will guide the management of the Clear Creek Management Area into the future. When finalized, this RMP will replace the 1984 Hollister RMP, as amended, and the Record of Decision for the CCMA RMP Amendment and Route Designation (2006).

This Draft RMP/EIS has been developed in accordance with the National Environmental Policy Act of 1969 (NEPA), and the Federal Land Policy and Management Act of 1976. This document contains the no action alternative, six additional action alternatives, and BLM's preferred alternative.

A Reader's Guide is included to help you navigate through the chapters of this document, and is located directly after the Abstract.

The Draft RMP/EIS is available for a 90-day public comment period beginning on the date the Environmental Protection Agency publishes the Notice of Availability of the Draft CCMA RMP/EIS in the *Federal Register*. During this period, comments may be submitted using several methods:

Written comments should be sent to:
CCMA RMP/EIS Comments
Attention: Planning Coordinator
Bureau of Land Management
Hollister Field Office
20 Hamilton Court
Hollister, CA 95023

E-mail comments to:
cahormp@ca.blm.gov

Fax comments to:
(831) 630-5055
CCMA RMP/EIS Comments
Attention: Planning Coordinator

BLM's practice is to make comments, including names and home addresses of respondents, available for public review and disclosure at the above address Monday through Friday, except holidays, during regular business hours (8:00 a.m. to 4:00 p.m.). Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations and businesses, will be available for public inspection in their entirety.

FOR FURTHER INFORMATION: For further information or to have your name added to the project mailing list, contact Sky Murphy, Environmental Planning Specialist, Bureau of Land Management, 20 Hamilton Court, Hollister, CA 95023; Phone: (831) 630-5000, or email your request to Sky_Murphy@blm.gov.

SUPPLEMENTARY INFORMATION: Copies of the Draft CCMA RMP/EIS have been sent to affected federal, state, and local government agencies and to interested parties. Copies of the Draft RMP/EIS are available for public inspection at the BLM Hollister Field Office address above.

Interested persons may also review the Draft CCMA RMP/EIS on the Internet at: http://www.blm.gov/ca/st/en/fo/hollister/clear_creek_management_area/CCMA_RMP.html

BLM would like to thank the Environmental Protection Agency (our cooperating agency partner), the California Department of Toxic Substances Control, and the California State Parks Motor vehicle Recreation Division, as well as all the public members of organizations and individuals that contributed to helping us complete this document. The support and expertise provided was important to understanding the issues and developing alternatives that focus on resolving resource concerns in the CCMA. The collective experience and dedication of all these groups and individuals has made this a better process and BLM looks forward to continuing to work with them to complete this planning effort.

Sincerely,

Rick Cooper
Field Manager
Hollister Field Office

# DRAFT

# CLEAR CREEK MANAGEMENT AREA

# RESOURCE MANAGEMENT PLAN &

# ENVIRONMENTAL IMPACT STATEMENT

[ X ] Draft Environmental Impact Statement [ ] Final Environmental Impact Statement

**Department of Interior, Bureau of Land Management**

Type of Action: [X] Administrative [ ] Legislative

**Abstract:**

This Draft Resource Management Plan / Environmental Impact Statement describes and analyzes the no action alternative, six action alternatives, and BLM's preferred alternative for managing the Clear Creek Management Area in California. The preferred alternative provides management recommendations to guide the multiple use management of all resources.

**Comments:**

Comments on this document are requested from all interested and / or affected agencies, organizations, and individuals. Comments must be received within 90 days of the Federal Register notice of availability. Comments being mailed must be postmarked by close of business on the 90th day.

**For further information contact:**

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# Readers' Guide

## Introduction

The Draft Clear Creek Management Area Resource Management Plan (RMP) and Environmental Impact Statement (EIS) is divided into six chapters, and includes maps (of the planning area and the alternatives), an Executive Summary, Appendices, a Glossary, and an Acronyms List.

## Executive Summary

The Executive Summary addresses the entire document and highlights the key issues brought forth in the planning process.

## Chapter 1

Chapter 1 identifies the purpose and need for the plan, defines the planning area, and explains public participation in the planning process. This chapter identifies the planning criteria used as guidelines influencing all aspects of the process. These guidelines are based on law, regulation, and policy. Also included in this chapter is a description of the involvement of state, local, and federal governments and tribal agencies. The issues developed through public participation and the planning processes are described therein.

## Chapter 2

Chapter 2 presents the various management strategies for achieving the desired range of conditions. The Draft RMP/EIS includes a detailed description of the goals, objectives, and management actions for each resource or program that are included in the no action alternative, six action alternatives, and the BLM's preferred alternative. The actions in this Draft RMP/EIS are designed to provide general management guidance in most cases. Specific projects for a given area or resource will be detailed in future activity plans or site-specific proposals developed as part of interdisciplinary project planning or other means. These plans and processes address more precisely how a particular area or resource is to be managed and additional National Environmental Policy Act analysis and documentation would be conducted as needed.

A *Summary Comparison of Alternatives Table* is included in this chapter. This table provides the reader a general summary of the key management actions for each of the seven alternatives developed for the Draft RMP/EIS.

A *Summary Comparison Impacts Table* is also included at the end of Chapter 2. This table provides the reader a comparison summary of the main adverse and beneficial impacts that would result from implementing each of seven alternatives that were developed for the DRMP.

## Chapter 3

Chapter 3 (Affected Environment) provides an overview of the planning area and describes the existing situation for each of the resource programs. It describes both the biological and physical components that may be affected by the alternatives. Other components of the environment that will not be affected by the range of alternatives are also described, such as wilderness, wild and scenic rivers, and other special designations.

## Chapter 4

Chapter 4 (Environmental Consequences) analyzes the beneficial and adverse effects of each alternative. Assumptions used in the analysis are specified at the beginning of the Chapter and under certain resource discussions to help guide the reader through the assessment process. At the end of the analysis of each resource, a discussion of the cumulative effects is provided.

## Chapter 5

Chapter 5 summarizes key events in the consultation and coordination process prior to and during preparation of the Draft CCMA RMP/EIS. It also lists those agencies, organizations, and individuals who were contacted or provided input into the planning process. Also listed are the document team members who prepared this plan.

## Chapter 6

Chapter 6 lists the references cited throughout Chapters 1 through 5.

## Appendices

Maps are supplied in Appendix I to assist the reader in comprehending proposed management actions as described in Chapter 2. The other appendices include supplemental material referenced in the Draft RMP/EIS.

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***DEAR READER***

**ABSTRACT**

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# ES EXECUTIVE SUMMARY

## ES.1 Introduction

The Bureau of Land Management (BLM) Hollister Field Office (HFO) has prepared this Draft Resource Management Plan/Environmental Impact Statement (RMP/EIS) to provide direction for managing public lands in the Clear Creek Management Area (CCMA). The HFO manages approximately 63,000 acres of public land within the 75,000-acre CCMA, representing a variety of settings and landforms that host many diverse natural and cultural resources, and offer recreation and other multiple-use opportunities. Since 1984, approximately 30,000 acres of serpentine soils high in asbestos fibers within the CCMA have been designated as the Clear Creek Serpentine Area of Critical Environmental Concern (ACEC) to protect public health and safety. BLM's mission is to sustain the health, diversity, and productivity of these public lands for the use and enjoyment of present and future generations.

Public land resources described in this RMP/EIS are classified as "Planning Areas". The Planning Area encompasses the entire area within the boundaries of CCMA regardless of jurisdiction or ownership. The "BLM-administered lands" refer to public lands within the Planning Area for which the BLM has authority and makes decisions (also referred to as the "Decision Area").

The Planning Area has been managed in accordance with the 1984 Hollister Resource Management Plan (hereafter the '1984 Hollister RMP'), a broad-scale land use planning and management document that provides goals and objectives and defines necessary management actions to achieve these desired conditions. Since 1984, the 1984 Hollister RMP has been amended several times to address new issues and emerging trends on public lands in CCMA Though these plans provide a broad overview of goals, objectives, and needs associated with these public lands, the 1984 Hollister RMP and CCMA RMP Amendments (1986, 1999, 2006) lack detailed direction and are generally outdated. Social, political, and environmental changes, coupled with significant population growth not anticipated in the 1984 Hollister RMP (as amended) have presented some complex management issues that are appropriate to analyze in a "stand alone" RMP for the 63,000 acres of BLM-administered lands in CCMA.

The Hollister RMP was updated in 2007 to establish goals, objectives, and management actions for BLM public lands that address current issues, knowledge, and conditions. However, BLM-administered lands in CCMA were not addressed in the Hollister RMP (2007) because the Environmental Protection Agency (EPA) was preparing an asbestos exposure and human health risk assessment to provide BLM and the general public information on the exposure levels from various types of activities in the Clear Creek Serpentine ACEC. EPA initiated the study in 2004 in connection with the clean-up of the Atlas Asbestos Mine Superfund Site, also in CCMA, and concerns about the technical deficiencies of a 1992 health risk assessment that BLM used to evaluate CCMA visitor's exposure to airborne asbestos fibers in the area. Therefore, BLM agreed to work with EPA and the public upon completion of the study to incorporate the new health risk information into public land use decisions for the area.

EPA released the CCMA Asbestos Exposure and Human Health Risk Assessment on May 1, 2008. The result of the study concluded that visiting CCMA more than once per year can put adults and children above EPA's acceptable risk range for exposure to carcinogens and found an increased long-term cancer risk from engaging in many of the typical recreational activities at the CCMA.

In response to new information provided in the CCMA Asbestos Exposure and Human Health Risk Assessment (2008), BLM issued a temporary closure order simultaneously on May 1, 2008 that closed 30,000-acres within the CCMA's Serpentine ACEC to all public use and entry. The closure order was published in the Federal Register (Volume 73, Number 85), pursuant to 43 CFR 8364.1, to protect public land users from human health risks associated with exposure to airborne asbestos in the CCMA while the

BLM completes this Resource Management Plan. As a result, this RMP/EIS will address general public access and recreation at the CCMA to consider new information in the EPA report and analyze a full range of management options and alternatives for the CCMA.

This Draft RMP/EIS presents alternatives to help BLM and interested parties understand the various ways of addressing issues in the region and evaluates the environmental consequences of revising the 1984 Hollister RMP, and the associated CCMA RMP Amendments.

Upon evaluation of the alternatives and associated impacts as described in this Draft RMP/EIS, BLM selected a combination of management actions and objectives from among the range of alternatives, using the '*menu approach'* described below in Section 1.2.2. The BLM's Preferred Alternative is described in Chapter 2, Section 2.5 and comprises land use decisions and public health and safety measures to minimize asbestos exposure, reduce airborne asbestos emissions, and promote outreach and education to inform public lands users of the human health risks associated with exposure to asbestos in CCMA. The preferred alternative also meets the resource management goals described in Chapter 2 and the purpose and need statement described below.

Upon release of this Draft RMP/EIS, the public will have a period of 90 days to provide comments and feedback on its contents. During this period, BLM also will host a minimum of three public meetings to solicit feedback on the Draft RMP/EIS from the public and interested stakeholders. A final selection will be made after public review and comment on this Draft RMP/EIS. The final selection of an alternative may be different from any of the seven alternatives analyzed, possibly including some elements from one or more other alternatives to reflect public and other agency input.

Based on the comments and feedback received, BLM will prepare and publish a Proposed RMP/Final EIS, which will be followed by a 30-day public protest period. BLM will respond to protests and publish a Record of Decision for the Approved RMP for Clear Creek Management Area.

## ES.2 Overall Vision

The overall vision for management of BLM-administered lands in CCMA, derived from public scoping, inter-agency dialogue, and BLM's interdisciplinary team, is "to improve natural, cultural, and open space values across the landscape for the protection of human health and the environment; and pursue recreation opportunities through partnerships and collaboration for the enjoyment and use of a growing and diverse populations of current and future generations."

The BLM is responsible for the sustainable management of public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of "multiple use" – a combination of uses that takes into accounts the long-term needs of future generations for renewable and nonrenewable resources. These resources include public health and safety recreation, range, timber, minerals, watershed, fish and wildlife, wilderness, and natural, scenic, scientific, and cultural values.

The BLM is developing the CCMA RMP under the authority and direction of the Federal Land Policy and Management Act (FLPMA) of 1976 (Sec. 202(a)), which states that land use plans shall be developed, maintained, and, when appropriate, revised for the use of the public lands. The RMP revision will guide public land management for lands and resources administered by the BLM within the Planning Area for another 10 to 15 years.

The CCMA RMP/EIS provides an updated assessment of resources, uses, conditions, and trends; a forum for enhanced public collaboration and involvement; and a comprehensive impact analysis of reasonable management alternatives and resulting land use decisions.

## ES.3 Purpose and Need

Since the development of the 1984 Hollister RMP and associated CCMA RMP amendments, many social, political, and environmental changes have occurred that affect resource conditions and influence public land uses. These changes, coupled with significant population growth that had not been anticipated in the 1984 plan and subsequent amendments, have presented some complex management issues that can be addressed by an updated land use plan.

The need to develop the CCMA RMP arises from numerous changes in circumstances since the current land use plan decisions were adopted. The existing Resource Management Plan (RMP) for the area was adopted in 1984. There have been several amendments to the 1984 RMP to address public health and safety and resources protection issues in CCMA. However, many other issues that are emerging on public lands were not addressed in those amendments. The following list of specific factors illustrates the need for preparation of an updated management plan:

- The EPA's CCMA Asbestos Exposure and Human Health Risk Assessment (2008) provides significant new information that must be incorporated into a land use plan to evaluate the public health risk associated with BLM land use authorizations..

- The current management plan does not specifically address listing and/or additional habitat needs for species protected under the federal 1973 Endangered Species Act (ESA), including the California Condor, red-legged frog, and tiger salamander.

- Changes in social and economic conditions in San Benito County, the San Joaquin Valley, and the entire State of California have led to increased demand for use of public lands for recreation and energy production; as well as an increased awareness and social value placed on the cultural and natural resources in the Planning Area.

The purpose of the CCMA RMP is to establish goals, objectives, and management actions for BLM-administered lands in CCMA that address current issues, knowledge, and conditions. The CCMA RMP shall guide the management of the lands and resources administered by the Hollister Field Office in CCMA to achieve the following: 1) minimize asbestos exposure 2) reduce asbestos emissions 3) designate areas in CCMA for motorized, mechanized, and non-motorized/non-mechanized recreation management opportunities; 4) protect sensitive natural and cultural resources from impacts due to recreation and other land uses; 5) provide guidance for mineral and energy development; and 6) other land use authorizations and tenure adjustments. This planning effort is intended to be comprehensive, evaluating existing management plans and identifying regional issues, and resolving those issues through public, interagency, and intra-agency scoping efforts. This effort also identifies the area's "vision", long-range management goals, intermediate objectives, and actions and options for meeting those objectives.

## ES.4 Public Involvement in the Planning Process

Public involvement in BLM's planning process begins with a public scoping period. The objectives of the scoping process are to identify potentially interested parties, identify public and agency concerns, define the range of issues to be examined in the plan, ensure that relevant issues are identified early and drive the analyses, and establish a public record.

Opportunities for public involvement will continue as development of the CCMA RMP/EIS proceeds. For example, upon release of the Draft RMP/ EIS, the public will have a period of 90 days to provide comments and feedback on its contents to BLM. During this period, BLM will host a minimum of three public meetings to solicit feedback on the Draft RMP/EIS from the public and interested stakeholders.

Based on the comments and feedback received, BLM will prepare a Proposed RMP/Final EIS for CCMA public lands. The Proposed RMP/Final EIS will be followed by a 30-day public protest period. Following the protest period, BLM will resolve protests and publish a Record of Decision and Approved CCMA Resource Management Plan.

## ES.5 Management Alternatives

The goals and objectives of each resource program are specified, and specific management actions for each alternative are then presented. The basic goal of developing alternatives is to explore the range of use options, protection preferences, and management tools to find the optimal balance for the Planning Area. Alternatives must meet the purpose and need for the CCMA RMP; must be reasonable (i.e., manageable); must balance resource protection, public uses, and development; must meet established planning criteria, and Federal laws, regulations, and BLM planning policy.

Seven land use management alternatives are presented in Chapter 2, "Management Alternatives."

**Alternative A** *represents the 'No Action' alternative and would reaffirm current management under the 1984 Hollister RMP (as amended).* BLM would incorporate new health risk information into public outreach and education asbestos hazard information program to mitigate public health risk.

**Alternative B** *maintains multiple use opportunities in CCMA, and considers multiple mitigation measures to protect public health and safety.* BLM would protect health and safety by increasing restrictions on season of use and visitor use days/year, dust mitigation on major routes, and by eliminating camping and staging in the Serpentine ACEC.

**Alternative C** *limits OHV recreation opportunities in the Serpentine ACEC based on vehicle types, and minimum age requirements, and other mitigation measures.* BLM would protect health and safety by prohibiting access into the ACEC for visitors < age 18, restricting OHV recreation to motorcycle use only, increasing restrictions on season of use, dust mitigation on major routes, and by eliminating camping and staging in the Serpentine ACEC.

**Alternative D** *emphasizes vehicle access for non-motorized recreation opportunities inside the ACEC, and new OHV recreation opportunities outside of the ACEC.* BLM would protect health and safety by restricting motorized access in the ACEC to major routes, dust mitigation on major routes, installing a public wash rack, and by and eliminating camping and staging in the ACEC.

**Alternative E** *allows limited vehicle touring and pedestrian use in the ACEC, and non-motorized recreation opportunities outside the ACEC.* Public health and safety risks would be mitigated by requiring permits for access into the Serpentine ACEC for day use only. Vehicle touring would be limited to less than 5 days/year and pedestrian activity limited to less than 12 days/year.

**Alternative F** *restricts public access in the ACEC to non-motorized travel only.* Allowable use restrictions would significantly reduce risk to public health and safety; and BLM management activities would lower risk to human health and the environment.

**Alternative G** *minimizes public health risk by prohibiting all public access and entry into the Clear Creek Serpentine ACEC.* Alternative G would make the existing temporary closure of the 30,000-acre ACEC that was issued by BLM under 43 CFR 8364.1 on May 1, 2008 permanent. Consequently, the impact analysis for Alt. G provides a baseline for comparison of the impacts associated with the temporary closure of the Serpentine ACEC to other management actions within the range of alternatives for the CCMA RMP/EIS.

Alternatives that were considered but not analyzed are also presented in Chapter 2.

## ES.6 Affected Environment

Chapter 3, "Affected Environment," provides a general discussion of the Planning Area and then focuses in on those specific lands within the Planning Area that are administered by the BLM. The affected environment descriptions focus on those aspects of the physical, biological, cultural, social, and economic conditions (i.e. "human environment") that could be affected by the management actions prescribed in the range of alternatives.

## ES.7 Environmental Consequences

Chapter 4, "Environmental Consequences," identifies the impacts of each management action by resource. Mitigation measures designed to avoid or reduce these impacts are incorporated into the management actions of each alternative. The depth and breadth of the impact analyses presented in this chapter is commensurate with the level of detail of the management actions presented in Chapter 2, and on the availability and/or quality of data necessary to assess impacts. The baseline used for expected impacts is the current conditions in the Planning Area described in Chapter 3. For the purpose of analysis, many management actions are combined among the range of alternatives based on varying levels of motorized or non-motorized access inside the Serpentine ACEC, and other allowable uses, land use authorizations, and the associated mitigation measures for public health and safety.

## ES.8 Consultation and Coordination

Development of the CCMA RMP/EIS allows BLM the opportunity to review existing agreements and consider cooperative agreements with other government agencies, including: U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, California Department of Forestry & Fire Protection (CALFIRE), California Office of Historic Preservation, California Department of Fish & Game, California Regional Water Quality Control Board(s), Monterey Bay Unified Air Pollution Control District, and other local agencies.

The Tachi Yokut tribe of the Santa Rosa Rancheria is the only federally recognized Native American group in the Planning Area. Personal contacts between BLM officials and tribal representatives are routinely scheduled for other planning activities in the Hollister Field Office, and BLM has extended the opportunity to provide input for the RMP revision to the Tachi Yokut tribe throughout the planning process.

The HFO also participates in several regional Coordinated Resource Management Planning (CRMP) groups. Coordinated resource management is a voluntary planning process that has proven to be successful in the management of natural resources and is rapidly gaining acceptance nationwide as an essential tool in watershed management. CRMP allows local people to provide input in making and implementing proactive natural resource management decisions, and involves bringing all affected stakeholder groups together to set common goals and resolve resource issues as a team. BLM participates in the following CRMP groups in the Planning Area: Arroyo Pasajero Watershed, Cantua Creek Watershed, Pajaro Watershed, and Panoche-Silver Creek Watershed.

Six public scoping workshops were held from October 2007 to June 2008 to initiate the public involvement process for the CCMA RMP/EIS. Additionally, three public comment meetings and two social and economic strategies workshops will be announced upon release of the Draft CCMA RMP/EIS to discuss questions and concerns about the impacts of management alternatives and social and economic issues in the Planning Area to increase public involvement in development of the Proposed CCMA RMP and Final EIS.

## ES.9 Summary of Major Planning Issues

Based on the discussions held during six public scoping workshops and BLM's current land use planning guidance and knowledge of management issues and concerns in the Planning Area, 18 program areas are addressed in this Draft RMP/EIS. The following issues and concerns represent the key themes and prioirities that are considered in the CCMA RMP/EIS:

- Questions with regard to chrysotile asbestos and EPA Risk Assessment
- Impacts to human health from asbestos exposure.
- Measures to reduce and minimize risk to public health and safety:
- Suitable areas for motorized and non-mototrized recreation uses.
- Desired outcome for areas with high scenic and/or cultural values.
- Protection of special status species.
- Potential land tenure adjustments (acquisition & disposal).
- Wildfire management strategy to protect private and public lands and resources.
- Establishing limits on season of use, number of visitor use days/years, vehicle types, riding areas and/or trails types., or minimum age requirements.
- Fluid and solid mineral development;
- Impacts on watershed resources and water quality;
- Impacts on air quality in non-attainment areas;

A number of issues raised during scoping were determined to be beyond the scope of the CCMA RMP/EIS. The issues considered but not further analyzed are identified in Chapter 1, Section 1.3.3.

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# 1.0 INTRODUCTION

The Planning Area for this RMP/EIS includes all federal, state, and private lands in southern San Benito County and western Fresno County in Central California shown on Map 1 in Appendix I regardless of jurisdiction; however the BLM will only make decisions on lands that fall under the BLM's jurisdiction (including subsurface minerals). These are referred to as "BLM-administered lands" (or "public lands"), and include the subsurface Federal minerals, or "split estate", underlying State Trust Lands and some privately–owned properties. The BLM-administered land for which the HFO has authority and will make decisions in this Resource Management Plan (RMP) is referred to as the "Decision Area".

Specifically, Clear Creek Management Area (CCMA) encompasses approximately 75,000 acres, of which 63,000 acres are public lands managed by the BLM Hollister Field Office (HFO). Management areas are typically larger units of public lands that have a degree of similarity with regard to resource characteristics and planning issues. CCMA public lands have been used extensively for Off-Highway Vehicle (OHV)[1] recreation for many years. A variety of other recreation activities also occur within the CCMA including hunting and rock-hounding. BLM's land use decisions for CCMA public lands were originally addressed in the Hollister RMP (1984). Since 1984, the Hollister RMP was amended several times to address new issues and emerging trends on public lands. Therefore, current management direction for the 63,000 acres of public lands in CCMA is contained in the 1984 Hollister Resource Management Plan and subsequent CCMA amendments. This plan and its amendments, while providing a broad overview of goals, objectives, and needs associated with these public lands, lack detailed direction and are generally outdated. Social, political, and environmental changes, coupled with significant population growth not anticipated in the 1984 RMP and CCMA amendments have presented some complex management issues that are appropriate to analyze in a "stand alone" RMP for the 63,000 acres of BLM-administered lands in CCMA.

The Hollister RMP was updated in 2007 to establish goals, objectives, and management actions for BLM public lands that address current issues, knowledge, and conditions. However, BLM-administered lands in CCMA were not addressed in the Hollister RMP (2007) because the Environmental Protection Agency (EPA) was preparing an asbestos exposure and human health risk assessment to provide BLM and the general public information on the exposure levels from various types of activities in the CCMA. EPA initiated the study in 2004 in connection with the clean-up of the Atlas Asbestos Mine Superfund Site, also in CCMA, and concerns about the technical deficiencies of a 1992 health risk assessment that BLM used to evaluate CCMA visitor's exposure to airborne asbestos fibers in the area. Therefore, BLM agreed to work with EPA and the public upon completion of the study to incorporate the new health risk information into public land use decisions for the area.

EPA released the CCMA Asbestos Exposure and Human Health Risk Assessment on May 1, 2008. The result of the study concluded that visiting CCMA more than once per year can put adults and children

[1] For many years the term "off-highway vehicle" (OHV) has been used by the public, industry, and the BLM interchangeably with the term "off-road vehicle" (ORV). However, only the term off-road vehicle has a legally established definition in the Presidential Executive Orders and the BLM's related 43 CFR 8340 regulations. In general, throughout this document we will refer to motorized OHV, except when discussing issues related to policy or regulations.

above EPA's acceptable risk range for exposure to carcinogens and found an increased long-term cancer risk from engaging in many of the typical recreational activities at the CCMA.

In response to new information provided in the CCMA Asbestos Exposure and Human Health Risk Assessment (2008), BLM issued a temporary closure order simultaneously on May 1, 2008 that closed 30,000-acres within the CCMA's Serpentine ACEC (described below) to all public use and entry. The closure order was published in the Federal Register (Volume 73, Number 85), pursuant to 43 CFR 8364.1, to protect public land users from human health risks associated with exposure to airborne asbestos in the CCMA while the BLM completes this Resource Management Plan. As a result, this RMP/EIS will address general public access and recreation at the CCMA to consider new information in the EPA report and analyze a full range of management options and alternatives for the CCMA.

Within the CCMA boundary is the Serpentine Area of Critical Environmental Concern (ACEC) covering approximately 30,000 acres. It was designated as an ACEC upon approval of 1984 Hollister RMP, based on the human health risk associated with the naturally occurring asbestos and the occurrence of special status plant species endemic to area. The boundaries of the ACEC were defined by mapping of asbestos-laden soils derived from the New Idria serpentine formation. This ACEC is sometimes referred to as the Hazardous Asbestos Area (HAA). Human disturbance to the soils and plants in the serpentine ACEC is a special management concern, because throughout the ACEC, soil formation tends to be slow and the topsoil shallow. Plant regeneration is also slow, and accelerated erosion from human activities has negatively impacted soil and vegetative resources over the years. Minimizing soil erosion and minimizing the damage to vegetation is a management priority.

Within the Serpentine ACEC is the San Benito Mountain Research Natural Area (RNA), which is approximately 4,147 acres in size. RNAs are designated for the protection of public lands having natural characteristics that are unusual or that are of scientific or other interest. The San Benito Mountain RNA (SBMRNA) was designated because of the unique forest assemblage and vegetation communities associated with the serpentine soils. Its primary purpose is to provide research and educational opportunities while maintaining and protecting a unique assemblage of vegetation in as natural condition as possible.

The Clear Creek Management Area is shown on Map 7 (Special Designations) in Appendix I along with the area of the Serpentine ACEC and the SBMRNA. The acreages (rounded to the nearest hundred) of these areas are shown in Table 1-1, with a breakdown of BLM, other agencies and private land ownership in CCMA.

**Table 1-1. Land Ownership in the Planning Area**

| Ownership | Clear Creek Management Area (acres) | Serpentine ACEC | San Benito Mountain Research Natural Area | San Benito Mountain Wilderness Study Area | Percent of CCMA |
|---|---|---|---|---|---|
| BLM | 63,000 | 30,000 acres | 4,100 acres | 1,500 acres | 83.3 |
| Private | 10,600 | -- | -- | -- | 14.0 |
| State | 2,000 | -- | -- | -- | 2.6 |
| **Total** | **75,600** | **30,000** | **4,100** | **1,500** | **100.0** |

This RMP/EIS presents a range of management alternatives for BLM and interested parties to address emerging issues in the region and evaluate the environmental consequences of current management actions and the range of alternative management actions. The result of this land use planning effort will be a "stand alone" resource management plan that allocates resources in Clear Creek Management Area to generally establish the following:

(1) Areas for limited, restricted or exclusive use; and special designations;

(2) Allowable resource uses and related levels of production or use;

(3) Resource condition goals and objectives;

(4) Program constraints and general management practices needed to achieve the above items;

(5) Need for an area to be covered by more detailed and specific activity level plans;

(6) Support actions, including resource protection and public health and safety measures, access development, realty actions, etc. as necessary to achieve the above;

(7) General implementation sequences, where carrying out a planned action is dependent upon prior accomplishment of another planned action; and

(8) Intervals and standards for monitoring and evaluating the plan to determine the effectiveness of the plan and the need for amendment or revision.

Upon evaluation of the alternatives and associated impacts as described in this Draft RMP/EIS, BLM selected a combination of management actions and objectives from among the range of alternatives, using the '*menu approach'* described below in Section 1.2.2. The BLM's Preferred Alternative is described in Chapter 2, Section 2.5 and comprises land use decisions and public health and safety measures to minimize asbestos exposure, reduce airborne asbestos emissions, and promote outreach and education to inform public land users of the human health risks associated with exposure to asbestos in CCMA. The preferred alternative also meets the resource management goals described in Chapter 2 and the purpose and need statement described below.

Following public review and comment on the Draft RMP/EIS and BLM's Preferred Alternative, a Proposed RMP and Final EIS will be prepared that incorporates public comments and other agency input. As a result, the final alternative (i.e. Proposed Action) identified in the Proposed RMP may be different from the Preferred Alternative, or any of the alternatives analyzed in the Draft RMP/EIS, and include elements incorporated after public review of the Draft RMP/EIS. The Proposed RMP and Final EIS will identify any major changes to the preferred alternative.

## 1.1 Purpose and Need for the CCMA Resource Management Plan

The need to develop the CCMA RMP arises from numerous changes in circumstances since the current land use plan decisions were adopted. The existing Resource Management Plan (RMP) for the area was adopted in 1984. There have been several amendments to the 1984 RMP to address public health and safety and resources protection issues in CCMA. However, many other issues that are emerging on public lands were not addressed in those amendments. The following list of specific factors illustrates the need for preparation of an updated management plan:

- The EPA's CCMA Asbestos Exposure and Human Health Risk Assessment (2008) provides significant new information that must be incorporated into a land use plan to evaluate the public health risk associated with BLM land use authorizations.

- The current management plan does not specifically address listing and/or additional habitat needs for species protected under the federal 1973 Endangered Species Act (ESA), including the California condor, red-legged frog, and tiger salamander.

- Changes in social and economic conditions in San Benito County, the San Joaquin Valley, and the entire State of California have led to increased demand for use of public lands for recreation and energy production as well as an increased awareness and social value placed on the cultural and natural resources in the Planning Area.

The purpose of the CCMA RMP is to establish goals, objectives, and management actions for BLM-administered lands in CCMA that address current issues, knowledge, and conditions. The CCMA RMP shall guide the management of the lands and resources administered by the Hollister Field Office in CCMA to achieve the following: 1) minimize asbestos exposure 2) reduce asbestos emissions 3) designate areas in CCMA for motorized, mechanized, and non-motorized/non-mechanized recreation opportunities; 4) protect sensitive natural and cultural resources from impacts due to recreation and other land uses; 5) provide guidance for mineral and energy development; and 6) make other land use authorizations and tenure adjustments. This planning effort is intended to be comprehensive, evaluating existing management plans and identifying regional issues, and resolving those issues through public, interagency, and intra-agency scoping efforts. This effort also identifies the area's "vision", long-range management goals, intermediate objectives, and actions and options for meeting those objectives.

## 1.2 Planning Area Description

The Planning Area includes a portion of southern San Benito County and a portion of western Fresno County. BLM public lands account for more than 63,000 of the 75,000 acre management area. BLM also administers subsurface minerals on approximately 3,500 acres of "split estate" (areas where BLM administers Federal subsurface minerals but the surface is owned by a non-Federal entity).

The lands managed by the HFO include a variety of settings and landforms, including the southern Diablo Mountain Range, Hernandez Valley, and three major watersheds. The Pajaro watershed drains into the Pacific Ocean: the Arroyo Pasajero and Silver Creek watersheds drain into the San Joaquin Valley. BLM's mission is to sustain the health, diversity, and productivity of these public lands for the use and enjoyment of present and future generations.

The public lands in CCMA are typically steep and mountainous. Some lands within the planning area consist of chaparral and oak woodland vegetation. Other areas (primarily on the eastern slopes of the Diablo Range) consist of annual grassland and half-shrub vegetation. However, the majority of the planning area is dominated by the serpentine soil formation known as the New Idria formation, which is characterized by sparse vegetation, large barren complexes on hillsides and ridgelines, and a unique forest assemblage of foothill, Jeffrey and Coulter pine. Elevations range from 1,100 -- 5,000 feet.

### 1.2.1 Management Zones

This RMP incorporates existing BLM-administered land and recently acquired public lands into five 'Management Zones'. The five management zones (identified below) were defined by BLM interdisciplinary staff based on similar resources conditions, resource uses, and management issues or trends.

This RMP/EIS identifies desired future conditions for these management zones, depending on the resources and conditions that currently exist and the range of alternatives for multiple uses in CCMA. Accordingly, the range of alternatives in the RMP/EIS is designed to provide an analysis of the reasonable management actions. The five CCMA management zones include:

- The Serpentine Area of Critical Environmental Concern (ACEC).
- The Condon Peak Zone, which includes the White Creek drainage area.
- The Cantua Zone, which includes CCMA public lands in the Cantua drainage, the San Carlos Bolsa, and a disjunct parcel near Idria.
- The Tucker Mountain Zone, which includes public lands surrounding Tucker Mountain, Baker, Byles, and Cane Canyons, and the main entrance to Clear Creek; and
- The San Benito River Zone, which comprises scattered parcels that border the Serpentine ACEC and other BLM-administered lands in the San Benito River watershed.

Table 1-2 identifies the total acres of BLM-administered lands for each of the five management zones.

Table 1-2. CCMA Management Zones Ownership (acres rounded to nearest hundred)

| Ownership | Serpentine ACEC | Tucker | Condon | Cantua | San Benito River |
|---|---|---|---|---|---|
| BLM | 30,000 | 5,900 | 9,700 | 14,900 | 3,600 |
| Private | 3,400 | 3,300 | 2,600 | 1,300 | -- |
| State | 1,500 | -- | 500 | -- | -- |
| **Total** | **33,900** | **9,200** | **12,800** | **16,200** | **3,600** |

### 1.2.2 Planning Approach

While it is important to recognize issues and consider the impacts BLM decisions may have on the surrounding communities and landscapes, the decisions in this land use plan only apply to BLM public lands. Accordingly, the CCMA RMP/EIS will evaluate the environmental impacts of management actions considered within the range of alternatives pursuant to the National Environmental Policy Act (NEPA). Each of the alternatives for CCMA developed by the Hollister Field Office identifies areas of resource management emphasis that are generally described in this document.

The 'menu approach' is a land use planning concept that allows BLM to identify a *'preferred alternative'* for management of public lands that consists of a combination of management actions analyzed within the range of alternatives for Clear Creek Management Area. Using the 'menu approach', management actions that are consistent with BLM management goals and objectives can be incorporated into *any* of the alternatives, as long as they do not conflict with other management actions. For example, under the current management (no action) alternative, existing multiple uses would continue to be authorized. However, in order to adequately protect public health and safety, BLM could propose a *'preferred alternative'* that closely resembles current management, but includes mitigation measures to reduce risk to public health and safety from exposure to asbestos emissions.

Similarly, BLM's *"preferred alternative"* could comprise a combination of allowable uses based on resources protection and other mitigation measures to reduce the risk to human health and safety on public lands in CCMA that are identified in the range of alternatives. As a result, the 'menu approach'

allows the *'preferred alternative'* to be chosen from a range of management actions without being confined to authorized uses or mitigation measures outlined in any single alternative.

Chapter 2 of this RMP/EIS describes seven possible alternatives for a new resource management plan. Under the No Action Alternative (Alternative A), the provisions of the 1984 RMP and associated CCMA Amendments would remain in place and current resource management would continue as is. Alternative B also considers continuing to allow existing uses with an emphasis on dust suppression and limiting annual visitor use days to mitigate asbestos exposure and human health risks within the Serpentine ACEC. Alternative C aims to improve public health and safety by prohibiting access into the ACEC for children, restricting certain vehicle types, and the reducing the miles of designated routes available for OHV recreation. Alternative D would limit motorized access in the ACEC to full-size vehicles and emphasize OHV use opportunities on other BLM-administered lands in CCMA outside the Serpentine ACEC. Alternative E emphasizes non-motorized recreation in CCMA while continuing to provide for vehicular access and scenic touring opportunities in the ACEC. Alternative F would only authorize foot traffic for CCMA visitors inside the ACEC, and Alternative G would prohibit all public use and access into the area.

Chapter 3 describes the existing environment that would be affected by these seven resource management alternatives, and Chapter 4 describes the environmental consequences of implementing each of the seven alternatives. Finally, Chapter 5 provides information about the collaboration and consultation that has been conducted in preparation of this report, and Chapter 6 lists references indentified in the RMP/EIS.

## 1.3 Scoping/Issues

### 1.3.1 Scoping Process

Public involvement in BLM's planning process begins with a public scoping period.

BLM published the Notice of Intent to Prepare a Resource Management Plan for the Clear Creek Management Area, California, and Associated Environmental Impact Statement in the Federal Register (Volume 72, Number 172) on September 6, 2007. In conjunction with the NOI, BLM issued a news release on September 6, 2007 announcing three public scoping workshops for the CCMA RMP/EIS.

*Public Meetings (Round One)*

| | |
|---|---|
| September 27, 2007 | Veterans Memorial Hall<br>649 San Benito St.<br>Hollister, CA |
| October 4, 2007 | Harris Ranch Garden Ballroom<br>24505 W. Dorris Ave.<br>Coalinga, CA |
| October 11, 2007 | Dr. Martin Luther King Jr. Library Room 225<br>150 E. San Fernando St.<br>San Jose , CA |

Following the release of the EPA Asbestos Exposure and Human Health Risk Assessment and temporary closure of CCMA on May 1, 2008, BLM announced three more public scoping meetings for the CCMA RMP/EIS, one of which included a presentation by EPA staff to explain the results of the EPA study. The dates and locations of each meeting are listed below:

*Public Meetings (Round Two)*

| | |
|---|---|
| May 8, 2008<br><br>*EPA Presentation* | Santa Clara Convention Center<br>5001 Great America Parkway<br>Santa Clara, CA |
| May 19, 2008 | Veterans Memorial Hall<br>649 San Benito St.<br>Hollister, CA |
| May 21, 2008 | Dr. Martin Luther King Jr. Library Room 225<br>150 E. San Fernando St.<br>San Jose, CA |

During the scoping meetings, over 1,000 members of the public, mainly off-highway vehicle users, discussed the future management of the Clear Creek Management Area at the CCMA scoping meetings in Santa Clara, Hollister, Coalinga, and San Jose. The CCMA RMP/EIS Scoping Report (August 2008) was prepared by the Hollister Field Office and details the specific comments and results of the public scoping period, which closed on June 21, 2008. This Scoping Report is available for review on-line at: http://www.blm.gov/ca/st/en/fo/hollister.html, or by request from the Hollister Field Office.

### 1.3.2 Summary of Major Planning Issues

As a result of BLM current land use planning guidance and knowledge of management issues and concerns in the Planning Area, 18 resource program areas will be addressed in the CCMA RMP/EIS.

Based upon the discussions held during three public scoping workshops and responses to the NOI to prepare the CCMA RMP/EIS, the following issues and concerns represent the key themes and prioirities that emerged during the public scoping process. These key themes and priorities are analyed in the CCMA RMP/EIS, in addition to preliminary issues identified by BLM personnel, cooperating agencies, and public user groups.

- Questions with regard to chrysotile asbestos and EPA Risk Assessment
- Impacts to human health from asbestos exposure.
- Measures to reduce and minimize risk to public health and safety:
- Suitable areas for motorized and non-mototrized recreation uses.
- Desired outcome for areas with high scenic and/or cultural values.
- Protection of special status species.
- Potential land tenure adjustments (acquisition & disposal).
- Wildfire management strategy to protect private and public lands and resources.
- Establishing limits on season of use, number of visitor use days/years, vehicle types, riding areas and/or trails types., or minimum age requirements.
- Fluid and solid mineral development;
- Impacts on watershed resources and water quality;
- Impacts on air quality in non-attainment areas;

### 1.3.3 Issues Considered but Not Further Analyzed

A number of issues raised during scoping were determined to be beyond the scope of the CCMA RMP/EIS. These issues are identified below and will not be addressed in the CCMA RMP/EIS because they are either outside the scope of this planning effort or are outside the authority of the BLM. The following issues are not further analyzed in this report:

#### 1.3.3.1 Temporary Closure of Clear Creek Management Area

Several comments received by the Hollister Field Office requested that BLM reverse (i.e. remove) the Temporary Closure order issued on May 1, 2008 that closed the 30,000-acre Serpentine ACEC to all public use during the development of the RMP/EIS to allow public use during that period. However, BLM determined that the Temporary Closure order was appropriate in response to new information provided in the EPA Asbestos Exposure and Health Risk Assessment (2008). The EPA study determined that visitor use on public lands in CCMA can increase the long-term risk of cancer from exposure to asbestos.

The Federal government has concluded that all forms of asbestos are hazardous to humans, and that all can cause cancer; although the chrysotile form may be less potent than the amphibole family in causing mesothelioma (U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Toxicological Profile for Asbestos). While most of the asbestos detected in the EPA CCMA air samples was chrysotile, 8% of the fibers of the size most closely related to health concerns were amphibole asbestos. Despite the public health and safety risk identified in the EPA study, many public comments reflect concerns that the BLM excluded the public from the decision-making process and that the Temporary Closure will affect the current development of the CCMA RMP/EIS.

While the Hollister Field Office remains aware of these concerns and other issues raised during the public scoping process, the closure order will remain in place during the preparation of the CCMA RMP/EIS because this issue is outside the scope of the planning effort and the temporary closure will not affect the RMP development.

BLM acknowledges that controversy exists regarding the health risks of naturally occurring asbestos; however, EPA and other Federal, State, and local agencies whose missions relate directly to public health support the BLM's decision to avoid further elevated risks to visitors while an environmental impact statement is prepared to analyze a range of alternatives that meet the purpose and need for the CCMA RMP described in Section 1.1.

#### 1.3.3.2 Establishing New Off-Highway Vehicle Recreation Areas Outside of CCMA

Many clubs and organizations also requested that BLM consider establishing new areas for off-highway vehicle recreation on BLM public lands in CCMA, and on other public lands in the Hollister Field Office, including BLM-administered lands and California State Parks like Henry Coe.

While the Hollister Field Office will consider establishing new off-highway vehicle recreation areas in CCMA, the scope of the RMP/EIS will be limited to BLM-administered lands in the 75,000 acre CCMA based on the following rationale.

The purpose and need for the CCMA RMP/EIS is based on the EPA Asbestos Exposure and Human Health Risk Assessment. BLM acknowledges there are concerns about the loss of public lands available for OHV use, but the CCMA RMP/EIS will analyze a range of alternatives including the 'no action alternative', which would allow OHV use to continue in CCMA at the same levels prior to the closure order issued on May 1, 2008.

In light of these considerations, BLM has determined that it is appropriate to maintain the scope of the current RMP/EIS within the 75,000 acre CCMA. Furthermore, BLM and the California State Parks Motor Vehicle Recreation Division can work cooperatively outside of the CCMA land use planning process on the potential to establish new off-highway vehicle recreation areas in the Hollister Field Office. However, any proposal developed for this purpose would need to be accompanied by an adequate environmental impact statement, and the existing BLM resources and personnel allocated to the CCMA RMP/EIS are dedicated to addressing the purpose and need outlined in Chapter 1 of this Scoping Report.

#### 1.3.3.3 Special Designations

Changes or modifications to Special Designations in CCMA will not be considered in the range of alternatives for the CCMA RMP/EIS for the following reasons.

The purpose and need for this RMP/EIS includes minimizing human health risks from exposure to asbestos and reducing airborne asbestos emissions from BLM management activities. ACEC designations highlight areas where special management attention is needed to protect, and prevent irreparable damage to important historic, cultural, and scenic values, fish, or wildlife resources or other systems or processes or to protect human life and safety from natural hazards. The designation of the Serpentine ACEC in the 1984 Hollister RMP (as amended) is based on human health risks associated with exposure to asbestos within the serpentine soils. The boundaries of the ACEC were defined by mapping of asbestos soils derived from the New Idria serpentine formation. This ACEC is also referred to frequently as the Hazardous Asbestos Area (HAA).

Within the Serpentine ACEC is the 4,147-acre San Benito Mountain Research Natural Area (SBMRNA). The Hollister RMP (1984) and the 2006 Record of Decision (ROD) for CCMA RMP Amendment and Route Designation approved expansions of the original SBMRNA from its original boundary when it was first established as an Outstanding Natural Area in 1972. The designation of the SBMRNA is based on unique vegetation and forest types associated with serpentine soil. The current SBMRNA boundary protects sensitive resource values and riparian habitat, including Federally threatened San Benito evening primrose (*Camissonia benitensis)* populations, serpentine barrens, and a unique forest assemblage of Jeffrey pine, Coulter pine, foothill pine, and other mixed-conifers. Upper Clear Creek Canyon was also included in the expanded RNA to control OHV trespass into the RNA and closed mine areas.

Within the SBMRNA is the 1,500-acre San Benito Mountain Wilderness Study Area (WSA), which must be managed according to the BLM's Interim Policy for Lands Under Wilderness Review, as described in Chapter 3, Section 3.10.2.4. The boundaries of these special designation areas are delineated using identifiable landmarks, to the extent possible, and reflect the most current BLM policies for management of the public lands.

## 1.4 Planning Criteria

Planning criteria help to: (1) streamline the RMP's preparation and focus; (2) establish standards, analytical techniques, and measures to be used in the process; (3) guide development of the RMP; (4) guide and direct issue resolution; and (5) identify factors and data to consider in making decisions.

Principles of ecosystem management as well as a continuing commitment to multiple use and sustained yield will also guide land use decisions in the Planning Area. The commitment to multiple uses would not mean that all land would be open for all uses. Some uses may be excluded on certain lands to protect specific resource values or uses. Any exclusions, however, would be based on laws or regulations or be determined through the planning process and subject to public involvement.

Planning criteria developed during public scoping will help guide the planning effort. The preliminary planning criteria identified in the Notice of Intent published in the Federal Register are identified below:

- The RMP will be developed in compliance with FLPMA, all other applicable laws, regulations, executive orders, and BLM supplemental program guidance.
- The planning process will include an EIS that will comply with NEPA standards.
- Economic and social baselines and consequences will be developed in coordination with local and county governments.
- Initiate government to government consultation, including Tribal interests.
- Consider the extent to which the revised plan reduces airborne asbestos emissions, minimizes asbestos exposure, and addresses public health impact of the Hazardous Asbestos Area.
- Consider the extent to which the revised plan reduces accelerated erosion and offsite transport of asbestos fibers on vehicles and clothes due to off-highway vehicle use.
- All new data collected will have information about the data (metadata) stored in a data base. All metadata will meet the Federal Geographic Data Committee (FGDC) standards.
- The RMP/EIS will incorporate by reference the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management (1998).*
- The RMP will result in determinations as required by special program and resource specific guidance detailed in Appendix C of the BLM's Planning Handbook (H-1601-1).
- Decisions in the RMP will strive to be compatible with the existing plans and policies of adjacent local, State, Tribal, and Federal agencies as long as the decisions are in conformance with legal mandates on management of public lands.
- Resource allocations must be reasonable and achievable within available technological and budgetary constraints.

The following 'planning criteria' were presented in the CCMA Draft RMP Amendment (2004). These criteria were based on input from BLM specialists, other agencies, and the public and will also be considered during this planning process:

- The CCMA RMP must provide for the needs of the public land user, while protecting sensitive species and habitat, protecting natural and cultural resources, and protecting the unique ecosystem within the SBMRNA.
- BLM shall comply with the 2007 State Protocol Agreement between the California BLM and the California State Historic Preservation Officer (SHPO).
- Best Management Practices (BMP) related to watershed improvement projects would continue to be implemented to reduce erosion and off-site sedimentation transport.
- BLM would obtain California Department of Fish and Game permits and Clean Water Act Section 404 permits from the U.S. Army Corps of Engineers, for stream alteration and BMP watershed management practices as necessary and appropriate.
- All land use decisions for lands acquired within the CCMA boundaries by BLM would be incorporated into this RMP/EIS.

The CCMA is presently managed under the 1984 Hollister RMP (as amended). Information and decisions from the existing Hollister RMP, and associated amendment, will be reviewed and incorporated

in this RMP/EIS where appropriate. Management will continue under the CCMA Temporary Closure Order, issued May 1, 2008, until the CCMA RMP/EIS is approved.

## 1.5 Planning Process

In general, the BLM follows an eight-step planning process as outlined below:

**Step 1 – Planning Issues Identified.** Issues and concerns are identified through a scoping process that includes the public, Indian tribes, other Federal agencies, and state and local governments.

**Step 2 – Planning Criteria Development.** Planning criteria are created to ensure decisions are made to address the issues pertinent to the planning effort. Planning criteria are derived from a variety of sources, including applicable laws and regulations, existing management plans, coordination with other agencies' programs, and the results of public and agency scoping. The planning criteria may be updated or changed as planning proceeds.

**Step 3 – Data and Information Collection.** Data and information for the resources in the planning area are collected based on the planning criteria.

**Step 4 – Alternatives Formulation.** A range of reasonable management alternatives that address issues identified during scoping is developed.

**Step 5 – Alternatives Assessment.** The estimated environmental effects of each alternative are estimated and analyzed.

**Step 6 – Preferred Alternative Selection.** The alternative that best resolves planning issues is identified as the preferred alternative.

**Step 7 – Resource Management Plan Selection.** First, a Draft RMP/EIS is issued and made available to the public for a review period of 90 calendar days. During this time, the BLM holds another round of public meetings to gather comments and accepts comments in writing. After comments on the draft document are received, the draft is modified as necessary, and the Proposed RMP/Final EIS is published and made available for public review for 30 calendar days. A Record of Decision (ROD) is signed to approve the Final RMP/EIS.

**Step 8 – Implementation and Monitoring.** Management measures outlined in the approved plan are implemented, and future monitoring is conducted to test their effectiveness. Changes are made as necessary to achieve desired results.

### 1.5.1 Relationship to BLM Policies, Plans, and Programs

The major planning and decision documents that will be used to guide resources management in the CCMA RMP/EIS are described below.

#### 1.5.1.1 BLM Plans and Programs

This RMP focuses on broad resource objectives and direction while providing some activity-level guidance and site-specific decisions, and will build upon a 30-year history of natural resource management in Central California. Table 1.5-1 highlights some of the major plans and policies that have led to the present management of the area.

**Table 1.5-1 Historic Management Plans for the CCMA**

| Document Title | Year |
|---|---|
| Fresno/San Benito Management Framework Plan | 1978 |
| Hollister Resource Management Plan | 1984 |
| Clear Creek Management Plan and Decision Record | 1986 |
| Hollister Oil and Gas RMP Amendment | 1993 |
| Clear Creek Management Area RMP Amendment and Final EIS/Record of Decision | 1995/1999 |
| HFO Fire Management Plan | 2004 |
| Clear Creek Management Area RMP Amendment and Route Designation/Record of Decision | 2006 |

The preceding plans are incorporated in this RMP/EIS by reference but are not included herein. Additional major plans, policies and programs that apply to BLM land use planning include:

**Rangeland Health Standards and Guidelines**

Statewide standards and guidelines were approved by the Secretary of the Interior in 2000 for managing grazing on BLM public lands in California. BLM is required by statewide policy to use these standards and guidelines for evaluating rangeland health.

**Vegetation Treatments Using Herbicides Final Programmatic EIS Record of Decision (2007)**

The CCMA RMP is subject to the BLM's Vegetation Treatments Using Herbicides Final Programmatic EIS Record of Decision, approved in September 2007. The Programmatic EIS Record of Decision (ROD) has two primary objectives: 1) Determine which herbicide active ingredients are available for use on public lands to improve the agency's ability to control hazardous fuels and unwanted vegetation, and 2) to develop a state-of-the-science human health and ecological risk assessment (ERA) methodology. This methodology would serve as the initial standard for assessing human health and ecological risk for herbicides that may become available for use in the future.

**BLM Wilderness Recommendations**

Wilderness studies were completed for all BLM lands as a requirement under Section 603 of the FLPMA, and recommendations have been formally submitted to Congress by the President. Therefore, these decisions cannot be changed except by Congressional action. In the Planning Area, approximately 1,500 acres are being managed in the San Benito Mountain Wilderness Study Areas until Congress makes the final wilderness determination through legislative action.

**National OHV Strategy**

The BLM released a National Management Strategy for Motorized Off-highway Vehicle Use on Public Lands on January 19, 2001. This strategy is aimed at recognizing the interests of motorized OHV users while protecting environmentally sensitive areas on the public lands. It also seeks to focus the Agency's scarce funding and staffing resources on motorized OHV management on the ground at the local field office level.

**Wind Energy Development Policy**

The BLM is responsible for the development of wind energy resources on BLM-administered lands. Currently about 330 megawatts (MW) of wind capacity is installed nationwide under right-of-way

(ROW) grants administered by the BLM in accordance with the requirements of the Federal Land Policy and Management Act of 1976

A Programmatic Environmental Impact Statement (PEIS) relating to the authorization of wind energy projects was completed in June 2005. This EIS provides an analysis of the development of wind energy projects in the West. In conjunction with the publication of the PEIS, the BLM amended 52 land use plans to allow for the use of applicable lands for wind energy development. BLM offices are able to use the PEIS as an aid in analyzing impacts for specific applications for the use of public lands for wind energy use.

The Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) assisted the BLM in the preparation of the PEIS and provided an inventory assessment of wind energy resources on public lands in the Western United States. The PEIS Record of Decision (ROD), approved in January 2006, addressed the amendment of individual land use plans and established both policies and best management practices (BMPs) regarding the development of wind energy resources on BLM-administered lands.

**Native American Consultation per Executive Orders 12866, 12898, 13084, 13007 and 13175 et seq.**

Executive Order 12866 "Regulatory Planning and Review" intends to enhance planning and coordination with respect to both new and existing regulations and to make the process more accessible and open to the public. Executive Order 13084 "Consultation and Coordination with Tribal Governments" of 1998 established requirements for meaningful consultation and collaboration with Indian tribal governments with respect to the development of regulatory practices on Federal matters that significantly or uniquely affect their communities. Executive Order 13007 "Indian Sacred Sites" refined consultation requirements with tribal groups to include the identification of sacred sites or sacred areas that may be affected by proposed federal actions. Executive Order 13175 "Consultation and Coordination with Tribal Governments" of 2000 further clarified the consultation relationship between the Federal government and tribal communities.

**CFR Title 43, Section 1610, and BLM's NEPA Handbook (H-1790-1) & Land Use Planning Handbook (H-1601-1)**

43 CFR 1610 states that guidance for preparation and amendment of resource management plans may be provided by the Director and State Director, as needed, to help the District and Area Manager and staff prepare a specific plan.

The NEPA Handbook and the Land Use Planning Handbook provide guidance to BLM on the requirements of the Federal Land Policy and Management Act (FLPMA), the BLM's Planning Regulations (43 CFR 1600), and the National Environmental Policy Act (NEPA). Nothing in the Handbooks supersedes the legal and regulatory mandates in the CFR. The Manual and Handbook provide guidance for preparing new Resource Management Plans (RMPs), plan revisions, plan amendments, other equivalent plans (e.g., plans adopted from other agencies), and subsequent implementation-level plans. Procedures and requirements are set forth to ensure that the BLM's plans meet regulatory and statutory requirements. To the extent possible, this guidance integrates land use planning requirements with requirements under NEPA.

#### 1.5.1.2 Collaboration with Other Agencies and Groups

**Intergovernmental and Interagency**

The CCMA RMP/EIS will allow BLM the opportunity to review existing agreements and consider cooperative agreements with the Federal, State, and local agencies to improve management of public land resources in the Planning Area. These agencies would include:

- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- California Department of Parks and Recreation
- California Department of Toxic Substances Control
- California Department of Forestry and Fire Protection
- California State Office of Historic Preservation
- California Department of Fish and Game
- California Regional Water Quality Control Board
- Monterey Bay Air Pollution Control Board
- San Benito County
- Fresno County

**Tribal Relationships**

The Tachi Yokuts Tribe of Santa Rosa Rancheria is the only federally recognized Native American tribe in the Planning Area. There are several other non-federally recognized tribes and groups within the Planning Area as well. Consultation efforts between BLM officials and tribal representatives are conducted for various planning activities in the Hollister Field Office area including the CCMA. The BLM extends the opportunity to provide input for the CCMA RMP/EIS to all affected regional California Indian tribal entities (including individuals) throughout the planning process.

## 1.6 Relationship to Other Policies, Plans, and Programs

### 1.6.1 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is also known as the Superfund Act. CCMA is a 48-square-mile area that is part of the Atlas Asbestos Mine Superfund Site. Both the CCMA and the mine site are located on a formation of naturally occurring serpentine rock and soil which contain high concentrations of naturally occurring asbestos (NOA). There are over 86 abandoned mines (mercury, chromium and asbestos) in the CCMA and surrounding areas of the New Idria/Coalinga Region.

The Atlas Asbestos Mine Site has been remediated to ensure that asbestos associated with its mining activities is not released to surrounding areas, including the CCMA. However, the Record of Decision (ROD) for the Atlas Asbestos Mine Superfund Site requires that U.S. EPA also assess the risk of NOA to recreational users of the CCMA. In the 1991 Record of Decision selecting a cleanup remedy for the Atlas

Asbestos Mine Superfund site, EPA stated that it would evaluate whether the BLM's plans for managing the CCMA were adequate to protect human health and the environment from asbestos exposure.

The EPA Superfund program defines the acceptable risk range for exposure to a carcinogen, like asbestos, as 1 in 10,000 ($10^{-4}$) to 1 in 1,000,000 ($10^{-6}$) excess lifetime cancer risk[2]. Exposures which are calculated to cause more than 1 in 10,000 excess cancers are considered to be of concern and may require action to reduce the exposure and resulting risk. Depending on the study's findings, the Site may be considered for deletion from the U.S. EPA National Priorities List (NPL). The NPL, or Superfund, is a list of the most hazardous waste sites in the nation. When a site is deleted from the NPL, it means that the Record of Decision has been fulfilled and the cleanup has been implemented and is functioning as designed.

The goal of the EPA's risk assessment for CCMA was to use current asbestos sampling and analytical techniques to update a 1992 BLM Human Health Risk Assessment and provide more robust information to BLM on the asbestos exposures from typical CCMA recreational activities and the potential cancer risks associated with those exposures. In addition, as families are frequent visitors to CCMA, the assessment estimated exposures and potential risks to children as well as adults. Thus, in 2004, as part of the process of evaluating the Atlas Mine cleanup for possible delisting of the site from the federal Superfund list, EPA Region 9 initiated an asbestos exposure and human health risk assessment for the CCMA to measure the amount of NOA fibers in the personal air space by conducting typical recreational activities in the CCMA using up-to-date test equipment and methodology. With the assistance of EPA as a cooperating agency, BLM has incorporated the results of the CCMA Asbestos Exposure and Human Health Risk Assessment (2008) into this RMP/EIS for the purpose of developing management strategies for the CCMA that will minimize human health risk to users and maintenance workers.

### 1.6.2 State Land Use Plans

Similar to many public lands, a complex land ownership pattern within the Planning Area continues to influence BLM coordination with agencies administering California State Lands, which are interspersed throughout the CCMA. While several agreements exist among State agencies and BLM, the CCMA RMP offers a unique opportunity to promote interagency cooperation to enhance natural resource management. Essential to the CCMA RMP is a strong partnership with California State Lands Commission and Department of Toxic Substances Control due to overlapping jurisdictions and environmental laws and regulations.

### 1.6.3 County Plans

The Planning Area spans two counties, each with their own General Plan. San Benito County is in the process of updating their General Plan to address transportation, economic development, population growth, and recreation demand and opportunities in the County. In addition to addressing these issues, County General Plans define open space and conservation policy in the Hollister Planning Area and opportunities to coordinate with Federal agencies such as the BLM.

Table 1.6-2 lists the county General Plans for land within the Planning Area.

[2] 40 CFR Part 300, National Oil and Hazardous Substances Pollution Contingency Plan, section 430(e)(2)(i)(A)(2), "For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between $10^{-4}$ and $10^{-6}$ using information on the relationship between dose and response..."

**Table 1.6-2 County Plans**

| Jurisdiction | Plan Date |
|---|---|
| Fresno County | February 1995 |
| San Benito County* | February 1995 |

**Update in progress*

## 1.7 Overall Vision

The overall vision for management of BLM-administered lands in CCMA, derived from public scoping, inter-agency dialogue, and BLM's interdisciplinary team, is "to improve natural, cultural, and open space values across the landscape for the protection of human health and the environment; and pursue recreation opportunities through partnerships and collaboration for the enjoyment and use of a growing and diverse populations of current and future generations."

The BLM is responsible for the sustainable management of public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of "multiple use", which direct BLM to provide for a combination of uses that takes into accounts the long-term needs of future generations for renewable and nonrenewable resources. These resources include: public health and safety, recreation, range, timber, minerals, watershed, fish and wildlife, wilderness, and natural, scenic, scientific, and cultural values.

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# 2.0 MANAGEMENT ALTERNATIVES

This chapter details seven land use management alternatives considered for the Clear Creek Management Area (CCMA) Resource Management Plan (RMP). Program area emphasis and allowable public use within each of the alternatives and the management actions proposed for each program under each alternative are described in this chapter. The land use management alternatives described in this chapter address identified issues, management concerns, and current and projected future uses of the BLM-administered public lands n the CCMA.

Due to concerns associated with protection of human health and the environment, this RMP/EIS has been organized so that 1) recreation, 2) public health and safety, and 3) transportation are addressed in the first three sections of each chapter to allow the reader to assess key information related to the human health risks from exposure to airborne asbestos fibers in CCMA.

## 2.1 Overview of the Range of Alternatives

The alternatives presented here incorporate guidance provided by numerous laws, mandates, policies, and plans. These include the Federal Land Policy and Management Act (FLPMA), and BLM planning guidance. As a result, many of BLM's goals, objectives, and management actions are applicable to many alternatives or common to all alternatives. These management actions are combined, where possible, under the range of alternatives based on the location and intensity of *Motorized* and *Non-motorized* activities within CCMA. These include management actions for recreation, public health and safety, biological resources, air, water, soils, fire management, livestock grazing, energy and minerals, cultural and heritage resources, paleontological resources, visual resources management, social and economic conditions, and special designations.

Based on the purpose and need identified in Chapter 1, the range of alternatives for the CCMA RMP/EIS includes multiple public use scenarios in the Serpentine ACEC: five of which entail *Motorized* access (Alternatives A, B, C, D, and E), one *Non-motorized* access alternative (Alt. F), and one alternative that considers closure of the Serpentine ACEC to all forms of public entry (Alt. G). The anticipated effects and the need to implement proposed management actions or mitigation measures would vary depending on the public use scenarios associated with each alternative.

In general, Section(s) 2.4.1 through 2.4.18 describe a 'range of alternatives' comprised of different combinations of BLM management actions, resource allocations, and allowable uses that BLM has determined are 'reasonable' to consider based the purpose and need for the CCMA RMP/EIS and the issues identified during the public scoping period. Additional management actions or mitigation measures that would be necessary to manage multiple-uses or protect resources (including public health and safety) under the range of alternatives are identified in Sections 2.4.1 – 2.4.18.

At the end of this Chapter, Section 2.5 identifies a combination of management actions, resource allocations, and allowable uses chosen from among the range of alternatives that represents BLM's 'Preferred Alternative' for lands administered by the HFO in the CCMA. This method of selecting program area emphasis and combinations of management actions for land use planning is known as the "menu approach" (ref. Section 1.2.2). Alternatives considered but not analyzed in detail are discussed in this chapter as well. The analysis of the environmental consequences, effectiveness of mitigation measures, and the feasibility of implementing the range of alternatives is presented in Chapter 4.

The following summarizes the seven alternatives considered in detail in this Draft RMP/EIS:

**Alternative A** *represents the 'No Action' alternative required by NEPA, and would reaffirm current management under the original Hollister RMP (BLM 1984) and its' associated Clear Creek Amendments (1986, 1999, 2006).* Alternative A does not take into account the temporary closure of the Serpentine ACEC. Management of recreation opportunities, special status species habitat, and other resources would be maintained at existing levels prior to the May 1, 2008 closure order. This alternative would not modify allowable uses to address emerging issues on public lands; however, this alternative would incorporate new human health risk information into BLM's public outreach and education asbestos hazard information program and new guidance for management of natural and heritage resource, rangelands, energy and minerals, and lands and realty established after the 1984 Hollister RMP, as amended.

**Alternative B** *emphasizes maintaining current multiple use opportunities in CCMA, and would authorize existing uses based on limited annual visitor use days, seasonal use restrictions, and other mitigation measures to protect public health and safety.* Resources management would focus on conserving natural and heritage resources that are functioning and restoring natural systems that are degraded. Management would focus on protecting human health and safety by restricting season of use and visitor use days/year, applying dust mitigation on major routes, and by eliminating camping and staging in the Serpentine ACEC.

**Alternative C** *emphasizes limited OHV recreation opportunities in the Serpentine ACEC based on vehicle types, minimum age requirements, and other mitigation measures to protect public health and safety.* Resources management would focus on conserving natural and heritage resources that are functioning and restoring natural systems that are degraded. Management would focus on protecting human health and safety by prohibiting access into the ACEC for visitors under age 18, restricting OHV recreation in the ACEC to motorcycle use only, increasing restrictions on season of use, applying dust mitigation on major routes, and by eliminating camping and staging in the Serpentine ACEC.

**Alternative D** *emphasizes vehicle access for non-motorized recreation opportunities inside the Serpentine ACEC, and enhancing new OHV recreation opportunities outside of the ACEC.* Resource uses consistent with BLM guidance and within human health risk constraints would be authorized in the ACEC. Emphasis would be on developing OHV recreation opportunities on public lands near Tucker Mtn., Condon Peak, or San Carlos Bolsa (Cantua Zone), where appropriate. Management actions would focus on protecting human health and safety by restricting motorized access in the ACEC to major routes, applying dust mitigation on major routes, installing a public wash rack, and by and eliminating camping and staging in the ACEC.

**Alternative E** *allows for limited vehicle touring through the Serpentine ACEC (ACEC), emphasizes pedestrian use in the ACEC and non-motorized recreation opportunities outside the ACEC.* Vehicle touring in the ACEC would be limited to a Scenic Route (Spanish Lake Road) from Idria to Wright Mtn. No OHV use would be allowed in the ACEC. Pedestrian trail day use opportunities would be available at destinations with unique scenic, natural or geologic features in the ACEC. Access into the Serpentine ACEC would be authorized by permit only. Vehicle touring would be limited to less than 5 days/year and pedestrian activity limited to less than 12 days/year. Public health and safety risks would be mitigated by restricting access and use during extreme weather conditions.

**Alternative F** *restricts public access in the Serpentine ACEC to non-motorized recreation only.* Public access in the Serpentine ACEC would be limited to foot-traffic only, and non-motorized recreation opportunities would be emphasized at outstanding locations throughout CCMA. Public health and safety risks would be mitigated by restricting access and use during extreme weather conditions. Allowable use restrictions would minimize and reduce risk to public health and safety; and BLM land use authorizations would require terms and conditions to minimize risk to human health and the environment.

**Alternative G** *emphasizes public health and safety by prohibiting all public access and entry into the Serpentine ACEC.* Alternative G would make the existing temporary closure of the 30,000-acre ACEC that was issued by BLM under 43 CFR 8364.1 on May 1, 2008 permanent. Consequently, the impact analysis for Alt. G provides a baseline for comparison of the impacts associated with the temporary closure of the Serpentine ACEC to other management actions within the range of alternatives for the CCMA RMP/EIS. Allowable use restrictions under Alternative G would minimize CCMA visitor exposure to airborne asbestos emissions and represent the most effective way to reduce risk to public health and safety. BLM would also prohibit other resources uses, such as livestock grazing and energy and minerals development under this alternative to ensure overall protection of human health and the environment from hazardous airborne asbestos emissions.

All the alternatives would place importance on partnerships and agreements with landowners, permit holders, and other local and state agencies to manage BLM public lands for multiple uses on a sustainable basis while providing adequate protection of public health and the environment.

## 2.2 Alternatives Considered but Not Analyzed in Detail

### 2.2.1 CCMA 'Open' Area Designation

Designation of CCMA as an 'open' area for vehicle use is not considered in the range of alternatives, because this type of designation would not meet the purpose and need for this RMP/EIS to minimize human health risks from exposure to asbestos and reducing airborne asbestos emissions from BLM management activities. The Federal government has concluded that all forms of asbestos are hazardous to humans, and that all can cause cancer; although the chrysotile form may be less potent than the amphibole family in causing mesothelioma (U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Toxicological Profile for Asbestos).

The purpose and need for the CCMA RMP/EIS is based on the EPA Asbestos Exposure and Human Health Risk Assessment, which concluded that visiting CCMA more than once per year can put adults and children above EPA's acceptable risk range for exposure to carcinogens and an increased long-term cancer risk from engaging in many of the typical recreational activities at the CCMA.

BLM acknowledges that controversy exists regarding the health risks of naturally occurring asbestos; however, EPA and other Federal, State, and local agencies whose missions relate directly to public health support the BLM's decision to limit the range of alternatives to vehicle use area designation that meet the purpose and need for the CCMA RMP described in Section 1.1.

Furthermore, management of the CCMA as an 'open' area for OHV recreation is not analyzed in this document because a large portion of the CCMA has been managed for decades as the Serpentine Area of Critical Environmental Concern (ACEC) due to the health risk from exposure to asbestos and to emphasize protection other unique values associated with the serpentine soils in the area. For example, a portion of the ACEC was also designated a Research Natural Area (RNA) because of the unique forest assemblage and rare plant habitat contained therein. On February 12, 1985 the San Benito evening primrose (Camissonia benitensis) was listed as federally threatened under the Endangered Species Act. Following the listing of the primrose, a CCMA Amendment (1995) was prepared that designated CCMA a 'Limited' use area for OHV recreation to prevent jeopardizing the continued existence of the species.

Designation of CCMA as an "open" area for vehicle use would have adverse effects on the values for which the ACEC/RNA was established and the federally threatened San Benito evening-primrose. As a result, this RMP/EIS only considers the 'Limited' and 'Closed' area designations for CCMA public lands.

### 2.2.2 Personal Protection Equipment (PPE)

During public meetings for the CCMA RMP/EIS, several scoping comments suggested that BLM consider the use of personal protection equipment (PPE) to reduce and minimize risks to public health and safety from exposure to asbestos. Comments received by the Hollister Field Office recommend the use of PPEs, such as dust masks or respirators, to protect CCMA visitors from exposure to airborne asbestos fibers. While using personal protective equipment may reduce your exposure to asbestos fibers, respirators must be equipped with HEPA filtered cartridges (color coded purple) or an N-100, P-100 or R-100 NIOSH rating. These cartridges are specific for filtering out asbestos fibers. The most common respirator is a half face, dual cartridge respirator. Half face respirators cover the nose and mouth and consist of a silicone or rubber face piece, elastic head harness and filter cartridges. However, respirators provide little protection if are not fitted properly or facial hair does not allow the respirator to fit properly. Typically, vendors provide instructions on performing a fit check of the respirator seal to ensure a proper fit, and they recommend a fit check is done each time the respirator is worn. Furthermore, respirators cause the lungs to work harder in order to breathe air, and manufacturers recommend checking with a medical doctor to ensure that people are physically able to wear a respirator.

Other respirators, including paper dust masks available at hardware stores, do not filter out asbestos fibers. Although some "dust masks" can actually be fit tested and can provide a very good fit factor, the Occupational Health and Safety Administration (OSHA) specifically prohibits their use for asbestos and manufacturers also specifically indicate that these masks are not acceptable for asbestos. Moreover, the voluntary use of dust masks in atmospheres documented or known to contain levels of asbestos above the Permissible Exposure Limit (PEL) is unacceptable, and one of the principle foundations of asbestos exposure control is to prevent its spread. Simply using a dust mask does not eliminate the potential for "take home" and subsequent exposure to asbestos.

Additional personal protection equipment such as eyewear, rubber boots, disposable gloves and coveralls are recommended during asbestos abatement activities to prevent contact with asbestos-containing debris. Once exposed to asbestos containing materials, these PPEs are supposed to be removed properly and disposed of in a designated asbestos waste bag to ensure all asbestos debris remains in the area of contamination and avoid the spread of hazardous asbestos fibers. However, most PPEs quickly get hot and uncomfortable because they do not breathe and as a result, are not appropriate for use during recreational activities in CCMA. Therefore, PPEs are not being considered within the range of alternatives as an option for protection of human health and safety from exposure to asbestos in CCMA.

### 2.2.3 Serpentine ACEC Land Tenure Adjustments

During the scoping period for the CCMA RMP/EIS, public comments suggested that BLM consider disposal of public lands though sales or leasing to entities that would manage the properties in the Serpentine ACEC to provide public access for multiple use activities. FLPMA, Section 102(a)(1), 43 U.S.C. § 1701(a)(1) authorizes BLM to consider disposal of BLM-managed lands through the land use planning process if the authorized officer determines that the proposed disposal will serve the national interest. FLPMA also provides criteria for determining whether lands are suitable for disposal, which require BLM to evaluate whether the lands may still serve a federal purpose and whether there is a good reason for disposal.

In general, the public interest determination considers whether resource values and public objectives served by the non-federal lands must equal or exceed those being conveyed, and the intended use of the conveyed federal land must not substantially conflict with management of adjacent federal lands. Based on the criteria set forth by FLPMA, BLM has determined that land tenure adjustments (including sales and exchanges of public or private lands in the Serpentine ACEC) are not in the public interest.

Acquisition of private in-holdings from willing sellers in the Serpentine ACEC to acquire special status species habitat would be in the public interest.

BLM's rationale for this determination is that the intended use of the conveyed Federal lands would significantly conflict with management objectives for overall protection of human health and the environment, and would not meet the purpose and need for the CCMA RMP/EIS identified in Chapter 1.

Furthermore, conveyances of contaminated Federal lands as subject to the provisions of the Comprehensive Environmental Response and Compensation Liability Act (CERCLA), 42 U.S.C 9620. Because BLM-managed lands in the Serpentine ACEC are known to be contaminated with asbestos, and remediation of naturally occurring asbestos is not practical or feasible over large tracts of land, any sale, lease, or exchange of these lands to be managed for public access and multiple use activities is not consistent with the standards set forth under CERCLA and the National Contingency Plan for protection of human health and the environment.

### 2.2.4 Wild & Scenic River Designation

The Wild and Scenic Rivers Act of 1968 (Public Law 90-542) was passed by Congress to preserve riverine systems that contain outstanding features. The law was enacted during an era when many rivers were being dammed or diverted, and is intended to balance this development by ensuring that certain rivers and streams remain in their free-flowing condition. Only Congress can designate Wild and Scenic Rivers to be included in the National Wild and Scenic River System (NWSRS), but BLM is mandated to evaluate stream segments on public lands as potential additions to the National Wild and Scenic Rivers System (NWSRS) during the Resource Management Plan (RMP) process under Section 5(d) of the Act. Therefore, the Hollister Field Office prepared a Wild and Scenic River Inventory that is contained in Appendix VI.

The criteria and information upon which WSR river eligibility and suitability determinations are based are also included in Appendix VI. Although many of the river and stream segments on BLM public lands were determined to be eligible for inclusion in the NWSRS, when considered in the context of other designated Wild and Scenic Rivers in the region, BLM determined that these river segments were not suitable for inclusion in the NWSRS. As a result, Wild and Scenic River designation is not recommended for any of the rivers or streams on public lands in CCMA under the range of alternatives analyzed in this RMP/EIS.

## 2.3 Management Common to All Alternatives

Many of the management actions considered in this DRMP/DEIS are common to all alternatives. Resource management actions are considered common to all alternatives if they meet resource management goals and objectives and they do not conflict with other allowable uses, and resource allocations or protection measures, including mitigation measures for public health and safety. A summary of these actions is provided below. Additional management actions or mitigation measures that would be necessary to manage multiple-uses or protect resources under the range of alternatives are described in Sections 2.4.1 through 2.4.18.

**Recreation**

- Manage CCMA as a Special Recreation Management Area (SRMA) to provide specific, structured recreation opportunities (i.e., activity, experience, and benefit opportunities).

**Public Health and Safety**

- Use a combination of best management practices (BMPs) and administrative actions (i.e. supplementary rules) to minimize human health risks from exposure to airborne asbestos fibers and reduce emissions of hazardous air pollutants from BLM land use authorizations and management activities.
- Augment the existing public asbestos hazard information program through improved signing, hand-outs, advisories, monitoring, public contact, and education programs. Any new information on risks to human health will be incorporated into the educational materials.

**Water, Resources**

- Close roads and trails to public use during periods of extreme wet weather in areas where sustained public use may compromise the integrity of the road or trail surface.
- Manage CWA 303(d)-listed impaired water bodies to meet properly functioning condition (PFC) objectives relative to beneficial uses and total maximum daily loads (TMDLs).
- Maintain stable watershed conditions and implement passive and active restoration projects to protect beneficial uses of water and meet TMDLs.

**Natural and Heritage Resources**

- Manage the Serpentine ACEC and San Benito Mountain RNA to protect significant resource values.
- Protect and monitor all known populations of Camissonia benitensis (CABE).
- Monitor cultural resources - especially those "at-risk" - including archeological sites, historic structures or landscapes, and Native American traditional use areas or sacred sites. Offset on-going or identified potential impacts to cultural resources through protective measures, data retrieval, or a combination of these methods.

**Land Use Authorizations**

- Maintain rights-of-ways for existing communication sites. Restrict new land use authorizations to existing communication sites on BLM-administered lands in the ACEC.
- Authorize rights-of-way to provide reasonable access for private landowners and existing rights-holders.

## 2.4 Description of the Alternatives

The description of alternatives is organized by resource program (e.g., air quality, soil resources, water resources, etc.). The goals and objectives of each resource program are specified, and specific management actions for each alternative are then presented. Management actions specified for each resource program include area-wide actions and actions specific to five management zones identified on Maps A-G, if applicable.

An alphanumeric system is used to identify management actions and to assist the reader in comparing alternatives and identifying the management actions that are common among the range of alternatives. Where possible, management actions that are common among the range of alternatives are combined under a resource program, provided that they meet resource management goals and objectives, and they do not conflict with other resource management goals and objectives. The effects of the proposed management actions are analyzed in Chapter 4, "Environmental Consequences."

Below, Table 2.4-1(a) provides a summary of the management goals, objectives, and allowable uses outlined under each alternative; and Table 2.4-1(b) provides a summary comparison of the range of alternatives that are analyzed in the CCMA RMP/EIS.

Detailed descriptions of the range of alternatives and the associated management goals, objectives, and allowable uses, management actions, and mitigation measures for BLM's resources programs are provided in Section 2.4.1 through 2.4.18, below.

As stated in Section 2.1, this RMP/EIS incorporates guidance provided by numerous laws, mandates, policies, and plans. As a result, many of BLM's goals, objectives, and management actions are applicable to many alternatives or common to all alternatives. These management actions are combined, where possible, under the range of alternatives based on the location and intensity of *Motorized* and *Non-motorized* activities within CCMA. These include management actions for recreation, public health and safety, biological resources, air, water, soils, fire management, livestock grazing, energy and minerals, cultural and heritage resources, paleontological resources, visual resources management, social and economic conditions, and special designations.

Section 2.1 also states, "BLM will identify one such combination of management actions, resource allocations, and allowable uses from among the range of alternatives as a 'Preferred Alternative' for lands administered by the HFO in the CCMA. This method of selecting program area emphasis and combinations of management actions for land use planning is known as the "menu approach" (ref. Section 1.2.2)."

**To further illustrate the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

Section 2.5 describes the rationale for the Preferred Alternative, and provides a list of all the management actions from within the range of alternatives that comprise the BLM's Preferred Alternative.

Table 2.4-1(a) Summary of Range of Alternatives

## *Alternative A (Current Management/No Action Alternative)*

**Management Goal:** Authorize continued OHV recreation and public access in the Serpentine ACEC.

**Management Objectives and Allowable Uses:**

Travel Management and Recreation Resources

- Maintain designated CCMA route and trail network (up to 270 miles) for OHV use.
- Maintain designated open play areas (a.k.a. barrens) for OHV use (478 acres).
- Maintain the Condon, Tucker, and Cantua zones for hunting and other non-motorized recreation opportunities.

Public Health and Safety

- Apply dust-suppressant on major routes in CCMA. The initial application will be evaluated for continued use on an annual or semi-annual basis.
- Enforce Dry Season Use Restrictions from June 1st through October 15th, annually.
- Enforce Wet Season Closures once 8 inches of annual precipitation has been reached, additional rainfall exceeding ½ inch within a 24 hour period or 1 inch within a 72 hour period would result in a three day closure.
- Install a public vehicle wash facility.

Lands Acquisition and Disposal

- Acquire lands from willing sellers in the Tucker Mtn. area. Acquire state lands and private in-holdings from willing sellers through acquisition or exchange.

Energy & Minerals

- Allow no mineral leasing or sales within Clear Creek Canyon. Withdraw the RNA and Clear Creek Canyon from locatable mineral entry.

Livestock Grazing

- Authorize livestock grazing on existing allotments in CCMA. (Same for Alts. B, C, D, & E).

Table 2.4-1(a) Summary of Range of Alternatives

## *Alternative B (Annual Use Restrictions Alternative)*

**Management Goal:** Authorize OHV recreation and public access in the Serpentine ACEC based on a limited OHV use season, limited visitor use days/year, and restrictions on organized events in CCMA.

**Management Objectives and Allowable Uses:**

Travel Management and Recreation Resources

- Maintain designated CCMA route and trail network (up to 270 miles) for OHV use.
- Maintain designated open play areas (a.k.a. barrens) for OHV use (478 acres).
- Prohibit special recreation permits for organized events in the Serpentine ACEC.
- Manage the Tucker, Condon, and Cantua zones for hunting and other non-motorized recreation opportunities.

Public Health and Safety

- Authorize access into the Serpentine ACEC by Special Recreation Permits (SRP) only, and limit visitor use less than 12 days/year for non-motorized activities, and less than 5 days/year for motorized use.
- Maintain and/or improve designated route network (and recreation facilities) to protect human health through surface hardening and other dust suppression techniques.
- Extend Dry Season Use Restriction period from April 15th through December 1st, annually.
- Enforce Wet Season Closures once 8 inches of annual precipitation has been reached, additional rainfall exceeding ½ inch within a 24 hour period or 1 inch within a 72 hour period would result in a three day closure.
- Install a public vehicle wash facility.

Lands Acquisition and Disposal

- Public lands in the Tucker, Condon, and San Benito River zones would be available for disposal.
- Acquire lands from willing sellers south of CCMA to Coalinga-Los Gatos Road.

Energy & Minerals

- Authorize locatable mineral entry and mineral leasing or sales on public lands in the Serpentine ACEC.

Table 2.4-1(a) Summary of Range of Alternatives

## *Alternative C (Single Track Trail Alternative)*

**Management Goal:** Authorize limited OHV recreation opportunities in the Serpentine ACEC based on vehicle types, minimum age requirements, and other engineering projects to protect public health and safety.

**Management Objectives and Allowable Uses:**

Travel Management and Recreation Resources

- Designate the entire 75,000 acres CCMA as a "Limited" vehicle use area. Vehicle use in the ACEC would be limited to full-size vehicles and motorcycle use only on designated routes identified on Map C in Appendix I.
- Develop and maintain approximately 150 miles of routes and single track trails in the Serpentine ACEC. Convert route management objectives to single track trail, as needed.
- Manage the Tucker, Condon, and Cantua zones for non-motorized recreation opportunities. Vehicle use would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map C in Appendix I.

Public Health and Safety

- **Limit OHV recreation in the Serpentine ACEC to visitors over age 18.**
- Maintain and/or improve designated route network (and recreation facilities) to protect human health through surface hardening and other dust suppression techniques.
- Establish remote automated weather station (RAWS) monitoring of soil moisture to determine need for Serpentine ACEC closure based on extreme weather conditions.
- Enforce seasonal use restrictions from December 1st to April 15th annually.
- Enforce Wet Season Closures once 8 inches of annual precipitation has been reached, additional rainfall exceeding ½ inch within a 24 hour period or 1 inch within a 72 hour period would result in a three day closure.
- Install a public vehicle wash facility.

Lands Acquisition and Disposal

- Public lands in the Tucker, Condon, and San Benito River zones would be available for disposal.
- Acquire lands from willing sellers south of CCMA to Coalinga-Los Gatos Road.

Energy & Minerals

- Authorize locatable mineral entry and mineral leasing or sales on public lands in the Serpentine ACEC.

Table 2.4-1(a) Summary of Range of Alternatives

## *Alternative D (New OHV Area(s) Alternative)*

**Management Goal:** Authorize limited access through the ACEC and limited OHV recreation outside the ACEC.

**Management Objectives and Allowable Uses:**

Travel Management and Recreation Resources

- Designate the entire 75,000 acres CCMA as a "Limited" vehicle use area. Vehicle use in the ACEC would be limited to full-size vehicles on designated routes identified on Map D in Appendix I.
- Vehicle use in the other CCMA management zones would be limited to designated (and proposed) routes identified on Map D in Appendix I.
- Acquire public access and/or develop routes to public lands in the Cantua Zone and the Tucker Zone.
- Develop and maintain approximately 60 miles of routes and trails in the Tucker, Condon, and Cantua Zones for off-highway vehicle (OHV) recreation.
- Establish new campground, staging area, and OHV recreation facilities in the Cantua Zone.
- Establish staging area for motorized access to Condon Peak from Coalinga-Los Gatos Road.

Public Health and Safety

- **Limit access into Serpentine ACEC to visitors over age 18.**
- Maintain and/or improve designated route network (and recreation facilities) to protect human health through surface hardening and other dust suppression techniques.
- Establish remote automated weather station (RAWS) monitoring of soil moisture to determine need for ACEC closure based on extreme weather conditions.
- Enforce Wet Season Closures once 8 inches of annual precipitation has been reached, additional rainfall exceeding ½ inch within a 24 hour period or 1 inch within a 72 hour period would result in a three day closure.
- Install a public vehicle wash facility.

Lands Acquisition and Disposal

- Acquire lands from willing sellers in the Serpentine ACEC and south of CCMA to Coalinga-Los Gatos Road.

Energy & Minerals

- Allow mineral leasing or sales on public lands in the Serpentine ACEC.
- Withdraw public lands in the Serpentine ACEC from locatable mineral entry.

Table 2.4-1(a) Summary of Range of Alternatives

## *Alternative E (Vehicle Touring Alternative)*

**Management Goal:** Authorize limited access through the Serpentine ACEC and non-motorized recreation opportunities throughout CCMA. OHV recreation would not be authorized in the ACEC.

**Management Objectives and Allowable Uses:**

Travel Management and Recreation Resources

- Designate 460 acres in the Serpentine ACEC as a "Limited" vehicle use area for vehicle touring on the Scenic Route identified on Map E in Appendix I. Vehicle use on the Scenic Route is limited to full-sized vehicles for day use only.
- Designate the rest of the 30,000-acre Serpentine ACEC as "Closed" to vehicle use.
- Designate the Tucker, Condon, and Cantua Zones as "Limited" vehicle use areas. Vehicle use in the Tucker, Condon, and Cantua Zones would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map E in Appendix I.
- Develop and maintain transportation facilities (i.e. pull-outs and parking areas) on portions of T153 and Spanish Lake Road (R11) with high scenic values, and other destinations with unique biological, natural and geologic features within CCMA.
- Develop and maintain approximately 30 miles of routes and trails in the Condon, Tucker, and Cantua Zones for non-motorized recreation following inventory, soil loss assessment, and resources screening using route designation criteria described in Appendix II.
- Acquire public access and/or develop routes to public lands in the Tucker and Cantua Zones for non-motorized recreation opportunities.

Public Health and Safety

- Authorize access into the Serpentine ACEC by permit only and limit visitor use in the ACEC to less than 12 days/year for non-motorized activities and less than 5 days/year for motorized use.
- Maintain and/or improve designated route network (and recreation facilities) to protect human health through surface hardening and other dust suppression techniques.
- Establish remote automated weather station (RAWS) monitoring of soil moisture to determine need for ACEC closure based on extreme weather conditions.

Lands Acquisition and Disposal

- Acquire lands from willing sellers in the Serpentine ACEC, Tucker Mtn. area and south of CCMA to Coalinga-Los Gatos Road.
- Public lands in the Tucker, Condon, and San Benito River zones would be available for disposal.

Energy & Minerals

- Allow no mineral leasing or sales on public lands in the Serpentine ACEC. Withdraw public lands in the Serpentine ACEC from locatable mineral entry.

Table 2.4-1(a) Summary of Range of Alternatives

## *Alternative F (Non-motorized Recreation Alternative)*

**Management Goal:** Restrict public access and non-motorized recreation inside the Serpentine ACEC.

**Management Objectives and Allowable Uses:**

Travel Management and Recreation Resources

- Designate the entire 30,000-acre Serpentine ACEC as "Closed" to vehicle use.
- Restrict public access in the Serpentine ACEC to foot traffic and other non-motorized uses consistent with management goals and objectives.
- Designate the Condon Zone as a "Limited" vehicle use area. Vehicle use in the Condon Zone would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map F in Appendix I.
- Designate the Tucker, Cantua, and San Benito River Zones as "Closed" vehicle use areas.
- Develop visitor use facilities for non-motorized recreation in the Cantua and Tucker zones.

Public Health and Safety

- Authorize access into the Serpentine ACEC by permit only and limit visitor use in the ACEC to less than 12 days/year for non-motorized activities and less than 5 days/year for motorized use.
- Maintain and/or improve designated route network (and recreation facilities) to protect human health through surface hardening and other dust suppression techniques.
- Establish remote automated weather station (RAWS) monitoring of soil moisture to determine need for ACEC closure based on extreme weather conditions.

Lands Acquisition and Disposal

- Acquire lands from willing sellers in the Serpentine ACEC, Tucker Zone, and south of CCMA to Coalinga-Los Gatos Road.

Energy & Minerals

- Prohibit mineral leasing or sales on public lands in the Serpentine ACEC. Withdraw public lands in the Serpentine ACEC from mineral exploration and development.

Livestock Grazing

- Modify TGA allotment boundaries to exclude livestock grazing in the Serpentine ACEC.

Table 2.4-1(a) Summary of Range of Alternatives

## *Alternative G (ACEC Closure Alternative)*

**Management Goal:** Restrict public access and entry inside the Serpentine ACEC.

**Management Objectives and Allowable Uses:**

Travel Management and Recreation Resources

- Make the current temporary closure order issued by BLM on May 1, 2008 permanent by designating the entire Serpentine ACEC as "Closed" to vehicle use, and prohibit all forms of public entry into the 30,000–acre area of serpentine soils high in asbestos fibers.
- Authorize access into the Serpentine ACEC for existing rights-holders, private property owners, and scientific studies, research, and education from accredited institutions and individuals, on a case-by-case basis. Access authorizations would stipulate health and safety requirements, as appropriate.
- Designate the Condon Zone as a "Limited" vehicle use area. Vehicle use in the Condon Zone would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map G in Appendix I.
- Designate the Tucker, Cantua, and San Benito River Zones as "Closed" vehicle use areas.

Public Health and Safety

- Maintain and/or improve visitor use facilities to protect human health through surface hardening and other dust suppression techniques.
- Stipulate health and safety requirements for rights-of-ways on BLM-administered lands in the Serpentine ACEC on a case-by-case basis.

Lands Acquisition and Disposal

- Acquire lands from willing sellers in the Serpentine ACEC, Tucker Mtn. area and south of CCMA to Coalinga-Los Gatos Road.

Energy & Minerals

- Prohibit mineral leasing or sales on all public lands in the CCMA. Withdraw all BLM-administered lands in CCMA from locatable mineral entry.

Livestock Grazing

- Modify TGA allotment boundaries to exclude livestock grazing in the entire CCMA.

| Table 2.4-1(b) Summary Comparison of CCMARMP/EIS Range of Alternatives | | | | | | | |
|---|---|---|---|---|---|---|---|
| | CCMA RMP/EIS Range of Alternatives | | | | | | |
| **PROGRAM AREA** | **A** | **B** | **C** | **D** | E | F | G |
| **RECREATION** | Motorized (AREAWIDE) | | | | | Non-motorized (AREAWIDE) | |
| **ALLOWABLE USES** | **OHV Recreation** | | | | **Vehicle Touring** | **Foot Traffic Only** | **ACEC Closure** |
| | **Motorized, Mechanized, Non-Motorized, Shooting** | | | | **Non-Motorized** | **Mechanized, Non-Motorized, Shooting** | |
| Management Zones | **Serpentine ACEC** | | | **Cantua<br>Condon<br>Tucker** | **Serpentine ACEC** | | **Cantua<br>Condon<br>Tucker** |
| Visitor Services | Maintain existing facilities in CCMA. | Restrict development of new facilities inside the ACEC and locate new facilities outside the ACEC. | | | | | Develop & maintain facilities outside the ACEC. |
| Interpretation/Education | Improve visitor awareness of human health risks from exposure to airborne asbestos fibers in CCMA through outreach and education on kiosks, maps, and brochures. | | | | | | |
| **TRANSPORTATION & ACCESS** | **Improve designated route network (and recreation facilities) through surface hardening and other dust suppression techniques, including but not limited to paving or capping roads, or application of dust stabilizers in the soil to protect human health and the environment.** | | | | | | |
| Vehicle Use Area Designations | Serpentine ACEC = "Limited"<br>Condon, Cantua, Tucker, and San Benito River = "Limited" | | | | Scenic Route Corridor (460 acres) = "Limited"<br>Serpentine ACEC = "Closed"<br>Condon, Cantua, & Tucker = "Limited" | Serpentine ACEC = "Closed"<br>Condon Zone = "Limited"<br>Cantua, Tucker, and<br>San Benito River = "Closed" | |
| Miles of Routes (Open/Closed) | 242/0 | 242/0 | 185/57 | 103/199 | 56/216 | 15/227 | |
| Vehicle Type(s): On Major Routes | ALL OHVs | | | | Full-Size Only | Full-Size & ATV/UTVs Only | |
| Vehicle Type(s): On Network of Trails | ALL OHVs | | Motorcycles Only | ALL OHVs | Full-Size & ATV/UTVs Only | Full-Size & ATV/UTVs Only | |
| **PUBLIC HEALTH & SAFETY<br>(Management actions only apply to ACEC)** | **Use a combination of best available technologies (BATs) and administrative actions (i.e. supplemental rules) to minimize human health risks from exposure to airborne asbestos fibers and reduce emissions of hazardous air pollutants from BLM land use authorizations and management activities.** | | | | | | |
| Season of Use | Oct. 15-June 1 | Dec. 1 - April 15 | | Jan. 1 - Dec. 31 | | Oct. 15 - June 1 | ACEC closed year-round. |
| Permit Access to Restrict Visitor Use Days/Year | | √ | | | √ | √ | |
| Age Limit ≥ 18 yrs. old | | | √ | | | | |
| Install Public Wash Rack | √ | √ | √ | √ | | | |
| **LANDS & REALTY** | **Maintain existing rights-of-ways for private landowners, communication sites, and mining claims; and restrict new land use authorizations to existing facilities on BLM-administered lands in the ACEC.** | | | | | | |
| Land Tenure Adjustments | Acquire lands in the ACEC and Tucker Zone | 3.300 acres available for disposal in Tucker, Condon, and SBR Zones | | Acquire lands from willing sellers in CCMA. | | Make lands identified in Alternatives B and C available for disposal. Ref. Maps F & G in Appendix I | |
| Land Use Authorizations | Limited to Private Land Owners, Existing Rights-of-Ways & Utility Corridors in the Serpentine ACEC. Considered on a case by case basis in other zones. | | | | | | Issue Health & Safety Stips. for ROWs |

## Table 2.4-1(b) Summary Comparison of CCMARMP/EIS Range of Alternatives

| PROGRAM AREA | CCMA RMP/EIS Range of Alternatives | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| **ENERGY & MINERALS** | **Serpentine ACEC (30,000 acres), includes San Benito Mt. WSA: (1,500 acres): Tucker, Condon, Cantua, and San Benito River Zones: (33,000 acres total): Split Estate (3,500 acres)** | | | | | | |
| **Available/Unavailable:** | 61,400/5,100 | | 65,000/1,500 | | | 36,500/30,000 | 0/66,500 |
| **LIVESTOCK GRAZING** | **Authorize on existing allotments in CCMA.** | | | | | **Exclude grazing inside ACEC.** | **Exclude grazing in CCMA.** |
| Total acres: | | | | | 22,140 | 20,157 | 0 |
| Total AUMs: | | | | | 1,354 | 1,271 | 0 |
| **SPECIAL DESIGNATIONS** | **Protect values for which special designations are established.** | | | | | | |
| Wilderness & Wilderness Study Areas (WSA) | Manage the 1,500 acre San Benito Mountain WSA pursuant to BLM's Interim Policy for Lands Under Wilderness Review | | | | | | |
| Areas of Critical Environmental Concern (ACECs) & Research Natural Areas (RNAs) | Clear Creek Serpentine ACEC = 30,000-acres<br>San Benito Mountain RNA = 4,147-acres | | | | | | |
| Wild & Scenic Rivers | Recommend none of the rivers and streams in CCMA for inclusion in the National Wild & Scenic River System. | | | | | | |
| **VISUAL RESOURCES MANAGEMENT** | **Protect the quality of scenic values on public lands, and apply standards for VRM according to the established VRM classes.** *Class IV unless noted. | | | | | | |
| Serpentine ACEC | * | * | * | * | Class II | * | * |
| San Benito Mountain WSA/RNA | Class I | Class I | Class I | Class I | Class I | Class I | Class I |
| Condon | Class III | Class III | Class III | Class IV | Class III | Class III | Class III |
| Cantua | * | * | * | * | * | * | * |
| Tucker | * | * | * | * | * | * | * |
| San Benito River | * | * | * | * | * | * | * |
| **BIOLOGICAL RESOURCES -- Vegetation, Wildlife Habitat, & Special Status Species** | **Restore, maintain, or improve ecological conditions, natural diversity, and associated watersheds of high value, high-risk, native plant communities and unique plant assemblages.** | | | | | | |
| | **Provide diverse, structured, dynamic, and connected habitat on a landscape level to support viable and sustainable populations of wildlife, fish, and other aquatic organisms.** | | | | | | |
| | **Maintain populations of special status species; and actively contribute to recovery so as to promote downlisting and delisting of special status species.** | | | | | | |
| *Camissonia benitensis* | Implement Compliance Monitoring Plan for CABE in the 2006 Record of Decision for the CCMA Route Designation. | | | Adopt the BLM's Compliance Monitoring Plan for existing *Camissonia benitensis* habitat and populations outlined in Appendix III of this CCMA RMP/EIS. | | | |
| Revegetation | Support partnership to continue barrens restoration and to establish small scale soil/plant study plots to investigate plant adaptability and nutritional requirements for rehabilitation purposes. | | | | | | |
| Non-natives | Coordinate with California DFG and the USFWS to control non-native species. Prioritize noxious weed eradication based on the BLM and California State lists. | | | | | | |
| **CULTURAL & HERITAGE RESOURCES** | **The goals for cultural and heritage resources are to preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations, and seek to reduce imminent threats and resolve potential conflicts on cultural resources, from natural or human-caused deterioration, or from other resource uses.** | | | | | | |
| Resources Protection | Protect "at-risk" archeological or other cultural resources; utilize a variety of heritage education programs that promote the public stewardship of cultural resources. | | | | | | |
| Management Emphasis | Increased Monitoring | | | Increased Protection | | Increased Interpretation | |

## 2.4.1 Recreation

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

### 2.4.1.1 Goals and Objectives

The goals for recreation management are to (1) provide a variety of experiences and settings for a diversity of users and to meet potential changes in demand while minimizing conflicts with adjacent property owners and among user groups; (2) provide a range of recreational use opportunities while protecting sensitive natural and cultural resources from human intrusion; (3) promote sharing of ideas, resources, and expertise to increase the public's appreciation and understanding of natural and cultural resources on BLM public lands; and (4) disseminate information that will foster responsible behavior in order to achieve the highest possible environmental quality on BLM public lands.

To achieve these goals, the following objectives are established:

- Maintain a range of facilities to support recreational uses.
- Design maps and brochures and educational opportunities to improve visitors' appreciation and understanding of natural and cultural resources on BLM public lands.
- Create experiences and settings appropriate for the desired outcome within developed and undeveloped recreation areas.
- Establish and manage intensive-use areas, where the presence of high quality natural resources and the current or potential demand warrants intensive management practices to protect areas for their scientific, educational, and/or recreational values while accommodating anticipated increases in recreational activities in specific areas.
- Manage recreational facilities to protect natural resources and to meet user needs.
- Manage commercial, competitive, educational, and organized group recreational activities.

### 2.4.1.2 Allowable Uses for No Action Alternative (Current Management Actions)

**REC-USE-A1.** Boundary posting and visitor use patrols will be initiated in recreation areas concurrent with access development or enhancement. BLM will cooperate with adjacent private landowners to the extent possible.

**REC-USE-A2.** Enhance access to public lands for hunting and OHV opportunities in the area north of Clear Creek. Consolidate public lands and manage in conjunction with the Clear Creek SRMA.

**REC-USE-A3.** Develop recreation activity plans for accessible lands.

**REC-USE-A4.** Prohibit camping within the San Benito Mountain Research Natural Area.

**REC-USE-A5.** Clear Creek Canyon is designated as a "no shooting" area.

**REC-USE-A6.** Enforce Dry Season Use Restrictions from June 1st through October 15th, annually.

**REC-USE-A7.** Manage CCMA public lands as a Special Recreation Management Area (SRMA).

**Table 2.4-1 Overview of Allowable Use under each Alternative**

| Mgt. Zones | Alt. A | Alt. B | Alt. C | Alt. D | Alt. E | Alt. F | Alt. G |
|---|---|---|---|---|---|---|---|
| **Serpentine ACEC** | Motorized, Mechanized, Non-motorized, Shooting | Motorized, Mechanized, Non-motorized, Shooting | Motorized Non-motorized, Shooting | Motorized Non-motorized, Shooting | Motorized Non-motorized | Non-motorized | No Public Entry |
| **Condon** | Motorized, Mechanized, Non-motorized, Shooting | Motorized, Mechanized, Non-motorized, Shooting | Motorized Mechanized, Non-motorized, Shooting | Motorized, Non-motorized | Motorized Non-motorized Shooting | Motorized, Non-motorized, Shooting | Motorized Non-motorized, Shooting |
| **Cantua** | Mechanized, Non-motorized, Shooting | Mechanized, Non-motorized, Shooting | Mechanized Non-motorized, Shooting | Motorized Mechanized, Non-motorized, | Motorized Non-motorized Shooting | Non-motorized, Shooting | Non-motorized, Shooting |
| **Tucker** | Mechanized, Non-motorized, Shooting | Mechanized, Non-motorized, Shooting | Mechanized, Non-motorized, Shooting | Motorized, Non-motorized, | Non-motorized Shooting | Non-motorized Shooting | Non-motorized Shooting |
| **San Benito River** | Motorized, Mechanized, Non-motorized, Shooting | Motorized, Mechanized, Non-motorized, Shooting | Motorized, Mechanized, Non-motorized, Shooting | Mechanized, Non-motorized, Shooting | Non-motorized | Non-motorized | Non-motorized |

### 2.4.1.3 Management Actions under Alternative B

**REC-USE-B1.** Prohibit camping and staging for recreation in the Serpentine ACEC, except at Jade Mill Campground. Allow camping and staging for recreation on public lands outside the ACEC.

**REC-USE-B2.** Limit visitor use in the Serpentine ACEC to one half-hour before sunrise to one half-hour after sunset (i.e. day use only), except at Jade Mill Campground.

**REC-USE-B3.** Enforce Dry Season Use Restrictions from April 15th through December 1st, annually.

**REC-USE-B4.** Improve access and enhance facilities (i.e. trails, designated camp sites, staging areas) to support non-motorized recreation opportunities at destinations with unique biological, natural and geologic features within CCMA.

**REC-USE-B5.** Authorize access by Special Recreation Permits (SRP) only, and limit visitor use in the Serpentine ACEC to less than 5 days/year for motorized activities and less than 12 days/year for non-motorized activities.

**REC-USE-B6.** Prohibit special recreation permits for organized events in the Serpentine ACEC.

#### 2.4.1.4 Management Actions under Alternative C

**REC-USE-C1.** Improve major routes and single track trails to support motorcycle recreation opportunities in the Serpentine ACEC.

**REC-USE-C2.** Prohibit OHV recreation in the Serpentine ACEC for visitors under age 18.

**REC-USE-C3.** Prohibit special recreation permits for organized events in the Serpentine ACEC.

#### 2.4.1.5 Management Actions under Alternative D

**REC-USE-D1.** Prohibit access in the Serpentine ACEC for visitors under age 18.

**REC-USE-D2.** Develop OHV recreation opportunities on public lands in the Condon, Tucker, and Cantua Zones.

**REC-USE-D3.** Prohibit special recreation permits for organized events in the Serpentine ACEC.

**REC-USE-D4.** Improve access and enhance facilities (i.e. trails, designated camp sites, staging areas) to support motorized recreation opportunities at outstanding locations in the Tucker, Condon, and Cantua Zones.

#### 2.4.1.6 Management Actions under Alternative E

**REC-USE-E1.** Provide access on the Scenic Route along T153 and Spanish Lake Road (R11) in the Serpentine ACEC for day use by full-size vehicles only.

**REC-USE-E2.** Authorize access by Special Recreation Permits (SRP) only, and limit visitor use in the Serpentine ACEC to less than 5 days/year for motorized activities and less than 12 days/year for non-motorized activities.

**REC-USE-E3.** Manage the Tucker, Condon, and Cantua Zones with an emphasis on enhancing hunting and other non-motorized recreation opportunities.

**REC-USE-E4.** Improve access and enhance facilities (i.e. trails, designated camp sites, staging areas) to support non-motorized recreation opportunities in the Cantua Zone.

#### 2.4.1.7 Management Actions under Alternative F

**REC-USE-F1.** Restrict public access in the Serpentine ACEC to foot traffic and other uses consistent with resource management goals and objectives.

**REC-USE-F4.** Maintain the Tucker, Condon, and Cantua management zones with an emphasis on enhancing hunting and other non-motorized recreational opportunities.

**REC-USE-F5.** Improve access and enhance facilities (i.e. trails, designated camp sites, staging areas) to support non-motorized recreation opportunities at outstanding locations in CCMA.

#### 2.4.1.8 Management Actions under Alternative G

**REC-USE-G1.** Designate the Serpentine ACEC "Closed" to all forms of public entry on 30,000-acres of serpentine soils high in asbestos fibers.

**REC-USE-G2.** Authorize motorized access into the Serpentine ACEC for scientific research and education by organizations that may benefit knowledge and understanding of resources in CCMA. Access authorizations would stipulate health and safety requirements, as appropriate.

**REC-USE-G3.** Provide primitive non-motorized use in the Tucker and Cantua Zones.

**REC-USE-G4.** Maintain the Tucker, Condon, and Cantua Zones with an emphasis on enhancing hunting and other non-motorized recreational opportunities.

**REC-USE-G5.** Acquire public access to BLM lands in the Cantua Zone.

**REC-USE-G6.** Identify potential sites for development of primitive camping/staging areas and new trails leading to points of interest in CCMA.

#### 2.4.1.9 Visitor Services for No Action Alternative (Current Management Actions)

**REC-VIS-A1.** Improve public access by vehicle to Condon Peak (primarily for hunting).

**REC-VIS-A2.** Initiate boundary posting and visitor use patrols in CCMA concurrent with access development or enhancement.

**REC-VIS-A3.** Provide an interpretive and regulatory panel at each camping/staging area with a map and locator for each site. Contributing agencies and supporting user groups will be identified on this panel as well.

**REC-VIS-A4.** Provide directional signs identifying mileage at all major road junctions. Make signs as vandal proof/resistant as possible (e.g., metal).

**REC-VIS-A5.** Install signs identifying the CCMA as a Limited Use Area with all vehicle travel restricted to designated open routes. Clearly mark and identify the designated route network. Post public/private land boundaries where trespass is a problem.

**REC-VIS-A6.** Develop vehicular (four-wheel drive) access from North Hill into the San Carlos Bolsa area. Install gates to control seasonal access and trespass onto private land.

**REC-VIS-A7.** Make minor modifications to existing vehicle use designations as a result of land tenure adjustments and to protect significant riparian and special status species habitat.

**REC-VIS-A8.** Develop Cooperative Management Agreements with user groups to develop trail systems (adopt-a-trail), other project work, and volunteer patrols to the extent possible.

**REC-VIS-A9.** Increase Law Enforcement patrols and use of Law Enforcement response teams to monitor and enforce compliance with designations.

**REC-VIS-A10.** Continue providing interpretive map/pamphlet (Clear Creek Management Area map).

**REC-VIS-A11.** Continue fee program pursuant to Federal Register Notice published on June 27, 2007 to supplement existing funding.

#### 2.4.1.10 Visitor Services Common to Alternative B and C

**REC-VIS-BC1.** Establish boundary posting and visitor use patrols in recreation areas concurrent with access development or enhancement. To ensure public safety, increase the number of boundary signs at all sites that offer hunting and target shooting near private in-holdings.

**REC-VIS-BC2.** Provide an interpretive and regulatory panel at each camping/staging area with a map and locator for each site.

**REC-VIS-BC3.** Collect visitor use fees on BLM public lands consistent with the Federal Lands Recreation Enhancement Act (2005).

**REC-VIS-BC4.** Emphasize non-motorized recreation to increase protection of natural and cultural values.

**REC-VIS-BC5.** Allow development of facilities to protect public safety and allow for interpretation of natural and cultural values.

**REC-VIS-BC6.** Close recreation sites where resources are being degraded to facilitate repair and/or rehabilitation.

**REC-VIS-BC7.** Implement Best Management Practices (BMPs) related to recreation facilities outlined in Appendix V.

#### 2.4.1.11 Visitor Services under Alternative D

**REC-VIS-D1.** Implement CCMA Visitor Use Fee Program to support implementation of human health risk mitigation measures and maintain recreation opportunities.

**REC-VIS-D2.** Develop new campgrounds, staging areas and OHV opportunities on public lands within the Tucker, Condon, and Cantua zones.

#### 2.4.1.12 Visitor Services Common to Alternative E and F

**REC-VIS-EF1.** Improve access for motorized vehicles to Condon Peak.

**REC-VIS-EF2.** Provide a limited number of recreation facilities in the Tucker, Condon, and Cantua zones to meet increased recreation demand while protecting natural and cultural values and providing for public safety.

**REC-VIS-EF3.** Maintain existing visitor use facilities outside the Serpentine ACEC, and mitigate human health risk from asbestos emissions from facilities inside the Serpentine ACEC through dust suppression or surface hardening techniques.

#### 2.4.1.13 Visitor Services under Alternative G

**REC-VIS-G1.** Authorize access into the ACEC for scientific studies, research, and education for accredited institutions and individuals on a case-by-case basis. Access authorizations would stipulate health and safety requirements, as appropriate.

**REC-VIS-G2.** Enhance visitor use facilities for non-motorized recreation in the Condon Zone.

#### 2.4.1.14 Interpretation and Education for No Action Alternative (Current Management Actions)

**REC-INT-A1.** Create outdoor kiosk/display sites for various locations within the CCMA.

**REC-INT-A2.** Continue outreach and education program to create public and visitor awareness of human health risks from exposure to airborne asbestos fibers in CCMA.

**REC-INT-A3.** Intensify environmental education efforts with the goal of obtaining the maximum level of voluntary compliance with OHV designations.

**REC-INT-A4.** Provide an information kiosk near the main entrance (ref. map/app.). The kiosk would be located to encourage visitors to stop and view information provided. The kiosk would contain a map and information concerning: asbestos health hazards, OHV use designations, fire prevention, regulations, natural resources of the area, emergency assistance, and BLM Hollister Field Office phone number and address. Other agency/user groups' endorsement of management strategies (also indicating that facilities have been provided using Green Sticker funds) will be incorporated into signing.

**REC-INT-A5.** Produce and distribute a new user map to allow recreation users to understand the appropriate type of use and clearly identify where OHV use is permitted.

**REC-INT-A6.** Develop a recreation user education and awareness program to inform the public of the concepts of designated use, encourage safe and environmentally responsible behavior, and an understanding of multiple-use management.

#### 2.4.1.15 Interpretation and Education Common to Alternative B, C, D, E, F, and G

**REC-INT-BG1.** Provide recreation information such as maps, brochures, and educational opportunities to enhance visitors' experience on BLM public lands. Incorporate the best available information concerning: asbestos health hazards, OHV use designations, fire prevention, BLM regulations, and natural resources of the area into educational materials and on all maps, brochures, and kiosks.

**REC-INT-BG2.** Cooperate with adjacent private landowners on land management activities to the extent possible.

**REC-INT-BG3.** Cooperate with museums and education institutions to develop cultural resource education and interpretive programs for CCMA.

### 2.4.2 Hazardous Materials and Public Safety

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.2.1 Goals and Objectives

The goals for hazardous materials and public safety are to (1) protect public health and safety and environmental resources by minimizing environmental contamination from past and present land uses (i.e., abandoned mine lands) on public lands and BLM-owned and operated facilities; (2) comply with Federal, State, and local hazardous materials management laws and regulations; (3) maintain the health of ecosystems through assessment, cleanup, and restoration of contaminated lands; (4) manage the costs, risks, and liabilities associated with hazardous materials so that the responsible parties and not the government bear the brunt of financial liabilities; (5) integrate environmental protection and compliance with all environmental statutes into BLM activities.

To achieve these goals, the following objectives are established:

- Identify and control imminent hazards or threats to human health and/or the environment from hazardous substances releases on public lands (including Abandoned Mine Lands (AML) sites).
- Reduce hazardous waste produced by BLM activities and from authorized uses of public lands through waste minimization programs that include recycling, reuse, substitution, and other innovative, safe, cost-effective methods of pollution prevention.
- Ensure that authorized activities on public lands comply with applicable Federal, State, and local laws, policies, guidance, and procedures.
- Promote working partnerships with states, counties, communities, other Federal agencies, and the private sector to prevent pollution and minimize hazardous waste on public lands.
- Protect visitors from safety hazards and/or environmental releases of chemicals of concern associated with abandoned mine lands (AMLs) and mining activity.

### 2.4.2.2 No Action Alternative (Current Management Actions)

**HAZ-A1.** Install a public vehicle wash facility.

**HAZ-A2.** Monitor for illegal dumping of chemicals on federal lands.

**HAZ-A3.** Identify mining-related and other public land hazards and eliminate or mitigate as soon as possible.

**HAZ-A4.** Identify and resolve mining related trespasses with priority given to those cases where conflicts are occurring with visitor use and safety.

**HAZ-A5.** Apply dust-suppressant on major routes in CCMA. The initial application will be evaluated for continued use on an annual or semi-annual basis.

**HAZ-A6.** Comply with all provisions of the Monterey Bay Unified Air Pollution Control District's remote location exemption (for CCMA) from the ATCM regulation for control of airborne asbestos emissions relating to construction, road maintenance, and grading activities.

### 2.4.2.3 Management Actions Common to Alternatives B through G

**HAZ-BG1.** Restrict the type of activity and the number visits for that activity as the primary means to control risk to public from asbestos exposure.

**HAZ-BG2.** Use best available technologies (BATs) identified in Appendix V for dust abatement on roads and during project implementation.

**HAZ-BG3.** Reduce emissions at staging areas, other recreation facilities, and on major routes with dust suppression and surface hardening techniques as needed. The techniques include, but are not limited to, paving, base rock, chip seal, or applications of surfactants (i.e. biodegradable liquid copolymers) to stabilize and solidify soils or aggregates and control erosion.

**HAZ-BG4.** , Issue supplementary rules to minimize exposure to hazardous materials and airborne asbestos fibers, considering technical and budgetary constraints and overall effectiveness of the human health and safety mitigation measures identified below.

- Require signed waivers of liability to indemnify BLM against risk of tort claims associated with CCMA visitor use and exposure to airborne asbestos fibers.
- Enforce speed limits (15-25 mph) on designated routes.

**HAZ-BG5.** Implement Best Management Practices (BMPs) related to Abandoned Mine Lands (AML) and mining activities outlined in Appendix V.

**HAZ-BG6.** Reduce the use of Federal funds for clean-up of contaminated lands by seeking cost avoidance and/or cost recovery from the legally responsible parties.

### 2.4.3 Travel and Transportation Management

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.3.1 Goals and Objectives

The goals for transportation and access are to (1) continue to maintain roads for resource management purposes; (2) continue to support local counties and the State of California in providing a network of roads for movement of people, goods, and services across public lands; (3) manage motorized access use to protect resource values, promote public safety, provide responsible motorized access use opportunities where appropriate and minimize conflicts among various user groups.

To achieve these goals, the following objectives are established:

- Provide travel routes to and through BLM-managed lands as appropriate to meet resource objectives while providing for private and public access needs.
- Manage motorized access and mechanized vehicle use in conformance with OHV designations.

#### 2.4.3.2 No Action Alternative (Current Management Actions)

**TRANS-A1.** Designate the entire 75,000-acre CCMA as a "Limited" vehicle use area. Vehicle use in the Planning Area is limited to designated routes identified on Map A in Appendix I, and designated 'open play areas' (i.e. barrens) identified in the 2006 Record of Decision for the CCMA RMP Amendment and Route Designation.

**TRANS-A2.** All routes not designated 'open or limited', are designated as 'closed'. OHV use is authorized only on designated 'open or limited' routes which are signed for use.

**TRANS-A3.** Additional routes may be added to the designated route network until the total number of routes (including non-BLM administered) available for casual recreation use totals 270 miles; following inventory, soil loss assessment, and resources screening using designation criteria described in Appendix II.

**TRANS-A4.** Adopt the following route and barren designation methodology:

**A. Routes**

Designation decisions would be based on a variety of data, including previous studies, field inventory data, biological, environmental, cultural, and natural and recreation resources, land use, and land ownership.

Consider the level of impact of each route and barren; the number, density, and intensity of use of each route and area and its relationship to habitat fragmentation and cumulative effects; and ways to minimize the number and intensity of conflicting land uses.

Evaluate routes relative to designation criteria (see Appendix II) such as, resource sensitivity, soil loss, manageability, intended route use, and recreation opportunity. The route designation criteria are

combined in four tiers roughly corresponding to the criteria's likelihood of requiring route closure, described in Appendix II.

Establish a Data Element Dictionary for each of the resource screening criteria, representing the data on which decisions about authorized vehicle use of routes and barren areas is based. The data element dictionary describes the responses for each criterion. As routes and barrens are screened through the criteria tables, data element codes are assigned based on staff evaluation. The last digit of the element code also represents a scoring feature, with totals greater than nine for all criteria deemed least suitable for open designation. Designation of routes and barrens would include mitigation measures or restoration as needed.

**B. Barrens**

These designation criteria address a variety of management issues and concerns, including compliance with statutory guidelines, resource sensitivity, soil loss, manageability, and recreation opportunity. From this evaluation of criteria a designation on use classification, open, limited, or closed, is made. The Geomorphic Field Evaluation of Serpentinite Soil Barrens, CCMA (Dynamac Corp., 1998), contains data considered in the designation process. Key information from this study used in this designation process include; stream orders present, hydrographic position, vegetation cover, vegetation boundary/buffer, amount of gullying, slope, armoring present, sediment trapping features, and contribution of sediment to sub-watersheds with high erosion rates. For the purposes of this document, the term "barrens" is generally applied "to openings in serpentine hillslopes larger than 10 acres which support almost no herbaceous or woody vegetation". Criteria adopted for barren designation are included in Appendix II.

**TRANS-A5.** Designated 'closed' routes will be selected and prioritized for restoration and reclamation.

**TRANS-A6.** Cooperate with private landowners to prevent public access to or across their lands. Negotiate reciprocal rights-of-way with private landowners, as appropriate, to maintain the integrity of the route network.

**TRANS-A7.** Modify the designated route network to resolve visitor use conflicts and promote safe public access through minor route realignments designed to:

- Avoid sensitive natural or cultural resources,
- Reduce impact on sensitive species and habitats,
- Substantially increase the quality of the recreational experience, but that will not affect sensitive species or habitat, or other sensitive resource values,
- Avoid mines and private lands.

*"Minor realignment" is defined as a change of no more than ¼ linear mile of an individual designated route. This could include the opening of an existing previously closed route that serves the same access need as the route that is to be realigned. It could also involve re-routes of a segment of a route, to avoid the above mentioned resource conflicts. All new construction will undergo environmental review and NEPA compliance. All realignments and re-routes will be documented in the official record and kept on file at the BLM Field Office.*

**TRANS-A8.** Enforce seasonal access closures and restrictions to limit vehicle use during periods of extreme wet and muddy conditions and during periods of extreme dusty conditions. Wet season closure criteria are outlined under SOILS-A3. Dry season use restrictions would be implemented from June 1st through October 15th annually.

**TRANS-A9.** Construct fences and barriers to preclude access to riparian areas and closed areas to prevent vehicle disturbance and off-site transport of sediments. Specifically fence along R002 to control OHV access into the Larious watershed, and fence along T113 to control access to closed barrens in a high erosion watershed on the south side of Clear Creek.

**TRANS-A10.** Construct fence and barriers to protect boundaries and preclude unauthorized motorized access and trespass into the RNA. Complete corridor fencing of Spanish Lake Road (R11) through the RNA.

**TRANS-A11.** A difficulty rating system will be implemented for all designated open and limited routes. Ratings will be identified on route markers within the Clear Creek Watershed.

**TRANS-A12.** Implement California State Soils Loss Standards and Monitoring on all designated open routes and surveys completed on an annual basis. Routes may be temporarily closed until corrective maintenance repairs can be completed if necessary.

**TRANS-A13.** BLM will implement the following mitigation measures to reduce environmental impacts.

- **Best Management Practices**: BLM will monitor water quality, soil erosion, and sediment conditions within the watersheds of the CCMA. The BLM will implement Best Management Practices (BMPs) to reduce impacts to watershed resources, and will continue to evaluate and update these measures as needed to minimize impacts to water quality, control erosion and sediment production, and protect sensitive resources. The BMPs will incorporate the soil loss standards for OHV areas, developed jointly by BLM and California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division. BMPs related to watershed improvement and road maintenance projects will be implemented to reduce erosion and off-site sedimentation transport (see Appendix V).

- Address all route maintenance activities in an annual corrective route maintenance plan. Implement route maintenance and improvement projects consistent with the following guidance:

    - BLM manuals 9113, H-9113-2, 9114,

    - Federal Highway Administration's (FHWA) Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects Standards, US Forest Service Trails Handbook 2309.18, sections 2.32 a, b, and c, and

    - 1995 Pacific Watershed Associates (PWA) report will be used for standards, guidelines, and recommendations.

    - Resource awareness training will be completed by all operators to ensure compliance with adopted route maintenance guidelines, with relevant inventory data incorporated into the training as appropriate. The BLM will continue to implement BMPs to reduce impacts to watershed resources and control non-point source pollution. California OHV State soil loss standards will be used in monitoring and assessment of routes and areas, and will serve as the basis in developing corrective route management plans.

- Notify the public with media releases and postings to clubs, landowners, claimants and other permittees regarding scheduled route work and any temporary route closures or route diversions. Include public health and safety information in notifications.

- Implement route maintenance activities at stream crossings during low-flow periods, or if, possible when the channel does not contain flowing water to minimize sediment transport.

- Work on open routes will be done when soil moisture is sufficient to adequately compact the tread and prevent visible airborne asbestos emissions. If work is to be done under dry season conditions, then water will be added in sufficient quantities to maintain adequate soil moisture. Upon mechanical disturbance by the treads of track driven equipment, the soil will be re-compacted in six-inch or less lifts.

- Monitor water quality, soil erosion, and sediment conditions within the watersheds of the CCMA. Continue to evaluate and update BMPs as needed to minimize impacts to water quality, control erosion and sediment production. These measures include drainage improvements, construction of rolling dips, water bars, rock armored/hardened stream crossings, hardened sills, and half-pipe bridges, and are contained in Appendix V.

- Implement measures to minimize off-site sediment transport from barren areas through repair of erosion scars, construction of drainage improvements, sediment control and trapping treatments, and re-vegetation of vegetative buffers. Designated 'closed' barrens will be selected and prioritized for restoration and reclamation employing these same techniques.

#### 2.4.3.3 Management Actions for Alternatives B

**TRANS-B1.** Designate the entire 75,000-acre CCMA as a "Limited" vehicle use area. Vehicle use in the Planning Area would be limited to designated routes identified on Map B in Appendix I.

**TRANS-B2.** Reduce emissions at staging areas, other recreation facilities, and on major routes with dust suppression and surface hardening techniques including, but are not limited to, paving, base rock, chip seal, or applications of surfactants (i.e. biodegradable liquid copolymers) to stabilize and solidify soils or aggregates and control erosion.

**TRANS-B3.** Use best available technologies (BATs) for dust abatement on roads and during project implementation.

**TRANS-B4.** Enforce seasonal access closures and restrictions to limit vehicle use during periods of extreme wet and muddy conditions and during periods of extreme dusty conditions.

**TRANS-B5.** Implement BMPs related to transportations and roads outlined in Appendix V:

- Address all route maintenance activities in an annual corrective route maintenance plan. Implement route maintenance and improvement projects consistent with the following guidance:
    - BLM manuals 9113, H-9113-2, 9114,
    - Federal Highway Administration's (FHWA) Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects Standards, US Forest Service Trails Handbook 2309.18, sections 2.32 a, b, and c; and
    - 1995 Pacific Watershed Associates (PWA) report will be used for standards, guidelines, and recommendations.

Resource awareness training will be completed by all operators to ensure compliance with adopted route maintenance guidelines, with relevant inventory data incorporated into the training as appropriate. The BLM will continue to implement BMPs to reduce impacts to watershed resources and control non-point source pollution. Soil loss standards will be used in monitoring and assessment of routes and areas, and will serve as the basis in developing corrective route management plans.

#### 2.4.3.3 Management Actions for Alternatives C

**TRANS-C1.** Designate the entire 75,000-acre CCMA as a "Limited" vehicle use area. Vehicle use in the ACEC would be limited to full-size vehicles and motorcycle use only on designated routes identified on Map C in Appendix I. Vehicle use in the Tucker, Condon, and Cantua zones would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map C in Appendix I.

**TRANS-C2.** Develop and maintain approximately 150 miles of routes and single track trails in the Serpentine ACEC for off-highway vehicle (OHV) recreation following inventory, soil loss assessment, and resources screening using route designation criteria described in Appendix II.

#### 2.4.3.4 Management Actions for Alternatives D

**TRANS-D1.** Designate the entire 75,000-acre CCMA as a "Limited" vehicle use area. Vehicle use in the ACEC would be limited to full-size vehicles on designated routes identified on Map D in Appendix I. Vehicle use in the Tucker, Condon, and Cantua zones would be limited to designated (and proposed) routes identified on Map D in Appendix I.

**TRANS-D2.** Develop and maintain approximately 60 miles of routes and trails in the Condon, Tucker, and Cantua Zones for off-highway vehicle (OHV) recreation following inventory, soil loss assessment, and resources screening using route designation criteria described in Appendix II.

### 2.4.3.5 Management Actions for Alternatives E

**TRANS-E1.** Designate 460 acres in the Serpentine ACEC as a "Limited" vehicle use area for vehicle touring on the Scenic Route identified on Map E in Appendix I. Vehicle use on the Scenic Route is limited to full-sized vehicles for day use only. Designate the rest of the 30,000-acre Serpentine ACEC as "Closed" to vehicle use.

**TRANS-E2.** Develop and maintain transportation facilities (i.e. pull-outs and parking areas) on portions of T153 and Spanish Lake Road (R11) with high scenic values, and other destinations with unique biological, natural and geologic features within CCMA.

**TRANS-E3.** Designate the Tucker, Condon, and Cantua Zones as "Limited" vehicle use areas. Vehicle use in the Tucker, Condon, and Cantua Zones would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map E in Appendix I.

**TRANS-E4.** Develop and maintain approximately 30 miles of routes and trails in the Condon, Tucker, and Cantua Zones for non-motorized recreation following inventory, soil loss assessment, and resources screening using route designation criteria described in Appendix II.

**TRANS-E5.** Enforce temporary closures year-round to protect persons, property, and public lands and resources, especially during periods of extreme wet conditions and during periods of extreme dry conditions.

### 2.4.3.6 Management Actions for Alternatives F and G

**TRANS-FG1.** Designate the entire 30,000-acre ACEC as "Closed" to vehicle use. Designate the Tucker, Cantua, and San Benito River Zones as "Closed" vehicle use areas. Designate the Condon Zone as a "Limited" vehicle use area. Vehicle use in the Condon Zone would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Maps F and G in Appendix I.

**TRANS-FG2.** Develop and maintain approximately 15 miles of routes and trails in the Condon Zone for non-motorized recreation following inventory, soil loss assessment, and resources screening using route designation criteria described in Appendix II.

**TRANS-FG3.** Decommission Clear Creek Road (R1), and reclaim closed roads to protect sensitive resources, reduce sediment transport, and control erosion.

**TRANS-FG4.** Implement BMPs to reduce offsite water quality impacts from roads and trails that no longer serve their original purpose, or exceed soil loss standards.

**TRANS-FG5.** Restrict administrative use of roads and trails during periods of inclement weather.

Table 2.4-2 provides an overview of the designated route mileage under each alternative.

## Table 2.4-2 Vehicle Use Area Designations and Route Designation Alternatives

| **Area Designation (acres)** | **Alt. A** | **Alt. B** | **Alt. C** | **Alt. D** | **Alt. E** | **Alt. F** | **Alt. G** |
|---|---|---|---|---|---|---|---|
| Serpentine ACEC (30,000) | Limited | | | | Closed: 29,540 acres<br>Limited: 460 acres | Closed | Closed |
| Condon (9,700) | Limited | | | | | | |
| San Benito River (3,600) | Limited | | | | | | Closed |
| Cantua (14,900) | Limited | | | | | | Closed |
| Tucker (5,900) | Limited | | | | | | Closed |
| **Designated Route (miles)** | **Alt. A** | **Alt. B** | **Alt. C** | **Alt. D** | **Alt. E** | **Alt. F** | **Alt. G** |
| Serpentine ACEC | | | | | | | |
| Closed | -- | -- | 42 | 199 | 216 | 227 | 227 |
| Open | 227 | 227 | 185 | 28 | 11 | 0 | 0 |
| Condon & San Benito River Zone(s) | | | | | | | |
| Closed | -- | -- | -- | -- | -- | -- | -- |
| Open | 15 | 15 | 15 | 30 | 15 | 15 | 15 |
| Cantua Zone | | | | | | | |
| Closed | -- | -- | -- | -- | -- | -- | -- |
| Open | -- | -- | -- | 30 | 15 | -- | -- |
| Tucker Zone | | | | | | | |
| Closed | -- | -- | -- | -- | -- | -- | -- |
| Open | -- | -- | -- | 15 | 15 | -- | -- |

### 2.4.4 Biological Resources – Vegetation Resources

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.4.1 Goals and Objectives

The goals for vegetation resources are to (1) restore, maintain, or improve ecological conditions, natural diversity, and associated watersheds of high value, high-risk, native plant communities and unique plant assemblages and (2) to restore degraded landscapes and plant communities.

To achieve these goals, the following objectives are established:

- Maintain or improve current ecological values and processes, productivity, and biological diversity;
- Rehabilitate areas affected by wildland fire and other surface-disturbing activities to stabilize soils and promote growth of desired plant communities;
- Prevent the introduction and proliferation of noxious and invasive weeds.

#### 2.4.4.2 No Action Alternative (Current Management Actions)

**VEG-A1.** Consider woodcutting permits on a case-by-case basis. Commercial woodcutting may be considered to meet special management needs.

**VEG-A2.** Manage the native perennial grassland communities to maintain or increase the population (i.e. the desert needlegrass community in the Condon Peak area).

**VEG-A3.** Give special consideration to the unique stands of big sagebrush and protect these to the extent practicable, especially in the San Carlos Bolsa.

**VEG-A4.** Manage conifer forests for their scenic values and unique vegetation characteristics.

**VEG-A5.** Prohibit commercial harvesting of conifer forests in sensitive areas (i.e. San Benito Mountain Research Natural Area).

**VEG-A6.** Protect known and newly discovered occurrences of sensitive vegetation resources, including vernal pools and riparian zones, from vehicle and camping disturbances through fencing and other physical barriers.

**VEG-A7.** Implement brush clearing, prescribed burning, and seed or seedling introductions as appropriate for selected species.

**VEG-A8.** Use prescribed fire and other management techniques to provide a mosaic of vegetative communities to protect soil, watershed, and wildlife.

**VEG-A9.** Maintain sustained yield of vegetation for consumptive and nonconsumptive uses.

**VEG-A10.** Cooperate with the University of California to continue the barrens restoration pilot program and to establish small scale soil/plant study plots to investigate plant adaptability and nutritional requirements for rehabilitation purposes.

### 2.4.4.3 Management Actions Common to Alternatives B through G

**VEG-BG1.** Include mitigation measures to protect or enhance riparian areas in all activity plans.

**VEG-BG2.** Emphasize locally grown or adapted native seed mixes for restoration activities.

**VEG-BG3.** Utilize management activities that mimic natural disturbance regimes (e.g., fire) to manage and maintain the composition, mixed age classes, and native wildlife habitat of perennial grasslands, chaparral, oak woodland communities, and wetlands.

**VEG-BG4.** Rehabilitate vegetation emphasizing use of local genotypes of native species for revegetation materials following wildland fires and/or other surface-disturbing activities. Allow non-invasive, non-native species to be used in re-vegetation materials that are temporary and non-persistent.

**VEG-BG5.** Avoid surface disturbance to riparian vegetation except for short-term disturbances that are necessary to restore or enhance riparian conditions in the long-term.

**VEG-BG6.** Mitigate or relocate existing or proposed activities within 100 feet of riparian vegetation that could cause a downward trend in condition of riparian resources.

**VEG-BG7.** Maintain mixed-aged classes for all riparian communities.

**VEG-BG8.** Develop an Integrated Pest Management approach that prioritizes invasive and noxious weed eradication based on the BLM and California State lists.

**VEG-BG9.** Issue non-commercial permits for collecting vegetative products for Native American practices.

**VEG-BG10.** Initiate riparian restoration/improvement projects within systems that have been identified as not functioning or functioning at risk with a downward or static trend.

**VEG-BG11.** Provide a mosaic of vegetation communities to protect soil, watershed, and wildlife; maintain sustained yield of vegetation for consumptive and non-consumptive uses.

## 2.4.5 Biological Resources – Fish and Wildlife

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.5.1 Goals and Objectives

The goal for fish and wildlife is to provide diverse, structured, dynamic, and connected habitat on a landscape level to support viable and sustainable populations of wildlife, fish, and other aquatic organisms.

To achieve this goal, the following objectives are established:

- Conserve habitat consistent with the *Recovery Plan for Camissonia Benitensis (FWS 2007)*.
- Conserve habitat for migratory birds and species listed on the U.S. Fish and Wildlife Service (USFWS) list of Birds of Conservation Concern.
- Maintain or enhance viable, healthy, and diverse populations of native and desired species, including special status species, where appropriate.

#### 2.4.5.2 No Action Alternative (Current Management Actions)

**HAB-A1.** Conduct prescribed burns to maintain unevenly aged brush fields.

**HAB-A2.** Emphasize upland game habitat maintenance and enhancement through management of other resources (e.g., grazing), water development, and project maintenance.

**HAB-A3.** Install guzzlers to provide water for deer, wild pigs, quail, and other wildlife.

**HAB-A4.** Fence sensitive areas such as meadows to preclude livestock and vehicle use.

**HAB-A5.** Install rock barriers around sensitive areas such as vernal pools to protect them from camping and vehicle use.

**HAB-A6.** Construct fences in wildlife use areas to meet BLM specifications that permit the movement of identified wildlife.

**HAB-A7.** Emphasize upland game habitat enhancement through management of other resources (e.g. grazing), water development and project maintenance in the nonserpentine management zones.

**HAB-A8.** Emphasize protection and/or enhancement of riparian habitat in the Serpentine ACEC.

**HAB-A9.** Fence portions of eight meadows in the Condon Peak area to preclude livestock and vehicle use (one acre or less at each site).

**HAB-A10.** Protect the unique vegetation at Spanish Lake from camping and vehicle use. Develop the Agua Buena spring site for the enhancement of wildlife habitat.

#### 2.4.5.3 Management Actions Common to Alternatives B, C, D, E, and F

**HAB-BF1.** Coordinate with the California Department of Fish and Game (CDFG), and the USFWS to control non-native wildlife species.

**HAB-BF2.** Preserve fallen trees and snags in occupied and potential habitat for raptors. Prohibit collecting wood in areas known to provide breeding habitat.

**HAB-BF3.** Mitigate or relocate man-made barriers that substantially impede migration within wildlife travel corridors, as appropriate.

**HAB-BF4.** Maintain existing water improvements (e.g., guzzlers).

**HAB-BF5.** Avoid disturbance, including road construction and recreational activities, within a 0.125-mile radius of nesting sites of owls, ospreys, golden eagles, buteos, accipiters, and falcons.

**HAB-BF6.** Avoid disturbance, including road construction and recreation activities, within a 0.25-mile radius around nesting sites of the California condor, bald eagle, and prairie falcons.

**HAB-BF7.** Cooperate with the CDFG to reintroduce, release, and/or restore populations of native fish and wildlife species into historic and occupied ranges with suitable habitat.

#### 2.4.5.4 Management Actions for Alternative G

**HAB-G1.** Remove non-functioning water improvements (e.g., guzzlers) and evaluate the use of functioning man-made water sources in the Serpentine ACEC.

**HAB-G2.** Cooperate with the CDFG to reintroduce, release, and/or restore populations of native fish and wildlife species into historic and occupied ranges with suitable habitat outside the Serpentine ACEC.

### 2.4.6 Biological Resources – Special Status Species

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.6.1 Goals and Objectives

The goal for management of special status species is to (1) maintain populations of special status species; and (2) actively contribute to recovery so as to promote downlisting and delisting of special status species.

To achieve these goals, the following objectives are established:

- Manage listed, proposed, or candidate threatened or endangered species to comply with the provisions of the Endangered Species Act (ESA).
- Manage special status plant and BLM-recognized significant plant communities consistent with BLM policy on Special Status Species Management (BLM Manual 6840).
- Preclude the need for listing proposed, candidate, and sensitive species under the ESA.
- Improve the condition of special status species and their habitats to the point where their special status recognition is no longer warranted.

### 2.4.6.2 No Action Alternative (Current Management Actions)

**SSS-A1.** Establish appropriate levels of surface disturbance to protect special status species and their associated habitats.

**SSS-A2.** Monitor the effects of management activities on significant habitat areas.

**SSS-A3.** Plan development of access roads to follow existing roads and trails and route new roads to avoid sensitive habitat features.

**SSS-A4.** Provide on- and off-site compensation in the form of rehabilitation, reseeding, and other actions during new construction.

**SSS-A5.** Enforce seasonal restrictions for certain activities during sensitive periods such as denning and nesting.

**SSS-A6.** Maintain buffer zones around sensitive habitat features.

**SSS-A7.** Manage public lands to protect and enhance sensitive, rare, threatened, or endangered species. Evaluate all known or potential habitat before implementing actions that may affect the habitat. Conduct consultations in accordance with Section 7 of the Endangered Species Act, if appropriate.

**SSS-A8.** Manage portions of Clear Creek, Sawmill Creek, San Benito River, and San Carlos Creek for introducing the San Benito evening-primrose into suitable habitat.

**SSS-A9.** Monitor all populations of the San Benito evening-primrose and their protective measures for compliance relating to OHV trespass.

**SSS-A10.** Monitor water quality, soil erosion, and sediment conditions within the watersheds of the CCMA. Implement BMPs including drainage improvements, construction of rolling dips, water bars, rock armored/hardened stream crossings, hardened sills, and half-pipe bridges, as needed to minimize impacts to water quality, control erosion and sediment production. These BMPs are contained in Appendix V.

**SSS-A11.** Rehabilitate (by ripping and/or pitting) potential habitat areas for the San Benito evening primrose in Clear Creek Canyon. Seed would be collected from nearby populations and broadcast over these areas (approximately one-half acre each) subsequent to seedbed preparation. Evaluate and implement vegetation manipulations, such as brush clearing, prescribed burns and seed or seedling introductions, for San Benito evening primrose habitat areas of high and moderate potential.

**SSS-A12.** Initiate an ecological study of the San Benito evening primrose to determine habitat requirements.

**SSS-A13.** Monitor known populations and potential habitat on a yearly basis. Protect new populations as they are discovered.

**SSS-A14.** Protect known and newly discovered occurrences of the San Benito evening primrose and other sensitive resources including rare plants such as rayless layia, vernal pools, and riparian zones from vehicle and camping disturbances.

**SSS-A15.** Monitor all unprotected populations of special status species for possible adverse impacts from vehicles and other uses and implement protective actions as warranted.

**SSS-A16.** Inventory suitable habitat for all sensitive plant species. Monitor any new populations of special status species documented during inventories for adverse impacts and implement protective actions as warranted.

**SSS-A17.** Develop long-term studies to determine how disturbances such as human use, storms, and erosion, impact the viability of special status species.

**SSS-A18.** Conduct compliance monitoring for the protection of San Benito evening-primrose (CABE) to document the condition of the species, habitat, and the protective measures in place according to the Compliance Monitoring Plan for CABE in the 2006 Record of Decision for the CCMA RMP Amendment & Route Designation.

1. Monitoring will record direct disturbance to CABE, CABE habitat, and CABE potential habitat by off-highway vehicle use, including but not limited to tire tracks, trampling of plants, soil compaction, soil displacement, seed displacement, and soil erosion and sedimentation.
2. Biologists will visit occurrences monthly from October to May and on a less frequent basis during the off-season. Additional BLM staff will monitor integrity of protective measures on a more frequent basis.
3. Annual population census monitoring will be conducted and reported to FWS. The intensity and extent of disturbance at each occurrence will be evaluated to determine the need for additional mitigation measures.
4. BLM will coordinate with FWS in revising the compliance monitoring plan to promote the long-term conservation of the primrose.

**SSS-A19.** Revise Compliance Monitoring Plan to improve the BLM's ability to: 1) coordinate with FWS on implementation of adaptive management actions; 2) conduct annual area-wide monitoring of *Camissonia benitensis* habitat and population estimates; 3) analyze correlations between OHV use patterns and population levels; 4) establish thresholds that will trigger adaptive management, 5) establish thresholds that will trigger downlisting and delisting.

Specifically, working guidance would include the following measures addressing conservation of Camissonia benitensis:

1. **Population and habitat monitoring protocols:** Annual estimates of the distribution and abundance of CABE and the spatial distribution of documented and potential habitat within the CCMA. Methods to provide these estimates are likely to be refined in the future.
2. **OHV and other recreational use compliance monitoring:** Efforts to monitor compliance with rules and regulations governing use of the CCMA. The intensity and frequency of this effort will be commensurate with historical compliance data and other factors that affect risk to CABE and its habitats. Methods used to determine compliance levels are likely to continue to be refined in the future.
3. **Interagency coordination:** The BLM and the FWS will continue to meet annually, or more often as needed to:

    - Review all plant and habitat abundance and distribution data and any relevant circumstances;
    - Review all OHV and other recreational use compliance monitoring data;
    - Evaluate this information and determine whether current accepted risk thresholds have been exceeded;

- Develop any needed recommendations for managers;
- Generally evaluate CCMA Plan implementation, management strategy effectiveness, monitoring programs, and listed species risk thresholds;
- Determine whether either the BLM and/or the FWS believe there is any reason to reinitiate consultation under section 7 of the ESA.
- Determine whether downlisting or delisting is appropriate.

4. **Erosion process studies and control strategies:** Develop additional strategies to study, more fully understand, and manage soil erosion as it affects CABE habitats.

#### 2.4.6.3 Management Actions Common to Alternatives B and C

**SSS-BC1.** Maintain all known special status species habitat. Implement revised Compliance and Monitoring Plan identified above under SSS-A18 and SSS-A19.

**SSS-BC2.** Prohibit collection of special status species, except for scientific research or Native American traditional use.

**SSS-BC3.** Protect ponds, wetlands, or riparian areas known to support or that could potentially support California tiger salamander or yellow-legged frog to maintain natural corridors between pools/wetlands and upland habitat so that continuous native plant coverage allows adequate movement of these species.

**SSS-BC4.** Avoid disturbance, including road construction and recreation activities, within a 0.25-mile radius around nesting sites of the California condor, bald eagle, and prairie falcons.

#### 2.4.6.4 Management Actions Common to Alternatives D, E, and F

**SSS-DEF1.** Adopt the BLM's Compliance Monitoring Plan outlined in Appendix IV for existing CABE habitat and populations.

**SSS-DEF2.** Mitigate or relocate surface-disturbing activities proposed within occupied or potential habitat for special status species.

#### 2.4.6.5 Management Actions for Alternative G

**SSS-G1.** Adopt the BLM's Compliance Monitoring Plan outlined in Appendix IV for existing CABE habitat and populations.

**SSS-G2.** Limit proposed new surface-disturbing activities within occupied or potential habitat for special status species. Limit long-term disturbances in potential habitat.

**SSS-G3.** Conduct restoration projects in closed areas that disturb or interrupt hydrologic and/or ecological processes to support special status species and significant plant communities.

## 2.4.7 Air Quality

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

### 2.4.7.1 Goals and Objectives

The goal for air quality management is to ensure that BLM authorizations and management activities comply with local, State, and Federal air quality regulations, requirements, State Implementation Plans, and Regional Air Board standards and goals.

To achieve this goal, the following objectives are established:

- Manage prescribed fires to comply with established air quality standards;
- Manage energy and mineral development to avoid degradation of established air quality standards; and
- Coordinate with Regional Air Quality Control Districts on resource management activities to ensure consistency with State air basin plans.

### 2.4.7.2 No Action Alternative (Current Management Actions)

**AIR-A1.** The current management strategy for the CCMA is to comply with State and Federal air quality regulations. Specifically, management actions maintain compliance with:

(1) National Ambient Air Quality Standards (NAAQS) primary standards for sulfur dioxide, nitrogen oxides, particulate matter, carbon monoxide, ozone, and lead (40 CFR 50);

(2) NAAQS secondary standards (40 CFR 50); and

(3) The California State Implementation Plan and the California Air Pollution Control Laws (California Health and Safety Code §39606).

**AIR-A2.** Rely on existing methods of predicting impacts on air quality from prescribed fire projects on BLM-administered lands. Existing methods use modeling software that supports wildland fire-management planning and implementation. Examples of such software are:

CALPUFF – A three-dimensional model designed to predict ground level concentrations of particulate matter and gaseous pollutants from multiple sources in complex terrain.

NPSPUFF – A smoke-dispersal model developed in Region 6 that models smoke plume dispersion and concentrations of pollutants (particulate matter and other pollutants) from prescribed and wildland fires.

RXBURN/RXWEATHER – Analyzes and assesses burn prescriptions.

SASEM – An emission and plume dispersion model that predicts ground-level particulate matter and visibility impacts from prescribed burning of forest and range vegetation in relatively flat terrain in the Western United States.

SMOKE – A smoke prediction system that determines the volume of smoke.

TSAR3 – A three-part smoke dispersion prediction program. Each part can be used independently or together.

**AIR-A3.** Abate dust during project implementation to maintain ambient air levels for toxic air contaminants and naturally occurring asbestos.

**AIR-A4.** Use water trucks to spray roads and other areas during project implementation to avoid visible dust emissions in the Serpentine ACEC.

**AIR-A5.** Comply with all provisions of the California Air Resources Board (CARB) Airborne Toxic Control Measures (ATCM) regulation for control of airborne asbestos emissions relating to construction, road maintenance, and grading activities.

#### 2.4.7.3 Management Actions Common to Alternatives B through G

**AIR-BG1.** Incorporate mitigation measures in Appendix V for activities and projects on BLM lands in order to reduce airborne asbestos emissions and comply with applicable Federal, State, and local air quality regulations.

**AIR-BG2.** Manage motorized vehicle travel on dirt roads to minimize air pollution from dust and exhaust by restricting vehicle types and seasons when vehicles could be used.

**AIR-BG3.** Manage prescribed fire to minimize smoke and coordinate with Federal, State, and local governments in smoke-sensitive areas such as wildland-urban interface areas.

### 2.4.8 Soil Resources

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.8.1 Goals and Objectives

The goal for soil resources management is to manage soil on BLM lands such that functional biological and physical characteristics that are appropriate to soil type, climate, and land form are exhibited (Rangeland Health Standards and Guidelines, 2000).

To achieve this goal, the following objectives are established:

- Control erosion and sediment transport;
- Implement soil loss assessment procedures for road and trail maintenance;
- Implement BMPs for non-point source pollution control;
- Maintain vegetation cover at or above the level necessary to stabilize soils; and
- Protect and restore biological soil crusts on watersheds.

### 2.4.8.2 No Action Alternative (Current Management Actions)

**SOIL-A1.** Use check dams or other erosion control structures, where practical, to decrease soil erosion resulting from management actions.

**SOIL-A2.** Do not allow surface disturbance, e.g., no road or fire line construction, on slopes in excess of 50 percent.

**SOIL-A3.** Close roads to vehicle use during periods of extreme wet weather in areas where sustained vehicle use may compromise the integrity of the road surface, to reduce rutting of roads and trails and sediment transfer, and to improve visitor safety.

Wet season closure procedures would be implemented after the annual total precipitation exceeds 8 inches. Once 8 inches of precipitation has been exceeded, the following will apply: Additional rainfall exceeding ½ inch within a 24 hour period or 1 inch within a 72 hour period will result in a three day closure. Once the area has been closed a field inspection will be completed prior to reopening, and daily thereafter to determine suitability of road conditions.

**SOIL-A4.** Control, plan, and design all surface-disturbing activities to minimize erosion.

**SOIL-A5.** Perform brush crushing, "high-blading," and/or fireline construction (mechanical pre-burn site preparation) when soil and fuel moisture levels are low enough to prevent undue surface (soil) disturbance and to maximize pretreatment objectives.

**SOIL-A6.** Recurring corrective maintenance on county and/or administrative routes will be implemented annually as appropriate. Corrective maintenance will also be completed on technical 4WD and 2-track routes as needed with a goal of defining a 3-5 year maintenance cycle for the whole route network.

**SOIL-A7.** Install erosion control structures over the main route network within 3-5 years, and complete an evaluation and project plan for implementing appropriate drainage structures on the remainder of the routes in the CCMA.

**SOIL-A8.** Open or limited routes may be closed temporarily if necessary according to soil loss assessment, resource impacts, or required maintenance. Emergency limitations or closures are not OHV designations, but remain in effect until the adverse effects are eliminated, measures are in place to prevent their recurrence, or revised OHV designations are adopted (43 CFR 8341.2).

**SOIL-A9.** Maintain and update the Access database structure for route inventory, soil loss and erosion, maintenance, and monitoring to evaluate conformity with California State soil loss standards. Annual updates would be incorporated as route work and monitoring are completed.

**SOIL-A10.** Prioritize designated 'closed' routes for restoration and reclamation to allow them return to a natural state.

**SOIL-A11.** Prioritize designated 'closed' barrens for restoration and reclamation to minimize off-site sediment transport from barren areas through repair of erosion scars, construction of drainage improvements, sediment control and trapping treatments, and re-vegetation of vegetative buffers.

#### 2.4.8.3 Management Actions Common to Alternatives B through G

**SOIL-BG1.** Establish remote automated weather stations (RAWS) or apply the use of other available technologies in order to monitor precipitation and soil moisture content in CCMA.

**SOIL-BG2.** Require an approved erosion control strategy and topsoil segregation/restoration plan for proposals involving surface disturbance on slopes of 20 to 40 percent. No surface disturbance on slopes greater than 40 percent would be allowed unless it is determined that it would cause a greater impact to pursue other alternatives.

**SOIL-BG3.** Implement Best Management Practices (BMPs) related to barrens restoration/ management outlined in Appendix V.

### 2.4.9 Water Resources

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.9.1 Goals and Objectives

The goals for water resources management are to (1) maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands and (2) ensure that surface and groundwater quality comply with the Clean Water Act (CWA) and with California State standards.

To achieve these goals, the following objectives are established:

- Maintain the existing quality and beneficial uses of water, protect waters where they are threatened, and restore currently degraded waters. This objective is of even higher priority in the following situations:
- Where the beneficial uses of water bodies have been listed as threatened or impaired pursuant to Section 303(d) of the CWA;
- Where aquatic habitat is present or has been present for Federal threatened or endangered species, candidate species, and other special status species dependent on water resources; and
- In water resource-sensitive areas such as riparian or wetland areas.
- Protect all designated beneficial uses by preventing or limiting non-point source pollution.

#### 2.4.9.2 No Action Alternative (Current Management Actions)

**WAT-A1.** Implement BMPs outlined in Appendix V for watershed management and restoration, including but not limited to the following:

- Install erosion control structures to decrease erosion resulting from public recreation activities.
- Install additional vehicle barriers to control access to riparian corridors and sensitive watershed areas.

- Stabilize/rehabilitate severely eroding trails, hill climbs and naturally barren areas in CCMA with rock walls, rock armoring of stream crossings, contour trenching, gully plugs, and water diversions.
- Continue a regular planned maintenance program for major routes and trails in the Clear Creek Management area (e.g., waterbar construction and outsloping).
- Implement barren area management and restoration activities outlined in Appendix V.

**WAT-A2.** Obtain California Department of Fish and Game permits and Clean Water Act Section 404 permits from the U.S. Army Corps of Engineers, for stream alteration and watershed BMPs as necessary and appropriate.

**WAT-A3.** File for State appropriative water rights for all existing and any new surface water facilities on which any Federal funding has been expended in the development, construction, or maintenance of the water facility.

**WAT-A4.** File either solely in the name of the BLM or as a co-holder with the permittee or lessee making beneficial use of the water. Assert Federal reserved water rights for the amounts and uses necessary to accomplish the purposes for which the lands have been withdrawn.

**WAT-A5.** Allow private individuals to appropriate un-appropriated water on unreserved lands for use on or off the public lands. The appropriation must be in accordance with state laws and consistent with multiple use management of the public lands. Private individuals may also use reserved water when water is available and the proposed use is compatible with the purposes of the reservation and other multiple use management guidelines. Rights-of-way are necessary when water from any source is conveyed across public land.

**WAT-A6.** Conduct regular maintenance of roads and trails, including silt catchments, out sloping, and contouring to reduce impacts on water resources.

**WAT-A7.** Maintain or enhance water quality in all watersheds. Reduce erosion and sediment transport in all CCMA watersheds by reducing the number of miles and barren acreage available for vehicle use, and by implementing BMP's for all road work.

#### 2.4.9.3 Management Actions Common to Alternatives B through G

**WAT-BG1.** Implement BMPs related to watershed restoration/ management outlined in Appendix V to prevent degradation of water quality.

**WAT-BG2.** Maintain existing developed water sources (i.e., spring developments and reservoirs). Develop new sources on a case-by-case basis through project-level planning.

**WAT-BG3.** Maintain adjudicated water rights; inventory water sources not adjudicated or water rights sought, where applicable.

**WAT-BG4.** Submit request to the California State Department of Water Resources to establish Federal reserved water rights on acquired lands to ensure water availability for multiple use management and for functioning, healthy, riparian and upland systems.

**WAT-BG5.** Manage CWA 303(d)-listed impaired water bodies to meet properly functioning condition (PFC) objectives relative to beneficial uses and total maximum daily loads (TMDLs) for mercury and sediment.

**WAT-BG6.** Maintain stable watershed conditions and implement passive and active restoration projects to protect beneficial uses of water and meet TMDLs for mercury and sediment.

**WAT-BG7.** Work with Coordinated Resource Management Planning groups and other private landowners or non-profit organizations to prevent water bodies from reaching impairment levels that would result in listing under CWA 303(d).

**WAT-BG8.** Periodically monitor water quality in seasonal pools and perennial ponds containing known or suspected threatened and endangered (T & E) species. Identify water quality issues and initiate repairs, within environmental constraints.

**WAT-BG9.** Manage all fluvial systems functioning at risk to achieve proper functioning condition.

## 2.4.10 Special Designations

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

### 2.4.10.1 Areas of Critical Environmental Concern (ACECs) /Research Natural Areas (RNAs)

The goals for ACECs and RNAs are to identify and manage ACECs and RNAs to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

To achieve these goals, the following objectives are established:

- Manage the Serpentine ACEC to reduce human health risks and special status species associated with the serpentine soils of the New Idria Formation.
- Manage the San Benito Mountain RNA for the unique forest assemblage and scientific research and educational opportunities.

#### 2.4.10.1.1 No Action Alternative (Current Management Actions)

**ACEC-A1.** Designate the area of serpentine soils high in asbestos fiber and the Clear Creek watershed as the Clear Creek Serpentine ACEC (30,000 acres). Maintain 4,147-acre designation of the San Benito Mountain Research Natural Area (RNA).

**ACEC-A2.** Manage the Serpentine ACEC for public health and safety and the RNA for its unique forest assemblage and associated values.

**ACEC-A3.** Intensify the current asbestos awareness program through signing, pamphlets, and individual user contacts.

**ACEC-A4.** Continue monitoring programs assessing sedimentation in the Clear Creek drainage from OHVs, mining, and other activities. Identify and prioritize areas requiring further protection and/or stabilization.

**ACEC-A5.** Asbestos Hazard

- Provide a vehicle washing facility (wash rack) at the main entrance to Clear Creek.
- Provide asbestos hazard pamphlet/brochure to Central California motorcycle shops, sporting goods stores, etc. Issue news releases highlighting the area's asbestos hazard at least twice annually. Provide asbestos warning signs at all roads and trails entering the serpentine area.
- Prohibit organized events June 1st through October 15th.
- Designate asbestos mine areas as closed to motorized vehicle use. Access for mining operations would be granted under 43 CFR 3809 Plans of Operation (see Energy and Minerals).
- Post boundaries of asbestos mining areas as closed to OHV.
- Continue providing information on the asbestos hazard by distributing the CCMA map and other hand-out materials.
- Dust suppressant – Application will be evaluated for continued use on an annual or semi-annual basis using treatments described in Appendix V.

**ACEC-A6.** Restrict seasonal activities to minimize vehicle traffic, noise, etc. during sensitive periods such as denning, nesting, etc.

**ACEC-A7.** Provide formal programs to increase employee, including contactor, awareness of cultural resources and local wildlife concerns, emphasizing unique habitat features and values.

**ACEC-A8.** No surface occupancy (NSO) in occupied or critical habitat for special status species.

**ACEC-A9.** Adopt the Interim RNA Management Plan, as described in 2006 Record of Decision for the CCMA RMP Amendment and Route Designation (ROD).

- This plan outlines the prescriptions that will permit natural processes to continue without interference. It will also determine what characteristics of the habitat are important and what management response will be to changes in these characteristics, along with monitoring requirements, and specifying resource use limitations. It is important to avoid impacting these areas in ways which could adversely affect the natural, scenic, or ecological values for which the RNA was established.

#### 2.4.10.1.2 ACEC/RNA Management Actions Common to Alternatives B through G

**ACEC-BG1.** Maintain the area of serpentine soils high in asbestos fiber and the Clear Creek watershed as the Clear Creek Serpentine ACEC (30,000 acres). Maintain 4,147-acre designation of the San Benito Mountain Research Natural Area (RNA).

**ACEC-BG2.** Manage the Serpentine ACEC for public health and safety, special status species, and cultural, historic, and scenic values. Manage the San Benito Mountain RNA for its unique forest assemblage and the associated scientific research and educational values.

**ACEC-BG3.** Adopt the San Benito Mountain RNA Management Plan described in Appendix III.

**ACEC-BG4.** Develop stipulations for scientific research and collection in concert with individuals and institutions involved.

**ACEC-BG5.** Establish appropriate guidelines that protect special status species habitat from surface disturbing activities.

### 2.4.10.2 Wilderness

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

The goal for managing Wilderness Areas and Wilderness Study Areas (WSAs) is to manage the areas consistent with the Wilderness Act of 1964 as applicable. More specific management direction can be found in 3 CFR 6300. BLM is required to manage WSAs consistent with Section 603 of the FLPMA and the Interim Management Policy for Lands Under Wilderness Review (H-8550-1) until Congress designates the areas as wilderness or releases them from the Section 603 FLPMA provision. If the areas are released, they would be managed consistent with the provisions within the RMP.

To achieve this goal, the following objectives are established:

- Manage designated wilderness to allow for differing levels of resource use.
- Accomplish necessary projects and activities occurring in wilderness with the minimum tool or requirement needed to achieve a desired result. The chosen tool, equipment, or structure would be the one that least degrades wilderness values temporarily or permanently.
- Manage livestock grazing in wilderness under the stipulations of the Congressional Grazing Guidelines (HR 101-405 Appendix A).
- Manage existing WSAs in conformance with the Interim Management Policy for Lands Under Wilderness Review.

#### 2.4.10.2.1 Management Actions Common to All Alternatives (A-G)

**WILD-AG1**. Manage all designated wilderness consistent with the Wilderness Act of 1964 and Public Law 107-370-(2)(2). Manage WSAs under the Interim Management Policy (H-8550-1) until Congress designates wilderness areas or until non-suitable WSAs are released.

**WILD-AG2.** Manage the 1,500-acre San Benito Mountain WSA consistent with the goals and objectives and the resource management actions for the Serpentine ACEC and the San Benito Mountain RNA described in this RMP/EIS, if the area is released from WSA status by Congress.

**WILD-AG3.** Conduct necessary maintenance of routes through the area to enhance overall wilderness quality by minimizing route-related impacts to the sensitive resources inside the SBMRNA/WSA. Areas along the roadways near the WSA will be rehabilitated using the best management practices outlined in Appendix V.

#### 2.4.10.3 Wild and Scenic Rivers

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

Pursuant to *BLM Manual 8351 – Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation and Management*, the BLM evaluates identified river segments for their eligibility and suitability for Wild and Scenic River designation through its RMP process. The criteria and information upon which WSR river eligibility and suitability determinations are based are included in Appendix VI. Only Congress can designate Wild and Scenic Rivers to be included in the National Wild and Scenic River System (NWSRS).

##### 2.4.10.3.1 Management Actions Common to All Alternatives (A-G)

**WSR-AG1**. None of the river and stream segments on BLM public lands in CCMA were determined to be eligible and suitable for inclusion in the Wild and Scenic River System. Therefore, BLM recommends that none of the rivers and streams identified in Appendix VI be included in the NWSRS.

### 2.4.11 Livestock Grazing

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.11.1 Goals and Objectives

The goals for livestock grazing management are to (1) provide for a sustainable level of livestock grazing consistent with other resource objectives, (2) identify lands and forage available for livestock grazing, and (3) achieve the standards and implement guidelines for rangeland health as outlined in the 2000 Central California Standards and Guidelines for Livestock Grazing (hereafter referred to as the Standards and Guidelines).

#### 2.4.11.2 Management Actions Common to Alternatives A through E

**RANG-AE1.** Make public acres and animal unit months (AUMs) available for livestock grazing as summarized in Table 2.4-7.

**RANG-AE2.** Ensure that levels and duration of rest or deferment after a wildfire are consistent with site characteristics, ecological site descriptions, land management objectives, short-term emergency stabilization, and rehabilitation objectives such as rehabilitating the desired plant community.

**RANG-AE3.** In order to meet physiological requirements of key plant species or to meet other resource objectives, control the intensity, duration, and timing of grazing and/or provide for periodic deferment and/or rest where livestock grazing is limiting the achievement of multiple use objectives.

**RANG-AE4.** Conduct interdisciplinary rangeland health assessments on all grazing allotments to evaluate conformance with the Standards and Guidelines.

**RANG-AE5.** If new information demonstrates that livestock grazing within a particular allotment is not compatible with conservation or preservation of endangered, threatened, candidate, or special status species, these lands would become unavailable for livestock grazing.

**RANG-AE6.** When evaluation of rangeland health assessments determines that exclusion of livestock grazing is necessary to meet the resource objectives (i.e., cultural or historical resources protection, geologically unstable area protection, sensitive plant or animal areas, intensive recreational use areas, etc.), these lands would become unavailable for livestock grazing.

**RANG-AE7.** Where possible, fence spring developments to prevent trampling by livestock.

**RANG-AE8.** Cancel forage allocations on grazing allotments and make lands unavailable if lands are disposed of through exchange or sale or are devoted to another purpose.

**RANG-AE9.** Allow prescribed burning for rangeland improvement to prevent vegetative conversion (i.e., chaparral or juniper encroachment into annual grasslands or oak savannahs).

**RANG-AE10.** Develop allotment management plans to bring allotments not meeting the Standards and Guidelines due to livestock grazing into compliance.

**RANG-AE11.** Allow grazing on newly acquired land inside of allotments not in compliance with the Standards and Guidelines where livestock is not the cause.

**RANG-AE12.** Allow grazing on allotments not in compliance with the Standards and Guidelines where livestock grazing is determined as not being the cause of noncompliance.

#### 2.4.11.3 Management Actions for Alternative F

**RANG-F1.** Same as RANG-AF2 through RANG-AF12 and modify existing lease boundaries to exclude grazing in the Serpentine ACEC. Make public acres and animal unit months (AUMs) available for livestock grazing as summarized in Table 2.4-8

#### 2.4.11.4 Management Actions for Alternative G

**RANG-G1.** Modify existing leases and allotment boundaries to exclude grazing on all BLM-administered lands in CCMA.

## Table 2.4-7 Livestock Grazing Summary for Alternatives A - E

| Allotment Number | Allotment Name | Mgmt Zone [5] | Public Acres | Public AUMs [1] | Livestock Class [2] | Period Begin Date | Period End Date |
|---|---|---|---|---|---|---|---|
| 4301 | Akers [4] | SBR | 368 | 69 | C | 1-Mar | 28-Feb |
| 4308 | Birdwell, Perry W [4] | S, CON | 1,389 | 72 | C | 1-Mar | 28-Feb |
| | **Birdwell Addition**[3,4] | | 447 | 5 | | | |
| 4319 | Lewis Flat [4] | SBR | 190 | 19 | C | 1-Mar | 28-Feb |
| 4352 | Willow Spring | SBR | 940 | 80 | C | 1-Mar | 28-Feb |
| 4359 | Quarter Circle A-1 [3] | S, CON | 3,348 | 155 | C | 1-Mar | 28-Feb |
| 4374 | Joaquin Rocks [4] | CON | 3,568 | 275 | C | 1-Mar | 28-Feb |
| | **Joaquin Rocks Addition** | | **3,619** | **210** | | | |
| 4379 | Upper Los Gatos Crk. [3] | S, CON | 4,317 | 1,036 | Y | 1-Jan | 31-May |
| 4398 | Adobe [4] | CAN | 2,124 | 162 | C | 1-Mar | 28-Feb |
| 4401 | Williamson | CON | 1,920 | 126 | C | 15-Feb | 15-Aug |
| 4409 | Bar B Ranch | T | 1,957 | 129 | Y | 1-Mar | 28-Feb |
| 4410 | Hernandez Ranch [3] | S, T | 2,823 | 159 | Y | 1-Mar | 28-Feb |
| 4411 | Ashurst Ranch [3,4] | S, T | 12,246 | 2,104 | Y | 1-Dec | 30-Apr |
| | **Ashurst Ranch Addition** | | **160** | **0** | | | |
| 4414 | Diamond A [4] | CAN | 7,254 | 1,804 | Y | 1-Dec | 30-Apr |
| | **Diamond A Addition** | | **10,523** | **1,110** | | | |
| 4418 | Goat Mountain [3,4] | S, SBR | 440 | 32 | C | 1-Mar | 28-Feb |
| **14** | **TOTALS** | | **57,633** | **7,547** | | | |

[1] AUM (Animal Unit Month) = one cow + one calf.
[2] Livestock Class: C = cattle, Y = yearling.
[3] Includes public lands within HAA.
[4] Includes public lands outside of CCMA.
[5] Management Zone: S = Clear Creek Serpentine ACEC, T = Tucker, CON = Condon, CAN = Cantua, SBR = San Benito River.

**Table 2.4-8 Livestock Grazing Summary for Alternative F**

| Allotment Number | Allotment Name | Mgt Zone [5] | Public Acres | Public AUMs [1] | Livestock Class [2] | Period Begin Date | Period End Date |
|---|---|---|---|---|---|---|---|
| 4301 | Akers [4] | SBR | 368 | 69 | C | 1-Mar | 28-Feb |
| 4308 | Birdwell, Perry W [3,4] | S, CON | 1,389 | 72 | C | 1-Mar | 28-Feb |
| | **Birdwell Addition [4]** | | **432** | **5** | | | |
| 4319 | Lewis Flat [4] | SBR | 190 | 19 | C | 1-Mar | 28-Feb |
| 4352 | Willow Spring | SBR | 940 | 80 | C | 1-Mar | 28-Feb |
| 4359 | Quarter Circle A-1 [3] | S, CON | 3,329 | 155 | C | 1-Mar | 28-Feb |
| 4374 | Joaquin Rocks [4] | CON | 3,568 | 275 | C | 1-Mar | 28-Feb |
| | **Joaquin Rocks Addition [4]** | | **3,619** | **210** | | | |
| 4379 | Upper Los Gatos Crk. [3] | S, CON | 4,183 | 1,019 | Y | 1-Jan | 31-May |
| 4398 | Adobe [4] | CAN | 2,124 | 162 | C | 1-Mar | 28-Feb |
| 4401 | Williamson | CON | 1,920 | 126 | C | 15-Feb | 15-Aug |
| 4409 | Bar B Ranch | T | 1,957 | 129 | Y | 1-Mar | 28-Feb |
| 4410 | Hernandez Ranch [3] | S, T | 2,470 | 145 | Y | 1-Mar | 28-Feb |
| 4411 | Ashurst Ranch [3,4] | S, T | 11,135 | 2,078 | Y | 1-Dec | 30-Apr |
| | **Ashurst Ranch Addition** | | **160** | **0** | | | |
| 4414 | Diamond A [4] | CAN | 7,254 | 1,804 | Y | 1-Dec | 30-Apr |
| | **Diamond A Addition [4]** | | **10,523** | **1,110** | | | |
| 4418 | Goat Mountain [3,4] | S, SBR | 87 | 7 | C | 1-Mar | 28-Feb |
| **14** | **TOTALS** | | **55,647** | **7,465** | | | |

[1] AUM (Animal Unit Month) = one cow + one calf.
[2] Livestock Class: C = cattle, Y = yearling.
[3] Includes public lands within HAA.
[4] Includes public lands outside of CCMA.
[5] Management Zone: S = Clear Creek Serpentine ACEC, T = Tucker, CON = Condon, CAN = Cantua, SBR = San Benito River.

## 2.4.12 Energy and Minerals

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

### 2.4.12.1 Goals and Objectives

The goal for energy and mineral resource management is to allow development of energy and mineral resources to meet the demand for energy and mineral production while protecting natural and cultural resources in the area.

To achieve this goal, the following objectives are established:

- Balance responsible mineral resource development with the protection of other resource values.
- Provide opportunities for mineral exploration and development under the mining and mineral leasing laws.
- Provide mineral materials needed for community and economic purposes.

### 2.4.12.2 No Action Alternative (Current Management Actions)

**ENERG-A1.** Consider minerals exploration, development, and production within environmental and multiple-use management constraints. Withdrawals would be initiated to affect locatable mineral segregations on specified lands.

**ENERG-A2.** Seek a protective withdrawal for Clear Creek Canyon (1,031 acres) and the San Benito Mountain RNA (4,147 acres) from locatable mineral entry.

**ENERG-A3.** Consider mineral and geothermal exploration and development in other CCMA locations on a case-by-case basis.

**ENERG-A4.** Allow oil and gas exploration and development within environmental constraints to protect special status species and paleontological resources.

**ENERG-A5.** Make public lands available for orderly and efficient development of mineral and energy resources under principles of balanced multiple-use management.

### 2.4.12.3 Management Actions Common to Alternatives B and C

**ENERG-BC1.** Close WSAs and Wilderness Areas to mineral leasing and sales and to locatable mineral activities that require reclamation or degrade wilderness values

**ENERG-BC2.** Make WSAs and Wilderness Areas exclusion areas for wind energy development. Make all other areas available for wind energy development consideration, subject to the BMPs outlined in Appendix VII.

**ENERG-BC3.** Require No Surface Occupancy stipulations on all recreation and public purposes (R&PP) lease areas.

**ENERG-BC4.** Make available all remaining BLM public lands for energy and mineral development, unless withdrawn or otherwise noted.

**ENERG-BC5.** Consider energy and minerals exploration, development, and production within environmental and multiple-use management constraints.

### 2.4.12.4 Management Actions Common to Alternatives D, E, and F

**ENERG-DEF1.** Allow no mineral leasing or sales on public lands in the Serpentine ACEC. Withdraw the entire 30,000-acre ACEC from locatable mineral entry.

**ENERG-DEF2.** Allow mineral leasing or sales on public lands outside the ACEC, and stipulate that "No Surface Occupancy" is allowed on oil and gas leases on all BLM lands with occupied special status species habitat.

**ENERG-DEF3.** Make the Serpentine ACEC an exclusion area for renewable energy development. Make all other Zones available for wind energy development consideration, subject to the BMPs outlined in Appendix VII.

### 2.4.12.5 Management Actions for Alternative G

**ENERG-G1.** Prohibit mineral leasing or sales, and pursue mineral withdrawal on all BLM-administered lands and split-estate throughout the entire CCMA (66,500 acres).

**ENERG-G2.** CCMA would be an exclusion area for renewable energy development.

Table 2.4-10 summarizes the acres of land available/unavailable for leasable mineral entry and open/closed for salable mineral entry for each alternative. It also identifies acres of land open or closed to locatable mineral entry (i.e. 1,500-acre San Benito Mountain WSA).

**Table 2.4-10 Summary of Energy and Mineral Development by Alternative (Acres)**

| Type of Entry | Status | Alternative A | Alternatives B & C | Alternatives D,E,F | Alternative G |
|---|---|---|---|---|---|
| Leasable | Available | 61,400 | 65,000 | 36,500 | 0 |
| | Unavailable | 5,100 | 1,500 | 30,000 | 66,500 |
| Salable | Available | 65,000 | 65,000 | 36,500 | 0 |
| | Unavailable | 1,500 | 1,500 | 30,000 | 66,500 |
| Locatable | Open | 36,500 | 65,000 | 36,500 | 0 |
| | Closed | 5,100 | 1,500 | 30,000 | 66,500 |
| Renewable | Available | 65,000 | 65,000 | 36,500 | 0 |
| | Unavailable | 1,500 | 1,500 | 30,000 | 66,500 |

Note: Calculations based on 63,000 acres of BLM-managed lands, plus 3,500 acres of "split-estate".

## 2.4.13 Cultural Resources

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

### 2.4.13.1 Goals and Objectives

According to BLM policy (DM 8130.23), all RMPs will include the following two primary goals for cultural resources management:

- Preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations (per FLPMA Sec. 103(c), 201(a), 202(c); NHPA Sec. 110(a); ARPA Sec. 14(a)).

- Seek to reduce imminent threats and resolve potential conflicts on cultural resources, from natural or human-caused deterioration, or from other resource uses (per FLPMA Sec 103(c), NHPA Sec. 106; 110(a)(2)).

Cultural resources management by the BLM is viewed as an integrated system of identifying and evaluating cultural resources, deciding on their appropriate use(s), and administering them according to cultural resource law and policy. The primary objectives for this integrated management system are:

- Respond in a legally sufficient and professional manner concerning historic preservation and cultural resource protection;

- Recognize the potential public and scientific uses of cultural resources on the public lands, and manage the lands and cultural resources so that these uses and values are not diminished but rather are maintained and enhanced.

- Ensure that proposed land uses, initiated or authorized by BLM, avoid inadvertent damage to Federal and non-Federal cultural resources.

To achieve the primary goals and objectives for cultural resources management by the BLM, the following methods are applicable:

- Protect "at-risk" archeological or other cultural resources, including prehistoric and historic sites, using the BMPs available with physical ("on-the-ground") and/or administrative methods to achieve improved site stabilization, protection, or health;

- Utilize a variety of heritage education programs that promote the public stewardship of cultural resources, including but not limited to conventional outreach efforts, and participate in the following programs:

    - *California Archaeological Site Stewardship Program* (CASSP) and the *California Indian Site Stewardship* program, which provide training for volunteer site stewards for site monitoring, protection, and enhancement);

- *Cooperative Stewardship*, which involves the BLM and the California Office of Historic Preservation (OHP) in interpretive outreach efforts with involvement from tribes and educational institutions;

- *Professional and Avocational Societies*, in which the BLM attends meetings and conferences to enhance public outreach, education goals, and increase awareness of BLM's cultural resource management programs and to support avocational societies to advance cooperative efforts in public outreach and education; and

- *Archeological and Cultural Awareness Program* (ACAP), wherein BLM partners with tribes and other Federal and State agencies to conduct evaluations and enhancement projects using volunteers.

- Evaluate and manage all cultural resource properties appropriately using the Use Allocation and Desired Outcome management criteria for cultural resources in Table 2.4-11:

**Table 2.4-11 Cultural Resource Use Allocations and Desired Outcomes**

| Use Allocation | Desired Outcome |
|---|---|
| Scientific use | Preserved until research potential is realized |
| Conservation for future use | Preserved until conditions for use are met |
| Traditional use | Long-term preservation |
| Public use | Long-term preservation, on-site interpretation |
| Experimental use | Protected until used |
| Discharged from management | No use after recordation; not preserved |

### 2.4.13.2 No Action Alternative (Current Management Actions)

**CULT-A1.** Protect cultural resources (ex. archeological sites) as needed through the use of road closures, fences, barriers, or other management strategies.

**CULT-A2.** Conduct data retrieval (excavations) at specific archeological sites as needed to mitigate unauthorized excavation/vandalism.

**CULT-A3.** Work with research institutions to the extent possible for improved cultural resources management, including data retrieval.

**CULT-A4.** Before implementation of surface-disturbing projects, including range developments and vegetation manipulations, evaluate cultural resource potential and avoid adverse impacts to National Register-eligible sites when feasible.

**CULT-A5.** Protect archeological sites in the White Creek Archeological District by maintaining the closed route designation for White Creek Road.

**CULT-A6.** Initiate data retrieval at archeological site CA-Fre-1340 per the 1986 Clear Creek Management Plan and Decision Record; working with research institutions to the extent possible.

**CULT-A7.** Ensure access for Native American traditional uses.

**CULT-A8.** Maintain the archeological site monitoring program for cultural resources "at-risk."

#### 2.4.13.3 Management Actions Common to Alternatives B, C, and D

**CULT-BCD1.** Increase physical protection for archeological sites and other cultural resources with the BMPs available.

**CULT-BCD2.** Increase scope of archeological site monitoring program with volunteers and Law Enforcement Officers and Park Ranger patrols at archeological sites or other cultural resources as needed; monitor all known prehistoric archeological sites, historic site areas, and potential Native American traditional use areas for impacts.

#### 2.4.13.4 Management Actions for Common to Alternatives E, F, and G

**CULT-EFG1.** Promote research opportunities with academic, professional, and avocational institutions for anthropological, archeological, ethnographic, or historic use studies to improve local and regional cultural resources management.

**CULT-EFG2.** Maintain access and promote traditional uses of the CCMA by the Native American and California Indian community; work in coordination with tribal communities, groups, and individuals to address issues.

### 2.4.14 Paleontological Resources

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.14.1 Goals and Objectives

The goal for paleontological resources are to (1) preserve, protect and manage vertebrate, noteworthy invertebrate, and plant paleontological resources in accordance with existing laws and regulations for current and future generations; (2) facilitate the appropriate scientific, educational, and recreational uses of paleontological resources such as research and interpretation; (3) accommodate permit requests for scientific research by qualified individuals or institutions; (4) ensure proposed land uses do not destroy or damage paleontological resources.

To achieve these goals, the following objectives are established:

- Locate, evaluate, manage and protect, where appropriate, paleontological resources on the public lands;
- Facilitate the appropriate scientific, educational, and recreational uses of paleontological resources, such as research and interpretation;
- Using predictive modeling, identify significant localities that may be in conflict with other resource uses;
- Ensure that proposed land uses, initiated or authorized by BLM, do not inadvertently damage or destroy important paleontological resources on public lands;
- Foster public awareness and appreciation of paleontological resources through educational outreach programs.

#### 2.4.14.2 No Action Alternative (Current Management Actions)

**PALE-A1.** Evaluate surface-disturbing activities such as road construction, ground leveling, mining, or oil and gas exploration and development for potential adverse impacts to fossil resources; evaluate each surface-disturbing action on a case-by-case basis for applicability of protective measures.

**PALE-A2.** Maintain a 100-foot buffer around significant paleontological localities for project related activities.

**PALE-A3.** Install temporary fences along margins of developments to eliminate off-site vehicle impacts to undisturbed areas.

**PALE-A4.** Relocate proposed development to avoid impacts on significant paleontological localities.

**PALE-A5.** Require contract studies if significant paleontological localities cannot be avoided.

**PALE-A6.** If natural erosion threatens the integrity of significant fossil resources, stabilize and rehabilitate these resources if feasible.

#### 2.4.14.3 Management Actions Common to Alternatives B, C, and D

**PALE-BCD1.** Establish a 200-foot buffer for project actions around all paleontological sites and localities.

#### 2.4.14.4 Management Actions Common to Alternatives E, F, and G

**PALE-EFG1.** Establish a 300-foot buffer for project actions around all paleontological sites and localities.

### 2.4.15 Social and Economic Conditions

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.15.1 Goals and Objectives

The goal for social and economic conditions is to manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.

To achieve this goal, the following objectives are established:

- Work cooperatively with private and community groups and local tribal governments to provide for customary uses consistent with other resource objectives and to sustain or improve local economies.
- Maintain and promote the cultural, economic, ecological, and social health of communities associated with BLM public lands.

#### 2.4.15.2 No Action Alternative (Current Management Actions)

**SOCEC-A1.** Protect and conserve natural values while allowing for tourism and commodity use of natural resources.

**SOCEC-A2.** Enhance commodity production consistent with resource management goals and objectives.

#### 2.4.15.3 Management Actions Common to Alternatives B and C

**SOCEC-BC1.** Through cooperative and collaborative processes, make contracts and cooperative agreements for services and products available locally when need and conditions permit.

**SOCEC-BC2.** Manage natural resources on public lands to enhance tourism, maximize production, and attract industry.

**SOCEC-BC3.** Advertise existing commodities available for extraction or use. Target services and products for competitive contracting to local firms/individuals where legally permitted.

**SOCEC-BC4.** Provide for commodity production to the maximum extent allowable under environmental restrictions.

#### 2.4.15.4 Management Actions Common to Alternatives D, E, F, and G

**SOCEC-DG1.** Work collaboratively with local populations to emphasize a high level of natural resource protection, which contributes to tourism and attracts sustainable commodities industries.

**SOCEC-DG2.** Enhance public land resources to provide for sustainable tourism, production, and industry.

**SOCEC-DG3.** Emphasize sustainable economic operations while protecting the ecological, social, and cultural integrity of BLM public lands.

### 2.4.16 Visual Resources Management

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.16.1 Goals and Objectives

The goal for visual resource management is to manage public land actions and activities in a manner consistent with visual resource management (VRM) class objectives.

To achieve this goal, the following objective is established:

1) Protect, maintain, improve, or restore visual resource values by managing all public lands in accordance with the VRM system.

#### 2.4.16.2 No Action Alternative (Current Management Actions)

**VIS-A1.** VRM Class IV standards apply to the entire CCMA unless otherwise stated.

**VIS-A2.** Actions in the San Benito Mountain WSA and RNA must meet VRM Class I standards.

**VIS-A3.** Actions in the Condon Zone must meet VRM Class III standards.

**VIS-A4.** Limit bulldozer use on wildfires and prescribed burns when/where possible.

#### 2.4.16.3 Management Actions Common to Alternatives B and C

**VIS-BC1.** Manage all acquired lands consistent with the VRM classifications on adjacent public lands.

**VIS-BC2.** In the event that a river or stream is designated a Wild and Scenic River (WSR) by Congress, the WSR would be managed as VRM Class I.

#### 2.4.16.4 Management Actions under Alternative D

**VIS-D1.** Actions in the Condon Zone must meet VRM Class IV standards.

#### 2.4.16.5 Management Actions Common to Alternatives E, F, and G

**VIS-EFG1.** Actions in the Serpentine ACEC must meet VRM Class II standards.

### 2.4.17 Fire Management

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

#### 2.4.17.1 Goals and Objectives

The goals for fire management are to (1) establish a fire management program that is cost-efficient and commensurate with threats to life, property, public safety, and resources, (2) use fire to restore and/or sustain ecosystem health, (3) cooperate with communities at risk within the wildland-urban interface to develop plans for risk reduction, (4) cooperate with regional partners in fire and resource management across agency boundaries, and (5) reduce man-made fires, with a special emphasis on reductions in developed areas such as communities, campgrounds, and transportation corridors.

To achieve the goal for fire management, the following objectives are established:

A. Wildfire Suppression

– Provide for firefighter and public safety in all fire-management activities.

– Provide an appropriate management response for all wildland fires, emphasizing firefighter and public safety. Areas of Critical Environmental Concern, Special Recreation Management Areas (SRMAs), Wilderness Areas, Wilderness Study Areas (WSAs), Wild and Scenic River

(WSR) corridors (study and designated), and certain other public lands will require modified suppression techniques to protect the known values. Modified suppression techniques will be identified in the Hollister Fire Management Plan (FMP).

- Limit the intensity of fire suppression efforts to the most economical response consistent with the human and resource values that are at risk.
- Protect sensitive cultural and paleontological resource sites from damage by fire and/or fire suppression actions.

B. Fuels Management

- Reduce the risk of fire in wildland-urban interface communities.
- Reduce the risk of catastrophic wildfire through fuels management.
- Promote greater diversity within plant communities of the HFO with the use of fire.
- Use fire as natural land management tool for the control and eradication of noxious weeds.
- Use fire as a management tool to improve the ecological condition of the area within HFO jurisdiction.
- Use prescribed burning to reduce the fuel hazard in the chaparral community and for wildlife habitat improvement and increased local water yield and watershed enhancement.

C. Fire Rehabilitation, Stabilization, and Restoration

- Rehabilitate burned areas to mitigate adverse effects of fire on soils, water, and cultural resources and vegetation.

D. Prevention, Risk Mitigation, and Education

- Increase the public's knowledge of fire's natural role in the ecosystem and the hazards and risks associated with living in the wildland-urban interface.
- Educate the public on fire safety and prevention measures.
- Work with the California Department of Forestry and Fire Protection (CDF) to suppress all wildfires involving less than 10 acres 90 percent of the time.

#### 2.4.17.2 No Action Alternative (Current Management Actions)

**FIRE-A1.** Conduct prescribed burns to provide mosaic patterns of vegetation to protect soil, watershed, and wildlife.

**FIRE-A2.** Conduct range-improvement burning on a 10- to 20-year rotation and fuels reduction burns on a 20- to 30-year rotation. For wildfire burns, ideally 5 to 7 percent of an area (45 acres per square mile) is burned annually over a 10-year rotation period. However, weather, funding, and scheduling may dictate a 20- to 30 percent burn every three to five years.

**FIRE-A3.** Maintain consistency with State fire and air pollution laws via DOI regulations and BLM policy. Acceptable burn days are determined in coordination with State and local agencies.

**FIRE-A4.** Do not allow increases in livestock use in areas where burning for wildlife habitat improvement is the primary objective.

**FIRE-A5.** Keep prescribed burning during the spring season (April through June) to a minimum.

**FIRE-A6.** Use prescribed fire for abatement of yellow starthistle (YST) and medusahead grass annually, beginning in June (pending air quality issues and burn plan approval).

**FIRE-A7.** Brush crushing, "high-blading", and/or fireline construction (mechanical pre-burn site preparation) will be performed when soil and fuel moisture levels are low enough to prevent undue surface (soil) disturbance and to maximize pretreatment objectives.

**FIRE-A8.** Prescribe burn approximately 21000 acres of chaparral for fuel hazard reduction [in the Tucker Management Zone], as identified in the San Benito County Burn Plan.

**FIRE-A9.** Participate in the San Benito County Fire Safe Council to address fire management needs in the area. Promote prescribed fire to enhance long-term watershed stability.

**FIRE-A10.** In accordance with the BLM "10-Year Prescribed Burn Plan for Fresno and Monterey Counties" (1984), 100 acres within the WSA would be burned every two years until the entire area was burned in mosaics on about a 15-year cycle.

**FIRE-A11.** Prescribe burn to approximately 14000 acres for fuel hazard reduction (in the Condon Management Zone), as outlined in the San Benito and Fresno/Monterey County Burn Plans.

**FIRE-A12.** Allow the use of fire (action modification and/or prescribed burn) in the SBMRNA to promote natural conditions. The use of prescribed burning will be contingent on the strict control of motorized access and in consultation with qualified botanists.

**FIRE-A13.** Areas burned by wildfire in the RNA will not be reseeded in order to protect endangered plant species from introduced competition.

**FIRE-A14.** Continue and/or implement a rotational program of prescribed burning in the Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and Goat Mountain areas. Burn approximately seven percent per year (average) in scattered spots and patches.

**FIRE-A15.** Where possible, limit the use of heavy equipment (dozers) in sensitive areas.

**FIRE-A16.** Implement a modified fire suppression agreement with CDF for the San Benito Mountain Natural Area.

#### 2.4.17.3 Management Actions Common to Alternatives B through G

**FIRE-BG1.** Develop and maintain the Hollister Fire Management Plan.

**FIRE-BG2.** Identify appropriate management response goals, objectives, and constraints by specific Fire Management Units (FMUs) in the Hollister Fire Management Plan (Ref. Fire Map in Appendix I).

**FIRE-BG3.** Employ fire prevention strategies that reduce man-made fires, with special emphasis on developed areas such as communities, campgrounds, and transportation corridors.

**FIRE-BG4.** Develop fuels projects to mimic fire's natural role to enhance resource values.

**FIRE-BG5.** Coordinate with the California Department of Forestry and Fire Protection (CDF) or cooperator fire protection entities to develop appropriate management response actions, as documented in the annual operating plan, for wildland fires on or threatening BLM lands. Primary consideration and operational emphasis are placed on firefighter and public safety, minimizing the loss of life and damage to private property, minimizing environmental damage due to suppression efforts, and considering resource values and high value habitat at risk from unwanted wildfire.

**FIRE-BG6.** Identify high priority wildfire risk areas (e.g., wildland-urban interface, critical habitats and cultural areas). The Hollister Fire Management Plan (FMP) displays the list of values at risk and the communities at risk within each FMU. (These lists may change as communities are removed or added each year).

**FIRE-BG7.** Work collaboratively with Federal, State, Fire Safe Councils, and local partners to develop cross boundary fire management strategies and prioritize cross agency fire management actions.

**FIRE-BG8.** Work collaboratively with communities at risk within the wildland-urban interface to develop plans for risk reduction.

**FIRE-BG9.** Work collaboratively with managing partners to design and implement prescribed fire and fuels management projects across agency boundaries where this interaction would improve the overall success of the project.

**FIRE-BG10.** Limit the use of fire retardant drops to prevent damage to rock art sites and vernal pools and associated aquatic species. Keep retardant away from rock outcrops and waterways.

**FIRE-BG11.** Establish a fire effects monitoring system that inventories pre-burn species composition and resulting post-fire response, over time.

**FIRE-BG12.** Monitor fire/fuels treatment effects and adjust the Hollister FMP as needed.

**FIRE-BG13.** Implement a chaparral management program within the CCMA to use fire to improve wildlife habitat.

**FIRE-BG14.** Protect the primitive nature of public lands within the San Benito Mountain WSA from any action affecting the overall "naturalness" of the area.

**FIRE-BG15.** Prohibit the use of heavy mechanical equipment within the San Benito Mountain WSA. This restriction may be lifted by the Field Manager to protect human life, private property, structures, visitor safety, or sensitive or valuable resources.

**FIRE-BG16.** Develop local or regional "Normal Fire Year Rehabilitation Plans."

**FIRE-BG17.** Promote the use of native species in reseedings.

**FIRE-BG18.** Monitor rehabilitation efforts to facilitate future planning and implementation.

### 2.4.17.4 Target Acres for Fire Management in Alternatives A thru G

Management actions for prescribed fire and mechanical treatment activities on BLM-administered lands in the CCMA under Alternatives A (No Action) through Alternative G are summarized in Tables 2.4.17-1, 2.4.17-2 and 2.4.17-3. Management actions pertain to prescribed fire and treatment activities on BLM-administered lands in the CCMA.

**Table 2.4.17-1 Average Annual Prescribed Fire Target Acres**

| Geographic Area/ **Fire Management Unit (FMU)** | Prescribed Fire Strategies/Average Annual Acres | |
|---|---|---|
| | Alternative A - F | Alternative G |
| **Clear Creek Management Area** | | |
| San Benito Natural Area | 0 | 0 |
| Clear Creek Serpentine ACEC | 100 | 0 |
| Hernandez Valley | 125 | 125 |
| San Joaquin Valley South | 100 | 100 |
| San Joaquin South Continued | 1000 | 1000 |

**Table 2.4.17-2 Decadal Prescribed Fire Target Acres**

| Geographic Area/ **Fire Management Unit (FMU)** | Prescribed Fire Strategies/Decadal Acres | |
|---|---|---|
| | Alternative A - F | Alternative G |
| **Clear Creek Management Area** | | |
| San Benito Natural Area | 0 | 0 |
| Clear Creek Serpentine ACEC | 1000 | 0 |
| Hernandez Valley | 1,250 | 1,250 |
| San Joaquin Valley South | 1,000 | 1,000 |
| San Joaquin South Continued | 10,000 | 10,000 |

**Table 2.4.17-3 Decadal Mechanical Treatment Target Acres**

| Geographic Area/ **Fire Management Unit (FMU)** | **Mechanical Strategies/Decadal Acres** | |
|---|---|---|
| | Alternative A - F | Alternative G |
| **Clear Creek Management Area** | | |
| San Benito Natural Area | 0 | 0 |
| Clear Creek Serpentine ACEC | 1000 | 0 |
| Hernandez Valley | 125 | 125 |
| San Joaquin Valley South | 1,000 | 1,000 |
| San Joaquin South Continued | 10,000 | 10,000 |

## 2.4.18 Land and Realty

**Note: Using the menu approach, the Hollister Field Office has identified the resource management actions from among the range of alternatives for the Draft CCMA RMP/EIS that comprise BLM's Preferred Alternative in Sections 2.4.1 – 2.4.18 with a double-lined text box.**

### 2.4.18.1 Goals and Objectives

The goal for lands and realty management is to provide lands, interests in land, and authorizations for public and private uses while maintaining and improving resource values and public land administration.

To achieve this goal, the following objectives are established:

- Retain, consolidate, and/or acquire land or interest in land with high public resource values for effective administration and improvement of resource management;
- Make public land available for disposal that meets the disposal criteria contained in Section 203(a) of the FLPMA;
- Meet public, private, and Federal agency needs for realty-related land use authorizations and land withdrawals, including those authorizations necessary for wind, solar, biomass, and other forms of renewable energy development;
- Acquire legal public or administrative access to public land; and
- Eliminate unauthorized use of public lands.

### 2.4.18.2 Land Tenure Adjustments

#### 2.4.18.2.1 No Action Alternative (Current Management Actions)

**LTEN-A1.** All lands not identified for disposal are identified for retention to be considered on a case-by-case basis for exchange or disposal per the FLPMA. Lands identified for retention are considered as unsuitable for entry under any of the agricultural land laws because of significant multiple-use values.

**LTEN-A2.** Acquire private lands in Sections 16 and 36 (T 18 S., R 12 E.) and private inholdings through acquisition or land exchange. Acquisition of private inholdings has priority over acquisition of state owned sections.

**LTEN-A3.** Acquire, through exchange or purchase, state lands and private inholdings in the Byles Canyon/Tucker Mountain, San Carlos Bolsa, as well as the remainder of the management area.

**LTEN-A4.** Effect consolidation through exchange.

**LTEN-A5.** No lands would be made available for disposal that would compromise the management objectives for the management area.

**LTEN-A6.** Consolidate public land immediately north of Clear Creek area (Byles Canyon/Tucker Mountain area) and in the Laguna Mountain area.

**LTEN-A7.** Acquire or exchange lands in accordance with the FLPMA and other applicable Federal laws and regulations to ensure more efficient management of the public lands, to reduce conflicts with other public and private landowners, and to provide more consistency and logic in land use patterns within the Hollister Field Office.

**LTEN-A8.** The public lands identified for potential disposal are those that have been screened and considered for disposal to promote management efficiency. All public lands within the Planning Area can be disposed of if they meet the disposal criteria of FLPMA, other Federal laws and regulations, and would not jeopardize management objectives (i.e., disposal would have to be in conformance with the management objectives of the plan). Disposal proposals not in conformance would be subject to the amendment process.

#### 2.4.18.2.2 Management Actions Common to Alternatives B and C

**LTEN-BC1.** Public lands in the Tucker, Condon, and San Benito River Zones identified on Maps B and C in Appendix I would be available for disposal.

**LTEN-BC2.** Acquire or exchange lands in accordance with FLPMA and other applicable Federal laws and regulations to ensure more efficient management of the public lands, to reduce conflicts with other public and private landowners, and to provide more consistency and logic in land use patterns within the Hollister Resource Area.

**LTEN-BC3.** Acquire lands within special designation areas, including WSAs and ACECs.

#### 2.4.18.2.3 Management Actions Common to Alternatives D

**LTEN-D1.** Acquire lands from willing sellers in the Serpentine ACEC, Tucker Mountain area and south of CCMA to Coalinga-Los Gatos Road.

**LTEN-D2.** Public lands in the Tucker, Condon, and San Benito River zones would not be available for disposal.

**LTEN-D3.** Acquisition of private in-holdings with high value for multiple resources including important biological resources and recreational opportunities would be the highest priority

#### 2.4.18.2.4 Management Actions for Alternatives E, F, and G

**LTEN-EFG1.** Public lands in the Tucker, Condon, and San Benito River Zones identified on Maps E, F, and G in Appendix I would be available for disposal.

**LTEN-EFG2.** Acquisition of private in-holdings with high value for multiple resources including important biological resources and recreational opportunities would be the highest priority.

**LTEN-EFG3.** Consider minor boundary adjustments to facilitate management efficiency through sale, exchange, or patent (i.e., less than 50 acres).

**Table 2.4-13 Acres of public lands available for disposal under each alternative.**

| Management Unit | Alt. A | Alt. B | Alt. C | Alt. D | Alt. E | Alt. F | Alt. G |
|---|---|---|---|---|---|---|---|
| Tucker | -- | 2320 | 2320 | -- | 2320 | 2320 | 2320 |
| Condon | -- | 280 | 280 | -- | 280 | 280 | 280 |
| San Benito River | -- | 90 | 90 | -- | 90 | 90 | 90 |
| Total | 0 | 3,300 | 3,300 | 0 | 3,300 | 3,300 | 3,300 |

### 2.4.18.3 Land Use Authorizations

#### 2.4.18.3.1 No Action Alternative (Current Management Actions)

**LUSE-A1.** Maintain existing utility corridors and communication sites on San Benito Mountain, Santa Rita Peak, Spanish Lake, Sampson Peak, and Sampson Creek Ridge.

**LUSE-A2.** Designate existing utility routes as utility corridors.

**LUSE-A3.** Consider requests for rights-of-way or construction of utility sites and related facilities outside of designated or established corridors on a case-by-case basis.

**LUSE-A4**. Permit commercial filming on a case-by-case basis.

**LUSE-A5**. Allow communication sites on a case-by-case basis.

**LUSE-A6.** Lands identified for retention are considered as unsuitable for entry under any of the agricultural land laws because of significant multiple-use values.

**LUSE-A7**. Place special emphasis on resolution of unauthorized uses of public lands. Increase coordination with local, State, and other Federal law enforcement agencies.

**LUSE-A8.** Maintain consistency with County General Plans and zoning within Department regulations and Bureau policy.

**LUSE-A9.** Issue apiary permits on a case-by-case basis.

#### 2.4.18.3.2 Management Actions Common to Alternatives B, C, D, E, and F

**LUSE-BF1.** Lands identified for retention are considered unsuitable for entry under any of the agricultural land laws because of significant multiple-use values.

**LUSE-BF2.** Place special emphasis on resolution of unauthorized uses of public lands. Increase coordination with local, State and other Federal law enforcement agencies.

**LUSE-BF3**. Maintain consistency with County General Plans and zoning within Department regulations and Bureau policy.

**LUSE-BF4.** Permit commercial filming on a case-by-case basis.

**LUSE-BF5.** Issue apiary permits on a case-by-case basis.

**LUSE-BF6.** Honor valid existing rights and easements that have been acquired through land acquisitions. Enter rights-of-way into LR2000 to ensure proper recording.

**LUSE-BF7.** Construction of new communication sites in the ACEC will only be authorized at sites with existing facilities.

**LUSE-BF8.** Authorize rights-of-way to provide reasonable access for private landowners in CCMA.

**LUSE-BF9.** Construction within the ACEC would be completed based occupational health and safety requirements.

#### 2.4.18.3.3 Management Actions for Alternative G

**LUSE-G1.** Stipulate health and safety mitigation measures for existing communication sites and rights-of-way authorizations in the Serpentine ACEC.

**LUSE-G2.** Prohibit new rights-of-way and/or communication sites and related facilities in the Serpentine ACEC.

## 2.5 BLM's Preferred Alternative

The CCMA RMP/EIS range of alternatives considers allowable uses, resources protection measures, and management tools that would protect human health and safety, natural and cultural resources, and the CCMA's unique recreation opportunities, which were overwhelmingly identified as a priority in the public scoping process. In accordance with the National Environmental Policy Act (NEPA), alternatives must: meet the purpose and need, as identified in Chapter 1; be viable and reasonable; provide a mix of resource protection, management use, and development; be responsive to issues identified in scoping; and meet the established planning criteria (also identified in Chapter 1), federal laws and regulations, and BLM planning policy.

Due to the purpose and need for the CCMA RMP/EIS, the range of alternatives for motorized access and recreation considers seven different scenarios for allowable uses within CCMA; whereas, the range of alternatives for resources management fall within a relatively narrow range of management approaches, with subtle differences in the goals and actions they propose for maintaining the CCMA's unique landscape, while accommodating compatible uses. Alternative A is a continuation of current management as the "no action" alternative, and was developed from available inventory data, existing planning decisions and policies, and existing land use allocations and programs. Alternatives B through G were developed with input from public scoping and collaborative work among the BLM and other Federal, State, and local governments to represent a range of approaches to balance use and protection of CCMA resources and public health and safety.

In determining the appropriate land use for CCMA, BLM considered the planning criteria identified in Section 1.4 with an emphasis on managing risk to employees and the public. The Preferred Alternative would limit use that 1) creates high levels of asbestos emissions, 2) creates increased opportunity for human exposure to asbestos, and 3) creates a need to conduct intensive management in areas with high concentrations of asbestos.

Of the action alternatives, Alternative E represents the BLM's preferred management approach to recreation and travel management in CCMA that meets the purpose and need for this RMP/EIS by emphasizing limited opportunities for visitor use and limited types of use allowed within the Serpentine ACEC. It proposes to provide alternate routes for access to public lands surrounding the ACEC that would not require the public to drive through the ACEC and would create additional recreation opportunities in the surrounding management zones. The limited annual visitor use days would still allow for the public to experience the scenic, biological, cultural and geologic features of the Serpentine ACEC within EPA's acceptable risk range for exposure to asbestos, and with less BLM infrastructure and support needs. This alternative would also provide for improving habitat for endangered species, improved riparian habitat, and an opportunity to reduce soil loss and erosion in areas that are contributing to water quality issues in Clear Creek and the San Benito River.

**The following land use decisions and management actions were selected from the range of alternatives for the CCMA Draft RMP/EIS and represent BLM's Preferred Alternative:**

**RECREATION**

**REC-USE-A1.** Boundary posting and visitor use patrols will be initiated in recreation areas concurrent with access development or enhancement. BLM will cooperate with adjacent private landowners to the extent possible.

**REC-USE-A7.** Manage CCMA public lands as a Special Recreation Management Area (SRMA).

**REC-USE-B1.** Prohibit camping and staging for recreation in the Serpentine ACEC, except at Jade Mill Campground. Allow camping and staging for recreation on public lands outside the ACEC.

**REC-USE-B2.** Limit visitor use in the Serpentine ACEC to one half-hour before sunrise to one half-hour after sunset (i.e. day use only), except at Jade Mill Campground.

**REC-USE-B4.** Improve access and enhance facilities (i.e. trails, designated camp sites, staging areas) to support non-motorized recreation opportunities at destinations with unique biological, natural and geologic features within CCMA.

**REC-USE-E1.** Provide access on the Scenic Route along T153 and Spanish Lake Road (R11) in the Serpentine ACEC for day use by full-size vehicles only.

**REC-USE-E2.** Authorize access by Special Recreation Permits (SRP) only, and limit visitor use in the Serpentine ACEC to less than 5 days/year for motorized activities and less than 12 days/year for non-motorized activities.

**REC-USE-E3.** Manage the Tucker, Condon, and Cantua Zones with an emphasis on enhancing hunting and other non-motorized recreation opportunities.

**REC-USE-E4.** Improve access and enhance facilities (i.e. trails, designated camp sites, staging areas) to support non-motorized recreation opportunities in the Cantua Zone.

**REC-VIS-EF1.** Improve access for motorized vehicles to Condon Peak.

**REC-VIS-EF2.** Provide a limited number of recreation facilities in the Tucker, Condon, and Cantua zones to meet increased recreation demand while protecting natural and cultural values and providing for public safety.

**REC-VIS-EF3.** Maintain existing visitor use facilities outside the Serpentine ACEC, and mitigate recreation facilities inside the Serpentine ACEC for public health and safety.

**REC-VIS-G1.** Authorize access into the ACEC for scientific studies, research, and education for accredited institutions and individuals on a case-by-case basis. Access authorizations would stipulate health and safety requirements, as appropriate.

**REC-INT-A2.** Continue outreach and education program to create public and visitor awareness of human health risks from exposure to airborne asbestos fibers in CCMA.

**REC-INT-BG1.** Provide recreation information such as maps, brochures, and educational opportunities to enhance visitors' experience on BLM public lands. Incorporate the best available information concerning: asbestos health hazards, OHV use designations, fire prevention, BLM regulations, and natural resources of the area into educational materials and on all maps, brochures, and kiosks.

**REC-INT-BG2.** Cooperate with adjacent private landowners on land management activities to the extent possible.

**HAZARDOUS MATERIALS & PUBLIC HEALTH AND SAFETY**

**HAZ-A2.** Monitor for illegal dumping of chemicals on federal lands.

**HAZ-A3.** Identify mining-related and other public land hazards and eliminate or mitigate as soon as possible.

**HAZ-A4.** Identify and resolve mining related trespasses with priority given to those cases where conflicts are occurring with visitor use and safety.

**HAZ-A6.** Comply with all provisions of the Monterey Bay Unified Air Pollution Control District's remote location exemption (for CCMA) from the ATCM regulation for control of airborne asbestos emissions relating to construction, road maintenance, and grading activities.

**HAZ-BG1.** Restrict the type of activity and the number visits for that activity as the primary means to control risk to public from asbestos exposure.

**HAZ-BG2.** Use best available technologies (BATs) identified in Appendix V for dust abatement on roads and during project implementation.

**HAZ-BG3.** Reduce emissions from recreation facilities, and on major routes with dust suppression and surface hardening techniques as needed. The techniques include, but are not limited to, paving, base rock, chip seal, or applications of surfactants (i.e. biodegradable liquid copolymers) to stabilize and solidify soils or aggregates and control erosion.

**HAZ-BG4.** Considering technical and budgetary constraints, and overall effectiveness of the human health and safety mitigation measures identified below, issue supplementary rules to minimize exposure to hazardous materials and airborne asbestos fibers.

- Require signed waivers of liability to indemnify BLM against risk of tort claims associated with CCMA visitor use and exposure to airborne asbestos fibers.
- Enforce speed limits (15-25 mph) on designated routes.

**HAZ-BG5.** Implement Best Management Practices (BMPs) related to Abandoned Mine Lands (AML) and mining activities outlined in Appendix V.

**HAZ-BG6.** Reduce the use of Federal funds for clean-up of contaminated lands by seeking cost avoidance and/or cost recovery from the legally responsible parties.

**TRAVEL & TRANSPORTATION MANAGEMENT**

**TRANS-B5.** Implement BMPs related to transportations and roads outlined in Appendix V:

- Address all route maintenance activities in an annual corrective route maintenance plan. Implement route maintenance and improvement projects consistent with the following guidance:
    - BLM manuals 9113, H-9113-2, 9114,
    - Federal Highway Administration's (FHWA) Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects Standards, US Forest Service Trails Handbook 2309.18, sections 2.32 a, b, and c; and
    - 1995 Pacific Watershed Associates (PWA) report will be used for standards, guidelines, and recommendations.
    - Resource awareness training will be completed by all operators to ensure compliance with adopted route maintenance guidelines, with relevant inventory data incorporated into the training as appropriate. The BLM will continue to implement BMPs to reduce impacts to watershed resources and control non-point source pollution. Soil loss standards will be used in monitoring and assessment of routes and areas, and will serve as the basis in developing corrective route management plans.

**TRANS-E1.** Designate 460 acres in the Serpentine ACEC as a "Limited" vehicle use area for vehicle touring on the Scenic Route identified on Map E in Appendix I. Vehicle use on the Scenic Route is limited to full-sized vehicles for day use only. Designate the rest of the 30,000-acre Serpentine ACEC as "Closed" to vehicle use.

**TRANS-E2.** Develop and maintain transportation facilities (i.e. pull-outs and parking areas) on portions of T153 and Spanish Lake Road (R11) with high scenic values, and other destinations with unique biological, natural and geologic features within CCMA.

**TRANS-E3.** Designate the Tucker, Condon, and Cantua Zones as "Limited" vehicle use areas. Vehicle use in the Tucker, Condon, and Cantua Zones would be limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map E in Appendix I.

**TRANS-E4.** Develop and maintain approximately 30 miles of routes and trails in the Condon, Tucker, and Cantua Zones for non-motorized recreation following inventory, soil loss assessment, and resources screening using route designation criteria described in Appendix II.

**TRANS-E5.** Enforce temporary closures year-round to protect persons, property, and public lands and resources, especially during periods of extreme wet conditions and during periods of extreme dry conditions.

**TRANS-FG3.** Decommission Clear Creek Road (R1), and reclaim closed roads to protect sensitive resources, reduce sediment transport, and control erosion.

**TRANS-FG4.** Implement BMPs to reduce offsite water quality impacts from roads and trails that no longer serve their original purpose, or exceed soil loss standards.

**TRANS-FG5.** Restrict administrative use of roads and trails during periods of inclement weather.

**BIOLOGICAL RESOURCES – VEGETATION**

**VEG-A4.** Manage conifer forests for their scenic values and unique vegetation characteristics.

**VEG-A6.** Protect known and newly discovered occurrences of sensitive vegetation resources, including vernal pools and riparian zones, from vehicle and camping disturbances through fencing and other physical barriers.

**VEG-A7.** Implement brush clearing, prescribed burning, and seed or seedling introductions as appropriate for selected species.

**VEG-A8.** Use prescribed fire and other management techniques to provide a mosaic of vegetative communities to protect soil, watershed, and wildlife.

**VEG-A9.** Maintain sustained yield of vegetation for consumptive and nonconsumptive uses.

**VEG-A10.** Cooperate with the University of California to continue the barrens restoration pilot program and to establish small scale soil/plant study plots to investigate plant adaptability and nutritional requirements for rehabilitation purposes.

**VEG-BG1.** Include mitigation measures to protect or enhance riparian areas in all activity plans.

**VEG-BG2.** Emphasize locally grown or adapted native seed mixes for restoration activities.

**VEG-BG3.** Utilize management activities that mimic natural disturbance regimes (e.g., fire) to manage and maintain the composition, mixed age classes, and native wildlife habitat of perennial grasslands, chaparral, oak woodland communities, and wetlands.

**VEG-BG4.** Rehabilitate vegetation emphasizing use of local genotypes of native species for revegetation materials following wildland fires and/or other surface-disturbing activities. Allow non-invasive, non-native species to be used in re-vegetation materials that are temporary and non-persistent.

**VEG-BG5.** Avoid surface disturbance to riparian vegetation except for short-term disturbances that are necessary to restore or enhance riparian conditions in the long-term.

**VEG-BG6.** Mitigate or relocate existing or proposed activities within 100 feet of riparian vegetation that could cause a downward trend in condition of riparian resources.

**VEG-BG7.** Maintain mixed-aged classes for all riparian communities.

**VEG-BG8.** Develop an Integrated Pest Management approach that prioritizes invasive and noxious weed eradication based on the BLM and California State lists.

**VEG-BG9.** Issue non-commercial permits for collecting vegetative products for Native American practices.

**VEG-BG10.** Initiate riparian restoration/improvement projects within systems that have been identified as not functioning or functioning at risk with a downward or static trend.

**VEG-BG11.** Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife; maintain sustained yield of vegetation for consumptive and non- consumptive uses.

**BIOLOGICAL RESOURCES – FISH & WILDLIFE HABITAT**

**HAB-BF1.** Coordinate with the California Department of Fish and Game (CDFG), and the USFWS to control non-native wildlife species. Conduct monitoring and facilitate research to increase the public's awareness and scientific knowledge regarding these resources.

**HAB-BF2.** Preserve fallen trees and snags in occupied and potential habitat for raptors. Prohibit collecting wood in areas known to provide breeding habitat.

**HAB-BF3.** Mitigate or relocate man-made barriers that substantially impede migration within wildlife travel corridors, as appropriate.

**HAB-BF4.** Maintain existing water improvements (e.g., guzzlers).

**HAB-BF5.** Avoid disturbance, including road construction and recreational activities, within a 0.125-mile radius of nesting sites of owls, ospreys, golden eagles, buteos, accipiters, and falcons.

**HAB-BF6.** Avoid disturbance, including road construction and recreation activities, within a 0.25-mile radius around nesting sites of the California condor, bald eagle, and prairie falcons.

**HAB-BF7.** Cooperate with the CDFG to reintroduce, release, and/or restore populations of native fish and wildlife species into historic and occupied ranges with suitable habitat.

**BIOLOGICAL RESOURCES – SPECIAL STATUS SPECIES**

**SSS-BC2.** Prohibit collection of special status species, except for scientific research.

**SSS-BC3.** Protect ponds, wetlands, or riparian areas known to support or that could potentially support California tiger salamander or yellow-legged frog to maintain natural corridors between pools/wetlands and upland habitat so that continuous native plant coverage allows adequate movement of these species.

**SSS-BC4.** Avoid disturbance, including road construction and recreation activities, within a 0.25-mile radius around nesting sites of the California condor, bald eagle, and prairie falcons.

**SSS-DEF1.** Adopt the BLM's Compliance Monitoring Plan outlined in Appendix IV for existing CABE habitat and populations.

**SSS-DEF2.** Mitigate or relocate surface-disturbing activities proposed within occupied or potential habitat for special status species.

**SSS-G2.** Limit proposed new surface-disturbing activities within occupied or potential habitat for special status species and significant plant communities. Limit long-term disturbances in potential habitat.

**SSS-G3.** Conduct restoration projects in closed areas that disturb or interrupt hydrologic and/or ecological processes to support special status species and significant plant communities.

**AIR QUALITY**

**AIR-BG1.** Incorporate mitigation measures in Appendix V for activities and projects on BLM lands in order to reduce airborne asbestos emissions and comply with applicable Federal, State, and local air quality regulations.

**AIR-BG2.** Manage motorized vehicle travel on dirt roads to minimize air pollution from dust and exhaust by restricting vehicle types and seasons when vehicles could be used.

**AIR-BG3.** Manage prescribed fire to minimize smoke and coordinate with Federal, State, and local governments in smoke-sensitive areas such as wildland-urban interface areas.

**SOILS**

**SOIL-BG1.** Establish remote automated weather stations (RAWS) or apply the use of other available technologies in order to monitor precipitation and soil moisture content in CCMA.

**SOIL-BG2.** Require an approved erosion control strategy and topsoil segregation/restoration plan for proposals involving surface disturbance on slopes of 20 to 40 percent. No surface disturbance on slopes greater than 40 percent would be allowed unless it is determined that it would cause a greater impact to pursue other alternatives.

**SOIL-BG3.** Implement Best Management Practices (BMPs) related to barrens restoration/ management outlined in Appendix V.

**WATER QUALITY**

**WAT-BG1.** Implement BMPs related to watershed restoration/ management outlined in Appendix V to prevent degradation of water quality.

**WAT-BG2.** Maintain existing developed water sources (i.e., spring developments and reservoirs). Develop new sources on a case-by-case basis through project-level planning.

**WAT-BG3.** Maintain adjudicated water rights; inventory water sources not adjudicated or water rights sought, where applicable.

**WAT-BG4.** Submit request to the California State Department of Water Resources to establish Federal reserved water rights on acquired lands to ensure water availability for multiple use management and for functioning, healthy, riparian and upland systems.

**WAT-BG5.** Manage CWA 303(d)-listed impaired water bodies to meet properly functioning condition (PFC) objectives relative to beneficial uses and total maximum daily loads (TMDLs) for mercury and sediment.

**WAT-BG6.** Maintain stable watershed conditions and implement passive and active restoration projects to protect beneficial uses of water and meet TMDLs for mercury and sediment.

**WAT-BG7.** Work with Coordinated Resource Management Planning groups and other private landowners or non-profit organizations to prevent water bodies from reaching impairment levels that would result in listing under CWA 303(d).

**WAT-BG8.** Periodically monitor water quality in seasonal pools and perennial ponds containing known or suspected threatened and endangered (T & E) species. Identify water quality issues and initiate repairs, within environmental constraints.

**WAT-BG9.** Manage all fluvial systems functioning at risk to achieve PFC.

**SPECIAL DESIGNATIONS – ACEC/RNA**

**ACEC-BG1.** Maintain the area of serpentine soils high in asbestos fiber and the Clear Creek watershed as the Clear Creek Serpentine ACEC (30,000 acres). Maintain 4,147-acre designation of the San Benito Mountain Research Natural Area (RNA).

**ACEC-BG2.** Manage the Serpentine ACEC for public health and safety, special status species, and cultural, historic, and scenic values. Manage the San Benito Mountain RNA for its unique forest assemblage and the associated scientific research and educational values.

**ACEC-BG3.** Adopt the San Benito Mountain RNA Management Plan described in Appendix III.

**ACEC-BG4.** Develop stipulations for scientific research and collection in concert with individuals and institutions involved.

**ACEC-BG5.** Establish appropriate guidelines that protect special status species habitat from surface disturbing activities.

**SPECIAL DESIGNATIONS – WSA/WSR**

**WILD-AG1**. Manage all designated wilderness consistent with the Wilderness Act of 1964 and Public Law 107-370-(2)(2). Manage WSAs under the Interim Management Policy (H-8550-1) until Congress designates wilderness areas or until non-suitable WSAs are released.

**WILD-AG2.** Manage the 1,500-acre San Benito Mountain WSA consistent with the goals and objectives and the resource management actions for the Serpentine ACEC and the San Benito Mountain RNA described in this RMP/EIS, if the area is released from WSA status by Congress.

**WILD-AG3.** Conduct necessary maintenance of routes through the area to enhance overall wilderness quality by minimizing route-related impacts to the sensitive resources inside the SBMRNA/WSA. Areas along the roadways near the WSA will be rehabilitated using the best management practices outlined in Appendix V.

**WSR-AG1**. None of the river and stream segments on BLM public lands in CCMA were determined to be eligible and suitable for inclusion in the Wild and Scenic River System. Therefore, BLM recommends that none of the rivers and streams identified in Appendix VI be included in the NWSRS.

**LIVESTOCK GRAZING**

**RANG-AE1.** Make public acres and animal unit months (AUMs) available for livestock grazing as summarized in Tables 2.4-7.

**RANG-AE2.** Ensure that levels and duration of rest or deferment after a wildfire are consistent with site characteristics, ecological site descriptions, land management objectives, short-term emergency stabilization, and rehabilitation objectives such as rehabilitating the desired plant community.

**RANG-AE3.** In order to meet physiological requirements of key plant species or to meet other resource objectives, control the intensity, duration, and timing of grazing and/or provide for periodic deferment and/or rest where livestock grazing is limiting the achievement of multiple use objectives.

**RANG-AE4.** Conduct interdisciplinary rangeland health assessments on all grazing allotments to evaluate conformance with the Standards and Guidelines.

**RANG-AE5.** If new information demonstrates that livestock grazing within a particular allotment is not compatible with conservation or preservation of endangered, threatened, candidate, or special status species, these lands would become unavailable for livestock grazing.

**RANG-AE6.** When evaluation of rangeland health assessments determines that exclusion of livestock grazing is necessary to meet the resource objectives (i.e., cultural or historical resources protection, geologically unstable area protection, sensitive plant or animal areas, intensive recreational use areas, etc.), these lands would become unavailable for livestock grazing.

**RANG-AE7.** Where possible, fence spring developments to prevent trampling by livestock.

**RANG-AE8.** Cancel forage allocations on grazing allotments and make lands unavailable if lands are disposed of through exchange or sale or are devoted to another purpose.

**RANG-AE9.** Allow prescribed burning for rangeland improvement to prevent vegetative conversion (i.e., chaparral or juniper encroachment into annual grasslands or oak savannahs).

**RANG-AE10.** Develop allotment management plans to bring allotments not meeting the Standards and Guidelines due to livestock grazing into compliance.

**RANG-AE11.** Allow grazing on newly acquired land inside of allotments not in compliance with the Standards and Guidelines where livestock grazing is not the cause.

**RANG-AE12.** Allow grazing on allotments not in compliance with the Standards and Guidelines where livestock grazing is determined as not being the cause of noncompliance.

**ENERGY & MINERALS**

**ENERG-A1.** Consider minerals exploration, development, and production within environmental and multiple-use management constraints. Withdrawals would be initiated to affect locatable mineral segregations on specified lands.

**ENERG-A3.** Consider mineral and geothermal exploration and development in other CCMA locations on a case-by-case basis.

**ENERG-A4.** Allow oil and gas exploration and development within environmental constraints to protect special status species and paleontological resources.

**ENERG-A5.** Make public lands available for orderly and efficient development of mineral and energy resources under principles of balanced multiple-use management.

**ENERG-BC3.** Require No Surface Occupancy stipulations on all recreation and public purposes (R&PP) lease areas.

**ENERG-DEF1.** Allow no mineral leasing or sales on public lands in the Serpentine ACEC. Withdraw the entire 30,000-acre ACEC from locatable mineral entry.

**ENERG-DEF2.** Allow mineral leasing or sales on public lands outside the ACEC, and stipulate that "No Surface Occupancy" is allowed on oil and gas leases on all BLM lands with occupied special status species habitat.

**ENERG-DEF3.** Make the Serpentine ACEC an exclusion area for renewable energy development. Make all other Zones available for wind energy development consideration, subject to the BMPs outlined in Appendix VII.

**CULTURAL RESOURCES**

**CULT-A4.** Before implementation of surface-disturbing projects, including range developments and vegetation manipulations, evaluate cultural resource potential and avoid adverse impacts to National Register-eligible sites when feasible.

**CULT-A5.** Protect archeological sites in the White Creek Archeological District by maintaining the closed route designation for White Creek Road.

**CULT-EFG1.** Promote research opportunities with academic, professional, and avocational institutions for anthropological, archeological, ethnographic, or historic use studies to improve local and regional cultural resources management.

**CULT-EFG2.** Maintain access and promote traditional uses of the CCMA by the Native American and California Indian community; work in coordination with tribal communities, groups, and individuals to address issues.

**PALEONTOLOGICAL RESOURCES**

**PALE-A6.** If natural erosion threatens the integrity of significant fossil resources, stabilize and rehabilitate these resources if feasible.

**PALE-EFG1.** Establish a 300-foot buffer for project actions around all paleontological sites and localities.

**SOCIAL & ECONOMIC CONDITIONS**

**SOCEC-DG1.** Work collaboratively with local populations to emphasize a high level of natural resource protection, which contributes to tourism and attracts sustainable commodities industries.

**SOCEC-DG2.** Enhance public land resources to provide for sustainable tourism, production, and industry.

**SOCEC-DG3.** Emphasize sustainable economic operations while protecting the ecological, social, and cultural integrity of BLM public lands.

**VISUAL RESOURCES MANAGEMENT**

**VIS-A1.** VRM Class IV standards apply to the entire CCMA unless otherwise stated.

**VIS-A2.** Actions in the San Benito Mountain WSA and RNA must meet VRM Class I standards.

**VIS-A3.** Actions in the Condon Zone must meet VRM Class III standards.

**VIS-EFG1.** Actions in the Serpentine ACEC must meet VRM Class II standards.

**FIRE MANAGEMENT**

**FIRE-BG1.** Develop and maintain the Hollister Fire Management Plan.

**FIRE-BG2.** Identify appropriate management response goals, objectives, and constraints by specific Fire Management Units (FMUs) in the Hollister Fire Management Plan (Ref. Fire Map in Appendix I).

**FIRE-BG3.** Employ fire prevention strategies that reduce man-made fires, with special emphasis on developed areas such as communities, campgrounds, and transportation corridors.

**FIRE-BG4.** Develop fuels projects to mimic fire's natural role to enhance resource values.

**FIRE-BG5.** Coordinate with the California Department of Forestry and Fire Protection (CDF) or cooperator fire protection entities to develop appropriate management response actions, as documented in the annual operating plan, for wildland fires on or threatening BLM lands. Primary consideration and operational emphasis are placed on firefighter and public safety, minimizing the loss of life and damage to private property, minimizing environmental damage due to suppression efforts, and considering resource values and high value habitat at risk from unwanted wildfire.

**FIRE-BG6.** Identify high priority wildfire risk areas (e.g., wildland-urban interface, critical habitats and cultural areas). The Hollister Fire Management Plan (FMP) displays the list of values at risk and the communities at risk within each FMU. (These lists may change as communities are removed or added each year).

**FIRE-BG7.** Work collaboratively with Federal, State, Fire Safe Councils, and local partners to develop cross boundary fire management strategies and prioritize cross agency fire management actions.

**FIRE-BG8.** Work collaboratively with communities at risk within the wildland-urban interface to develop plans for risk reduction.

**FIRE-BG9.** Work collaboratively with managing partners to design and implement prescribed fire and fuels management projects across agency boundaries where this interaction would improve the overall success of the project.

**FIRE-BG10.** Limit the use of fire retardant drops to prevent damage to rock art sites and vernal pools and associated aquatic species. Keep retardant away from rock outcrops and waterways.

**FIRE-BG11.** Establish a fire effects monitoring system that inventories pre-burn species composition and resulting post-fire response, over time.

**FIRE-BG12.** Monitor fire/fuels treatment effects and adjust the Hollister FMP as needed.

**FIRE-BG13.** Implement a chaparral management program within the CCMA to use fire to improve wildlife habitat.

**FIRE-BG14.** Protect the primitive nature of public lands within the San Benito Mountain WSA from any action affecting the overall "naturalness" of the area.

**FIRE-BG15.** Prohibit the use of heavy mechanical equipment within the San Benito Mountain WSA. This restriction may be lifted by the Field Manager to protect human life, private property, structures, visitor safety, or sensitive or valuable resources.

**FIRE-BG16.** Develop local or regional "Normal Fire Year Rehabilitation Plans."

**FIRE-BG17.** Promote the use of native species in reseedings.

**FIRE-BG18.** Monitor rehabilitation efforts to facilitate future planning and implementation.

**LANDS & REALTY**

**LTEN-A7.** Acquire or exchange lands in accordance with the FLPMA and other applicable Federal laws and regulations to ensure more efficient management of the public lands, to reduce conflicts with other public and private landowners, and to provide more consistency and logic in land use patterns within the Hollister Field Office.

**LTEN-EFG1.** Public lands in the Tucker, Condon, and San Benito River Zones identified on Maps E, F, and G in Appendix I would be available for disposal.

**LTEN-EFG2.** Acquisition of private in-holdings with high value for multiple resources including important biological resources and recreational opportunities would be the highest priority.

**LTEN-EFG3.** Consider minor boundary adjustments to facilitate management efficiency through sale, exchange, or patent (i.e., less than 50 acres).

**LUSE-A2.** Designate existing utility routes as utility corridors.

**LUSE-BF1.** Lands identified for retention are considered unsuitable for entry under any of the agricultural land laws because of significant multiple-use values.

**LUSE-BF2.** Place special emphasis on resolution of unauthorized uses of public lands. Increase coordination with local, State and other Federal law enforcement agencies.

**LUSE-BF3**. Maintain consistency with County General Plans and zoning within Department regulations and Bureau policy.

**LUSE-BF4.** Permit commercial filming on a case-by-case basis.

**LUSE-BF5.** Issue apiary permits on a case-by-case basis.

**LUSE-BF6.** Honor valid existing rights and easements that have been acquired through land acquisitions. Enter rights-of-way into LR2000 to ensure proper recording.

**LUSE-BF7.** Construction of new communication sites in the ACEC will only be authorized at sites with existing facilities.

**LUSE-BF8.** Authorize rights-of-way to provide reasonable access for private landowners in CCMA.

**LUSE-BF9.** Construction within the ACEC would be completed in accordance with occupational health and safety requirements.

**LUSE-G1.** Stipulate health and safety mitigation measures for existing communication sites and rights-of-way authorizations in the Serpentine ACEC.

## 2.6 COMPARISON OF IMPACTS

The Comparison of Impacts Tables (2.6-1 - 2.6-14) below summarize the impacts on the resources of CCMA by alternative, as assessed in the detailed analysis in Chapter 4. See Chapter 4 for more specific details. Negligible impacts are predicted from any of the alternatives to prime and unique farmlands, floodplains, wild and scenic rivers, and wilderness. Under all alternatives, the Serpentine ACEC designation would be maintained for the 30,000-acre area with high concentrations of asbestos fibers. Since the analysis of impacts for all of the resources within the CCMA is done in the context of impacts to human health and safety and the environment from asbestos emissions, an analysis covering impacts to the ACEC values would be duplicative. Therefore, a separate analysis was not conducted for impacts to the values for which the ACEC was established.

### Recreation

Among the *Motorized* Alternatives (B, C, D, E) considered in the CCMA RMP/EIS, Alternative B and C would continue to provide vehicular access and OHV recreation at existing locations; although, certain allowable uses, competitive events, and commercial activities within the Serpentine ACEC would be restricted. Similarly, under Alternatives D and E, BLM would allow *Motorized* access through the ACEC, but the emphasis would be focused on establishing and managing motorized and non-motorized recreation use areas to provide appropriate recreation opportunities on BLM-managed lands outside of the ACEC.

Alternatives A, B, and C would focus on existing recreation sites and could allow expansion of existing facilities. Alternative C would limit OHV recreation in the ACEC to full-size vehicles and motorcycles only for visitors age eighteen or older. Alternative D would establish new OHV recreation sites outside the ACEC (see Table 2.6-1 below). Under all of the alternatives, except for No Action (Alt. A), overnight camping and staging would be prohibited in the ACEC. Alternative E emphasizes vehicle touring in the ACEC, as well as development of facilities for non-motorized recreation outside the ACEC.

Under the *Non-motorized* Alternatives (F and G), BLM would reduce asbestos emissions by limiting allowable uses to foot traffic only inside the ACEC (Alt. F) or minimize human health risks from exposure to asbestos by prohibiting all public use and entry in the ACEC (Alt G). In other words, Alternative G would make the existing temporary closure of the 30,000-acre ACEC that was issued by BLM under 43 CFR 8364.1 on May 1, 2008 permanent. Consequently, the impact analysis for Alt. G provides a baseline for comparison of the impacts associated with the temporary closure of the Serpentine ACEC to other management actions within the range of alternatives for the CCMA RMP/EIS.

Table 2.6-1 provides a comparison of impacts to recreation resources under each alternative.

**Table 2.6-1 Comparison of Impacts to Recreation Resources**

| Allowable Use | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| OHV Recreation | Major beneficial effects because this alternative would maintain existing OHV recreation opportunities. | Minor adverse impacts because motorized access would be limited to less than 5 day/year by permit only. | Moderate adverse impacts because OHV recreation in the ACEC would be limited to visitors ≥ 18 years old, and ATV use would be prohibited in the ACEC. | Moderate beneficial impacts because new OHV recreation opportunities would be developed outside the ACEC. | Major adverse impacts because OHV recreation in the ACEC would be limited to full-size vehicles by permit only, and ATV/UTV use on designated routes in the Cantua and Condon management zones. | Major adverse impacts because OHV recreation in the ACEC would be prohibited, and BLM would only authorize ATV/UTV use on designated routes in the Cantua and Condon management zones. | Major adverse impacts because OHV recreation in the ACEC would be prohibited, and BLM would only authorize ATV/UTV use on designated routes in the Condon management zones. |
| Hiking, Hunting, Rockhounding, Firearms and Target Shooting | Minor beneficial effects because this alternative would maintain existing motorized route network to support these recreation opportunities. | Minor adverse impacts because non-motorized access would be limited to less than 12 days/year and motorized access to support these recreation opportunities would be limited to less than 5 day/year by permit only. | Moderate adverse impacts because recreation opportunities would be limited to visitors ≥ 18 years old, and ATV use would be prohibited in the ACEC. | Major beneficial impacts because management of the ACEC would provide motorized access to support these activities, conflicts with OHV would be reduced, and new recreation facilities would be developed outside the ACEC. | Moderate beneficial effects because management of the ACEC would provide motorized access to support these activities, conflicts with OHV would be reduced, and new recreation facilities would be developed outside the ACEC. | Moderate adverse impacts because motorized access in the ACEC to support these activities would be prohibited. | Major adverse impacts because non-motorized recreation in the ACEC would be prohibited, and BLM would only maintain existing recreation facilities outside the ACEC. |
| Camping & Staging within ACEC | Minor beneficial effects because this alternative would allow overnight camping and staging to | Minor adverse effects because these alternatives would prohibit overnight camping and staging to support recreation opportunities in the ACEC (except for Jade Mill). However, these effects would be mitigated by developing new recreation facilities to support camping and staging for recreation activities in the Tucker, Cantua, and Condon management zones. | | | | | |

**Table 2.6-1 Comparison of Impacts to Recreation Resources**

| Allowable Use | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | support recreation opportunities throughout CCMA. | | | | | | |

## HAZMAT and Public Health & Safety

Under all the alternatives, BLM would continue to ensure proper handling of hazardous materials and wastes; identify mine-related, illegal dumps and other public land hazards, eliminating or mitigating them as soon as possible; and identify and resolve mining-related trespasses, especially public safety conflicts occurring with visitor use. Under Alternative A, the No Action Alternative, BLM would continue current hazardous material management activities as outlined in the 1984 Hollister RMP and associated CCMA amendments. Implementation of Alternatives B and C would emphasize health and safety mitigation measures at visitor use facilities and improvements on major routes to minimize exposure to asbestos. Alternative B would limit the number of annual visitor use days to less than 12 days for non-motorized and less than 5 days for motorized activities. Alternative C includes restrictions on allowable uses by limiting vehicle types on routes and trails, and by limiting OHV recreation in CCMA to visitors age eighteen and older to minimize exposure to asbestos. Alternatives D and E would only authorize motorized access on major routes in the ACEC. Alternatives E and F would authorize access in the Serpentine ACEC by permit only and limit the number of annual visitor use days based on excess lifetime cancer risk of proposed recreation activities. Alternative F would also restrict allowable uses in the Serpentine ACEC to foot-traffic and other non-motorized recreation activities. Alternative G would make the existing temporary closure of the 30,000-acre ACEC that was issued by BLM under 43 CFR 8364.1 on May 1, 2008 permanent. Consequently, the impact analysis for Alt. G provides a baseline for comparison of the impacts associated with the temporary closure of the Serpentine ACEC to other management actions within the range of alternatives for the CCMA RMP/EIS

Table 2.6-2 provides a comparison of impacts to public health and safety and hazardous materials under each alternative.

**Table 2.6-2 Comparison of Impacts to Public Health and Safety and Hazardous Materials**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Public Safety & Human Health Risk | Major adverse impacts to public health and safety because of excess lifetime cancer risk from exposure to asbestos. | Major beneficial impacts to public health and safety because visitor use restrictions would limit exposure to asbestos within the acceptable risk range. | Moderate adverse impacts because CCMA visitors would have potential excess lifetime cancer risk from exposure to asbestos. | Minor beneficial impacts because allowable use restrictions and management of designated routes in the ACEC would limit exposure to asbestos. | Major beneficial effects because allowable use restrictions and permitting requirements in the ACEC would limit exposure to asbestos within the acceptable risk range. | Major beneficial effects because allowable use restrictions and permitting requirements in the ACEC would limit exposure to asbestos within the acceptable risk range. | Major beneficial effects because ACEC closure would eliminate exposure to asbestos. |
| Hazardous Materials Disposal | Major beneficial effects because BLM would ensure proper disposal and monitor for illegal dumping. | | | | | | |
| Public Land Hazards, Abandoned Mine Lands (AML) | Moderate beneficial effects because BLM would eliminate or mitigate public land hazards, particularly related with mining activity. | Major beneficial effects because BLM would implement Best Management Practices (BMPs) related to Abandoned Mine Lands (AML) and mining activities outlined in Appendix V, and reduce the use of Federal funds for clean-up of contaminated lands by seeking cost avoidance and/or cost recovery from the legally responsible parties. | | | | | |
| HAZMAT Mitigation Measures | Minor beneficial impacts because installation of a public vehicle wash rack would reduce off-site transportation of asbestos fibers (i.e. track-out). | | | | Minor adverse impacts because of human health risk associated with off-site transportation of asbestos fibers (i.e. track-out). | | |
| | NA | Moderate adverse effects from signed waivers of liability to indemnify BLM against risk of tort claims associated with CCMA visitor use and exposure to airborne asbestos fibers because this requirement would not reduce human health risk and encourage visitor use in the ACEC. | | | | | |
| Recreation & | Major beneficial impacts from eliminating staging for recreation or camping overnight in ACEC (except for Jade Mill). | | | | | | |

**Table 2.6-2 Comparison of Impacts to Public Health and Safety and Hazardous Materials**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Allowable Use(s) | Minor beneficial impacts from Dry Season Closures June 1st – Oct 15th because allowable uses on designated routes would be restricted for four and one-half months out of the year. | Minor beneficial impacts from Dry Season Use Restrictions April 15th – Dec. 1st because allowable uses on designated routes would be restricted for seven and one-half months out of the year. | | Negligible effects because human health risk exists year-round, and it appears that only active rainfall reduces asbestos air concentrations (EPA 2008). | | Same as A because allowable uses would be restricted for four and one-half months out of the year. | |
| | | Major beneficial effects because limited annual visitor use would limit exposure to asbestos within the acceptable risk range. | Moderate beneficial impacts because visitors ≤ 18 and ATV riders would avoid exposure to asbestos in the ACEC. | Moderate beneficial impacts because OHV recreation visitors would reduce exposure to asbestos in the ACEC. | Major beneficial effects because allowable use restrictions and limited annual visitor use would limit exposure to asbestos within the acceptable risk range. | | Major beneficial effects because ACEC closure would eliminate exposure to asbestos. |
| Recreation Visitor Services, Interpretation and Education | Negligible impacts because health risk awareness information would be promoted on-site and on maps, brochures, etc. | Minor beneficial impacts because the best available information concerning: asbestos health hazards, OHV use designations, fire prevention, BLM regulations, and natural resources of the area would be incorporated into educational materials and on all maps, brochures, and kiosks. | | | | | |
| Travel and Transportation Management | Negligible effects because BLM would comply with ATCM for asbestos relating to construction and roads. | Moderate beneficial impacts because BLM would reduce emissions at staging areas, other recreation facilities, and on major routes with dust suppression and surface hardening techniques including, but not limited to paving, base rock, chip seal, or applications of surfactants (i.e. biodegradable liquid copolymers) to stabilize and solidify soils or aggregates and control erosion. | | | | | |

## Travel and Transportation Management

Under the seven alternatives, impacts to travel management and vehicle use opportunities would vary, depending on the Alternative's travel management plan. Alternatives A and B would continue current travel management practices; vehicle use on all BLM lands would be limited to designated routes and barrens, unless posted otherwise, and new trails would be constructed, up to a total of 270 miles. Alternatives A and B would emphasize recreational opportunities, and would have the greatest recreational benefit to the motorized community. Alternative B would limit travel by seasonal duration in consideration of human health and safety. Alternative C would provide basic access to the public while providing limited OHV use specific to motorcycles in an attempt to mitigate dust exposure. Alternative D would restrict access within the ACEC while developing other areas within CCMA for OHV travel. Alternative E would provide for access along T153/Spanish Lake Road only and would be the most restrictive for active ACEC motorized travel, with other areas outside the ACEC developed for non-motorized access. Alternative F would limit the public within the ACEC to pedestrian travel. Alternative G would prohibit any access by the public into the ACEC.

Table 2.6-3 summarizes the management actions under each alternative, and provides (approximate) miles of designated routes under each alternative.

**Table 2.6-3 Comparison of Impacts to Travel and Transportation Management**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Area Designation | Negligible effects from maintaining designation of the entire 75,000-acre CCMA as a "Limited" vehicle use area because vehicle use would continue to be limited to designated routes. | | | | Moderate adverse impacts from reducing the "Limited" vehicle use area designation within the ACEC to the 460-acre Scenic Route Corridor, and designating the remaining 29,560 acres as "Closed" to vehicle use. | Major adverse impacts from designating the entire Serpentine ACEC a "Closed" vehicle use area because access to support motorized and non-motorized recreation opportunities and other resource uses would be prohibited. | |
| Route Designation | Negligible effects from maintaining vehicle use in CCMA limited to designated routes identified on Map A in Appendix I and barrens | Minor adverse impacts from managing vehicle use in CCMA limited to permitted-vehicles on designated routes identified on | Moderate adverse impacts from managing vehicle use in CCMA limited to full-size vehicles and motor-cycle use only on designated routes | Minor adverse impacts from managing vehicle use in the ACEC limited to full-size vehicles on designated routes identified on Map | Moderate adverse impacts from reducing the miles of designated routes in the ACEC to the 11-mile Scenic Route (T153 &R11) identified on Map E | Major adverse designating all routes in the ACEC "Closed" because access to support motorized and non-motorized | Negligible effects from managing vehicle use in the Condon Zone limited to full-size vehicles and ATV/UTV use only on |

**Table 2.6-3 Comparison of Impacts to Travel and Transportation Management**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | identified in the 2006 ROD for CCMA Route Designation. | Map B in Appendix I because 478 acres of barrens would be designated closed to vehicle use. | identified on Map C in Appendix I because 478 acres of barrens and 42 miles of ATV/Jeep trails would be designated closed to vehicle use. | D in Appendix I.<br><br>Moderate beneficial impacts from managing vehicle use in the other zones limited to designated (and proposed) routes identified on Map D in Appendix I, because BLM would designate approximately 60 miles of new routes for OHV recreation following the route designation methodology described in Appendix II. | in Appendix I limited to permitted full-size vehicles only.<br><br>Minor beneficial impacts from managing vehicle use in the Condon, Tucker, and Cantua zones is limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map E in Appendix I because BLM would designate approximately 30 miles of new routes for travel and transportation following the route designation methodology described in Appendix II. | recreation opportunities and other resource uses would be prohibited.<br><br>Negligible effects from managing vehicle use in the Condon Zone limited to full-size vehicles and ATV/UTV use only on designated (and proposed) routes identified on Map F in Appendix I. | designated (and proposed) routes identified on Map G in Appendix I. |
| Seasonal Closures within the Serpentine ACEC | Negligible effects from seasonal closures because motorized access would continue to be limited to dry season routes from June 1 – | Moderate adverse impacts from seasonal closures because restrictions on motorized access would be extended for a longer period from April 15th through December 1st annually, which includes several months when traditional visitor uses supported by motorized access take place. | | Negligible effects from establishing remote automated weather station (RAWS) monitoring of soil moisture to determine need for ACEC closure based on extreme weather conditions because BLM would continue to restrict vehicle use during periods of extreme wet and muddy conditions because this type of closure | | Same as A. | NA |

**Table 2.6-3 Comparison of Impacts to Travel and Transportation Management**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | Oct. 15 annually, when visitor use is historically low.<br><br>Major beneficial impacts from restrictions to limit vehicle use during periods of extreme wet and muddy conditions because this type of closure would prevent rutting and soil loss on designated routes. | Major beneficial impacts from restrictions to limit vehicle use during periods of extreme wet and muddy conditions because this type of closure would prevent rutting and soil loss on designated routes. | | would prevent rutting and soil loss on designated routes. | | | |
| Mitigation Measures | Moderate beneficial impacts from implementation of BMPs to reduce off-site water quality impacts from roads and trails that are no longer designated open, or exceed State soil loss standards. | Major beneficial impacts from implementation of BMPs related to transportations and roads outlined in Appendix V, and addressing all route maintenance activities in an annual corrective route maintenance plan consistent with established guidance. | | | | | |

**Table 2.6-3 (cont.) Route Mileage by Alternative**

| Designation | Alt. A | Alt. B | Alt. C | Alt. D | Alt. E | Alt. F | Alt. G |
|---|---|---|---|---|---|---|---|
| **Serpentine ACEC /Hazardous Asbestos Area** | | | | | | | |
| Closed | -- | -- | 42 | 172 | 199 | 227 | 227 |
| Open | 227 | 227 | 185 | 55 | 28 | 0 | 0 |
| **Condon Peak & San Benito River Zone(s)** | | | | | | | |
| Closed | -- | -- | -- | -- | -- | -- | -- |
| Open | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Cantua Zone** | | | | | | | |
| Closed | -- | -- | -- | -- | -- | -- | -- |
| Open | -- | -- | -- | 30 | 15 | -- | -- |
| **Tucker Mountain Zone** | | | | | | | |
| Closed | -- | -- | -- | -- | -- | -- | -- |
| Open | -- | -- | -- | 15 | -- | -- | -- |

## Biological Resources – (Vegetation – Fish & Wildlife – Special Status Species)

Under all the alternatives, there would be beneficial impacts from managing sensitive resource areas, implementing wildlife management actions, use of prescribed fire and mechanical vegetation treatments, adoption of Standards for Rangeland Health and the BLM's CABE Compliance Monitoring Plan. The adverse impacts from recreation activities and other land use authorizations would be minor because of mitigation measures or use restrictions under all alternatives. Biological resources goals to maintain sustainable populations would have major long-term benefits on native and non-native plants and animals in CCMA.

Tables 2.6-4(a), 2.6-4(b), and 2.6-4(c) provide a comparison of impacts to biological resources under each alternative.

**Table 2.6-4(a) Comparison of Impacts to Biological Resources – Vegetation**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| **VEG-A1** | Negligible effects because requests for woodcutting permits are historically low and would only be authorized where it is consistent with resource management goals and objectives. | | | | | | |
| **VEG -A2** | Negligible effects because native perennial grassland communities would likely be maintained at existing population levels with slight fluctuations annually. | | | | | | |
| **VEG -A3** | Negligible effects because the big sagebrush stands in the San Carlos Bolsa would likely be maintained at existing population levels with slight fluctuations annually. | | | | | | |
| **VEG -A4** | Minor beneficial impacts because management of conifer forests for their scenic values and unique vegetation characteristics would reduce the adverse effects of other resources uses that conflict with these values. | | | | | | |
| **VEG -A5** | Negligible effects because commercial harvesting of conifer forests in the SBMRNA is already prohibited. | | | | | | |
| **VEG -A6** | Minor beneficial effects because existing BLM policy is to protect known and newly discovered occurrences of sensitive vegetation resources, including vernal pools and riparian zones. | | | | | | |
| **VEG -A7** | Major beneficial impacts from brush clearing, prescribed burns, and seed or seedling introductions because they would improve habitat available for desired vegetation species and reduce populations of noxious and invasive weeds that compete with native plants. | | | | | | |
| **VEG -A8** | Major beneficial impacts from prescribed fire and other management techniques because annual and decadal targets for prescribed fire and mechanical treatments would provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. | | | | | | |
| **VEG -A9** | Negligible effects because BLM currently maintains a sustained yield of vegetation for consumptive and nonconsumptive uses due to historically low utilization levels. | | | | | | |
| **VEG -A10** | Minor beneficial impacts because BLM currently cooperates with the University of California on the barrens restoration pilot program and establishing small scale soil/plant study plots to investigate plant adaptability and nutritional requirements for rehabilitation purposes | | | | | | |

**Table 2.6-4(a) Comparison of Impacts to Biological Resources – Vegetation**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| **VEG -BG1**. | -- | Moderate beneficial impacts form mitigation measures included in all activity plans to protect or enhance riparian areas. | | | | | |
| **VEG -BG2** | -- | Moderate beneficial impacts from emphasis on locally grown or adapted native seed mixes for restoration activities. | | | | | |
| **VEG -BG3** | -- | Major beneficial impacts from management activities that mimic natural disturbance regimes (e.g., fire) because they would improve habitat available for desired vegetation species and reduce populations of noxious and invasive weeds that compete with native plants. | | | | | |
| **VEG -BG4** | -- | Same as VEG-BG2 above. Negligible effects from non-invasive, non-native species that would be used in re-vegetation materials because they would be temporary and non-persistent. | | | | | |
| **VEG -BG5** | -- | Minor beneficial impacts from avoiding surface disturbance to riparian vegetation because limiting disturbances to those that are necessary to restore or enhance riparian conditions in the long-term would maintain or improve overall habitat for riparian vegetation communities. | | | | | |
| **VEG -BG6** | -- | Same as VEG-BG5 above. | | | | | |
| **VEG -BG7.** | -- | Minor beneficial impacts because maintaining mixed-aged classes for all riparian communities would enhance riparian conditions in the long-term. | | | | | |
| **VEG –BG8** | -- | Major beneficial impacts from management of invasive and noxious weed eradication based on the BLM and California State lists because prioritizing these species for abatement and control would reduce populations of noxious and invasive weeds that compete with native plants. | | | | | |
| **VEG –BG9** | -- | Negligible effects because requests for non-commercial permits for collecting vegetative products for Native American practices are historically low and would only be authorized where it is consistent with resource management goals and objectives. | | | | | |
| **VEG –BG10** | -- | Initiate riparian restoration/improvement projects within systems that have been identified as not functioning or functioning at risk with a downward or static trend. | | | | | |
| **VEG –BG11** | -- | Minor beneficial impacts because CCMA currently supports a mosaic of vegetation communities to protect soil, watershed, and a sustained yield of vegetation for consumptive and non-consumptive uses. | | | | | |

**Table 2.6-4(b) Comparison of Impacts to Biological Resources – Fish & Wildlife**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| **HAB-A1** | Major beneficial impacts from prescribed burns because they would increase nutrients in soils through combustion of fuels, and from increase habitat available for forage and browsing, and reductions in populations of noxious and invasive weeds that compete with native plants and animals. | | | | | | |
| **HAB-A2** | Minor benefits from enhancing upland game habitat because most of the suitable upland habitat is already managed in cooperation with DFG and hunting clubs in the area to sustain healthy population of game species. | | | | | | |
| **HAB-A3** | Minor benefits from installation of guzzlers because most of the suitable locations are already managed in cooperation with DFG and hunting clubs in the area to provide supplemental water improvements for game species. | | | | | | |
| **HAB-A4** | Minor benefits from fencing of sensitive areas because most of these locations are already protected by vehicle barriers and existing route designations. | | | | | | |
| **HAB-A5** | Same as HAB-A4 above. | | | | | | |
| **HAB-A6** | Same as HAB-A4 above. | | | | | | |
| **HAB-A7** | Minor benefits from improving game habitat in nonserpentine areas because most of the suitable locations are already managed in cooperation with DFG and hunting clubs in the area to sustain healthy population of game species. | | | | | | |
| **HAB-A8** | Same as HAB-A4 above. | | | | | | |
| **HAB-A9** | Same as HAB-A4 above. | | | | | | |
| **HAB-A10** | Same as HAB-A4 above. | | | | | | |
| **HAB-BF1**. | -- | Major beneficial impacts from control of nonnative species because of reductions in populations of noxious and invasive weeds that compete with native plants and animals. | | | | | -- |
| **HAB-BF2** | -- | Moderate benefits from preserving fallen trees & snags from | | | | | -- |

**Table 2.6-4(b) Comparison of Impacts to Biological Resources – Fish & Wildlife**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | | increase habitat available for nesting and roosting. | | | | | |
| **HAB-BF3** | -- | Same as HAB-A4 above. | | | | | -- |
| **HAB-BF4** | -- | Same as HAB-A3 above. | | | | | -- |
| **HAB-BF5** | -- | Moderate benefits from avoiding disturbance of raptor nests because of buffer distances from nests and perch sites sufficient to reduce by 90% the direct disturbance from human activities. | | | | | -- |
| **HAB-BF6** | - | Major benefits from avoiding disturbance of T&E raptor nests because of buffer distances from nests and perch sites sufficient to reduce the direct disturbance from human activities to near zero. | | | | | - |
| **HAB-BF7.** | -- | Minor benefits from restoring fish and wildlife habitat because most of the suitable habitat is already managed in cooperation with DFG and hunting clubs in the area to sustain healthy population of game species. | | | | | -- |
| **HAB-G1** | -- | -- | | | | | Negligible effects from removal of nonfunctional guzzlers because they no longer serve their intended purpose. |
| **HAB-G2** | -- | -- | | | | | Minor benefits from restoring fish and wildlife habitat outside the ACEC because most of these areas are already managed in cooperation with DFG and hunting clubs in the area to sustain healthy population of game species. |

**Table 2.6-4(c) Comparison of Impacts to Biological Resources – Special Status Species**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| **SSS-A1**<br>**SSS-BC1**<br>**SSS-DEF1**<br>**SSS-G1** | Negligible effects from establishing appropriate levels of surface disturbance to protect special status species and their associated habitats. | Minor beneficial impacts from maintaining all known special status species habitat and implementing revised Compliance and Monitoring Plan identified under SSS-A18 and SSS-A19. | | Moderate beneficial impacts from adopting the BLM's Compliance Monitoring Plan outlined in Appendix IV for existing CABE habitat and populations. | | | Moderate beneficial impacts from adopting the BLM's Compliance Monitoring Plan outlined in Appendix IV for existing CABE habitat and populations. |
| **SSS-A2**<br>**SSS-BC2**<br>**SSS-DEF2**<br>**SSS-G2** | Negligible effects from monitoring the effects of management activities on significant habitat areas. | Negligible effects from prohibiting collection of special status species, except for scientific research or Native American traditional use. | | Moderate beneficial impacts from mitigating or relocating surface-disturbing activities proposed within occupied or potential habitat for special status species. | | | Moderate beneficial impacts from limiting proposed new surface-disturbing activities within occupied or potential habitat for special status species. |
| **SSS-A3**<br>**SSS-BC3**<br>**SSS-G3** | Negligible effects from development of access roads to follow existing roads and trails and route new roads to avoid sensitive habitat features. | Minor beneficial impacts from protection of aquatic habitat that could support California tiger salamander or yellow-legged frog s by maintaining natural corridors so that continuous native plant coverage allows adequate movement of these | | -- | | | Major beneficial impacts from restoration projects in closed areas that disturb or interrupt hydrologic and/or ecological processes to support special status species and significant plant communities. |

**Table 2.6-4(c) Comparison of Impacts to Biological Resources – Special Status Species**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | | species. | | | | | |
| **SSS-A4**<br>**SSS-BC4.** | Minor beneficial impacts from on- and off-site compensation in the form of rehabilitation, reseeding, and other actions during new construction. | Avoid disturbance, including road construction and recreation activities, within a 0.25-mile radius around nesting sites of the California condor, bald eagle, and prairie falcons. | | -- | | | -- |
| **SSS-A5** | Negligible effects from seasonal restrictions for certain activities during sensitive periods such as denning and nesting. | -- | | -- | | | -- |
| **SSS-A6** | Negligible effects from buffer zones around sensitive habitat features. | -- | | -- | | | -- |
| **SSS-A7** | Major beneficial impacts from evaluation of known or potential habitat before implementing actions that may affect the habitat and consultations with FWS in accordance with Section 7 of the Endangered Species Act, as appropriate. | -- | | -- | | | -- |
| **SSS-A8** | Minor beneficial impact from managing portions of Clear Creek, Sawmill Creek, San Benito River, and San Carlos Creek for introducing the San Benito evening-primrose into | -- | | -- | | | -- |

**Table 2.6-4(c) Comparison of Impacts to Biological Resources – Special Status Species**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | suitable habitat. | | | | | | |
| **SSS-A9** | Negligible effects from monitoring all populations of the San Benito evening-primrose and their protective measures for compliance relating to OHV trespass. | -- | | -- | | | -- |
| **SSS-A10** | Minor beneficial impacts from implementation of BMPs including drainage improvements, construction of rolling dips, water bars, rock armored/hardened stream crossings, hardened sills, and half-pipe bridges, as needed to minimize impacts to water quality, control erosion and sediment production. | -- | | -- | | | -- |
| **SSS-A11** | Moderate beneficial impacts from rehabilitation of potential habitat areas for the San Benito evening primrose in Clear Creek Canyon. | -- | | -- | | | -- |
| **SSS-A12** | Negligible effects from an ecological study of the San Benito evening primrose to determine habitat requirements. | -- | | -- | | | -- |
| **SSS-A13** | Minor beneficial impacts from monitoring known populations and potential habitat on a yearly basis, and protecting new populations as they are | -- | | -- | | | -- |

**Table 2.6-4(c) Comparison of Impacts to Biological Resources – Special Status Species**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | discovered. | | | | | | |
| **SSS-A14** | Minor beneficial impacts from protection of known and newly discovered occurrences of the San Benito evening primrose and other sensitive resources including rare plants such as rayless layia, vernal pools, and riparian zones from vehicle and camping disturbances. | -- | | -- | | | -- |
| **SSS-A15** | Minor beneficial impacts from monitoring all unprotected populations of special status species for possible adverse impacts from vehicles and other uses and implementation of protective actions as warranted. | -- | | -- | | | -- |
| **SSS-A16** | Minor beneficial impacts from inventory of suitable habitat for all sensitive plant species and monitoring of any new populations of special status species documented during inventories for adverse impacts and implement protective actions as warranted. | -- | | -- | | | -- |
| **SSS-A17** | Minor beneficial impacts developing long-term studies to determine how disturbances such as human use, storms, and erosion, impact the | -- | | -- | | | -- |

**Table 2.6-4(c) Comparison of Impacts to Biological Resources – Special Status Species**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | viability of special status species. | | | | | | |
| **SSS-A18** | Minor beneficial impacts from compliance monitoring for the protection of San Benito evening-primrose (CABE) to document the condition of the species, habitat, and the protective measures in place according to the Compliance Monitoring Plan for CABE in the 2006 Record of Decision for the CCMA RMP Amendment & Route Designation | -- | | -- | | | -- |
| **SSS-A19** | Minor beneficial impacts from revising Compliance Monitoring Plan to improve the BLM's ability to: 1) coordinate with FWS on implementation of adaptive management actions; 2) conduct annual area-wide monitoring of *Camissonia benitensis* habitat and population estimates; 3) analyze correlations between OHV use patterns and population levels; 4) establish thresholds that will trigger adaptive management, 5) establish thresholds that will trigger downlisting and delisting. | -- | | -- | | | -- |

## Air Quality

Federal, State and local air quality regulations applicable to these activities would be identify permit conditions or other restrictions on activities to manage emissions to within acceptable levels. In general, air quality impacts are expected to decrease with each alternative going from A to G, as allowable uses are increasingly restricted and overall emissions of hazardous air pollutants would be mitigated through dust abatement. Impacts to other resources from air quality management actions are addressed in the respective sections in Chapter 4.

Table 2.6-4 summarizes impacts to air quality under the range of alternatives.

**Table 2.6-4 Comparison of Impacts to Air Quality**

| Management Actions | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Compliance | Negligible effects from compliance with all provisions of the Monterey Bay Unified Air Pollution Control District's ATCM regulation for control of airborne asbestos emissions. | Negligible effects from mitigation for activities and projects on BLM lands in order to comply with applicable Federal, State, and local air quality regulations. | Same as Alternative B. | | | | |
| Fire Management | Negligible effects from use of CALPUFF and other models to evaluate impacts on air quality from fire management. | Negligible effects from coordination with the Monterey Bay Unified Air Pollution Control District (APCD) to permit air quality impacts from BLM actions and authorizations. | Same as Alternative B. | | | | |
| Public Health and Safety | Minor beneficial impacts from installation of a public vehicle wash facility. | Minor beneficial impacts from best available control technologies (BACTs) for dust abatement on roads and during project implementation. | | | | | |
| | | Minor beneficial impacts from reducing emissions on major routes with dust suppression and surface hardening techniques that include, but are not limited to, paving, base rock, chip seal, or applications of surfactants to stabilize and solidify soils or aggregates and control erosion. | | | | | |

**Table 2.6-4 Comparison of Impacts to Air Quality**

| Management Actions | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| | | Negligible effects from reducing the use of Federal funds for clean-up of contaminated lands by seeking cost avoidance and/or cost recovery from the legally responsible parties. | | | | | |
| Mitigation Measures | Minor beneficial impacts from dust abatement during project implementation to maintain ambient air levels for toxic air contaminants and naturally occurring asbestos.<br><br>Minor beneficial impacts from water trucks to spray roads and other areas during project implementation to avoid visible dust emissions in the Serpentine ACEC. | Minor beneficial impacts from mitigation for activities and projects on BLM lands in order to reduce airborne asbestos emissions and comply with applicable Federal, State, and local air quality regulations. | | | | | |

## Soil Resources

The greatest soil disturbance activities within the CCMA include non-motorized recreation, motorized recreation, energy and mineral exploration, livestock grazing, and plant community restoration and fire management. The primary impact of concern for soil resources is erosion. Erosion is a function of four primary factors including precipitation (amount, intensity, and frequency), soil and bedrock permeability, slope, vegetative cover, and disturbance type and intensity. Erosion is a natural process, but it can be greatly accelerated by human impacts including motorized recreation, development (mining, roads, pipelines, buildings, fences), livestock grazing, and fire. Indirect impacts can result when eroded sediment is transported downstream.

Table 2.6-5 provides a comparison of the impacts to soils from among the range of alternatives.

**Table 2.6-5 Comparison of Impacts to Soils**

| Alternative | | | | | | |
|---|---|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| Moderate beneficial impacts from management actions and mitigation measures to reduce or eliminate erosion such as minimizing surface disturbance on steep slopes, erosion control (straw bale check dams, straw rolls), and revegetation of impacted closed areas. | Same beneficial impacts from management actions as Alternative A, plus: A restoration plan will be required for soils with poor restoration potential prior to soil disturbance. | | | | | |
| Moderate beneficial impacts from management actions and mitigation measures to reduce or eliminate erosion such as route maintenance, minimizing surface disturbance on steep slopes, seasonal road closures, erosion control (straw bale check dams, straw rolls), and revegetation of impacted closed areas. | Same beneficial impacts as Alternative A, plus: a restoration plan will be required for soils with poor restoration potential prior to soil disturbance. | | | | | |
| Moderate beneficial impacts from management actions and mitigation measures to reduce or eliminate erosion such as route maintenance, minimizing surface disturbance on steep slopes, seasonal road closures, erosion control (straw bale check dams, straw rolls), and revegetation of impacted closed areas. No disturbance will be permitted on slopes in excess of 50%. | Same beneficial impacts as Alternative A, plus: a restoration plan will be required for soils with poor restoration potential prior to soil disturbance, and no disturbance would be permitted on slopes in excess of 40%. | | | | | |
| Minor beneficial impacts from rangeland health monitoring to prevent excessive soil loss. | Same beneficial impacts as Alternative A | | | | | |

**Table 2.6-5 Comparison of Impacts to Soils**

| Alternative | | | | | | |
|---|---|---|---|---|---|---|
| **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| Alternatives A - F include restoration of closed routes and degraded lands. Soil erosion control will continue to be installed. Routes will continue to be maintained. No disturbance will be permitted on slopes in excess of 50%. | | | | | | Same beneficial impacts as other alternative, but disturbance would be permitted on slopes in excess of 40% if adverse impacts would likely result from pursuing other alternatives. |

## Water Resources

Water resource management decisions generally focus on actions that maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands and ensure that surface and groundwater comply with the U.S. Clean Water Act and California State standards. Other management actions have the potential to impact water resources through the implementation of various resource programs, as described below.

Management decisions can impact water quality, water quantity, and availability of water for multiple uses, as well as the watershed Proper Functioning Condition (PFC) for both surface water and groundwater. Impacts to water quality analyzed in this RMP/EIS include management actions specified for recreation, fire management, livestock grazing, energy and minerals development, and resource protection measures identified under soil resources.

Table 2.6-6 provides a comparison of the impacts to water resources from among the range of alternatives.

**Table 2.6-6 Comparison of Impacts to Water Resources**

| Alternative | |
|---|---|
| **A** | **B through G** |
| Negligible effects from BMPs for watershed enhancement and stabilization measures. | Negligible effects from managing all fluvial systems functioning at risk to meet PFCs. |
| Moderate beneficial impacts from appropriative water rights for all existing and any new surface water facilities on which any Federal funding has been expended in the development, construction, or maintenance of the water facility. | Moderate beneficial impacts from establishment of Federal water reserves on acquired lands to ensure water availability for multiple use management and for functioning, healthy, riparian and upland systems. |
| Negligible effects from regular maintenance of roads and trails, including silt catchments, out sloping, and contouring to reduce impacts on water resources. | Moderate beneficial impacts from management of CWA 303(d)-listed impaired water bodies to meet properly functioning condition (PFC) objectives relative to beneficial uses and total maximum daily loads (TMDLs). |
| Negligible effects from allowing private individuals to appropriate un-appropriated water on unreserved lands for use on or off the public lands because the appropriation must be in accordance with state laws and consistent with multiple use management of the public lands. | Major beneficial impacts from maintaining stable watershed conditions and implementation of passive and active restoration projects to protect beneficial uses of water and meet TMDLs. |
| Negligible effects from DFG permits and CWA Section 404 permits from the U.S. Army Corps of Engineers for stream alteration and BMP watershed management practices as necessary and appropriate. | Minor beneficial impacts from monitoring water quality in seasonal pools and perennial ponds containing known or suspected threatened and endangered (T & E) species and initiating repairs within environmental constraints. |

## Special Designations

The existing special designations within the CCMA include the 30,000-acre Serpentine ACEC, which encompasses 4,147-acre San Benito Mountain RNA and WSA (1,500-acres). The boundaries of the ACEC were defined by mapping of asbestos soils derived from the New Idria serpentine formation based on human health risks associated with exposure to asbestos within the serpentine soils. This ACEC is also referred to frequently as the Hazardous Asbestos Area (HAA).

The purpose and need for this RMP/EIS includes minimizing human health risks from exposure to asbestos and reducing airborne asbestos emissions from BLM management activities. The existing special designations highlight areas where special management attention is needed to protect public health and prevent irreparable damage to important historic, cultural, and scenic values, fish, or wildlife resources or other systems or processes from natural hazards. Therefore, no changes or modifications to the special designation areas in CCMA were considered in the range of alternatives for the CCMA RMP/EIS.

Table 2.6-7, below, provides a comparison of the impacts to special designation areas form among the range of alternatives.

**Table 2.6-7 Comparison of Impacts to Special Designation Areas**

| ACEC/RNA | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| Serpentine ACEC | Maintaining the existing designation for the 30,000-acre area of serpentine soils high in asbestos fiber and the Clear Creek watershed as the Serpentine ACEC would have major beneficial impacts on public health and safety, special status species, and the cultural, historic, and scenic values associated with these public lands. These long-term benefits would result from visitor use restrictions in the ACEC to reduce human health risk from exposure to asbestos emissions, as well as restoration of special status species habitat and protection of cultural and heritage resources . | | | | | | |
| San Benito Mountain RNA | Maintaining the existing designation for the 4,147-acre San Benito Mountain Research Natural Area (RNA) would have major beneficial impacts on its unique forest assemblage and the associated scientific research and educational values because of visitor use restrictions in the ACEC/RNA and long-term studies on barrens restoration and plant species endemic to serpentine soils. | | | | | | |
| **WSA** | **Alternative** | | | | | | |
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| San Benito Mountain WSA | Managing the 1,500 acre San Benito Mountain WSA pursuant to BLM's Interim Policy for Lands Under Wilderness Review would have negligible effects because the BLM manages the WSA in a manner as to prevent impairment of the area's suitability for wilderness designation while Congress considers whether to designate the WSA as permanent wilderness. | | | | | | |
| **WSR** | **Alternative** | | | | | | |
| | | **B** | **C** | **D** | **E** | **F** | **G** |
| Wild and Scenic River Designations | Recommending that none of the river segments on CCMA public lands for addition to National Wild & Scenic River System would have negligible impacts on the outstanding and remarkable values associated with these river segments because none of them are considered suitable for wild and scenic river management. | | | | | | |

## Livestock Grazing

Hollister Field Office land use decisions relating to the management of rangeland resources and livestock grazing are made in accordance with Bureau of Land Management (BLM) grazing regulations and the Central California Rangeland Health Standards and Guidelines. Variance from one or more of the standards indicates that rangeland health may be compromised and corrective actions for livestock grazing may be required.

Table 2.6-8 provides a comparison of the impacts to livestock grazing from among the range of alternatives.

**Table 2.6-8 Comparison of Impacts to Livestock Grazing**

| Management Action | Alternative | | |
|---|---|---|---|
| | A - E | F | G |
| Lands available for livestock grazing (public acres and animal unit months (AUMs) authorized in CCMA). | Maintaining utilization levels at 1,354 AUMS for livestock grazing on 14 allotments covering 22,140 acres within the CCMA boundary would have moderate long-term beneficial impacts on rangeland resources and wildlife habitat in the planning area because livestock grazing would be allowed to improve wildlife habitat and enhance vegetation resources. Yet, approximately 1,986 acres of lands designated for grazing are located in the Serpentine ACEC where livestock grazing could have minor adverse impacts on cultural resources, paleontological resources, and sensitive species habitat from trampling or disturbance, including potential habitat for the San Benito evening primrose. | Under Alterative F, grazing use would continue to be authorized on all 14 allotments, but approximately 83 AUMs that were previously grazed would become unavailable, and 1,986 acres of lands located in the Serpentine ACEC would be excluded from the existing grazing allotments, providing a total of 20,154 acres and 1,271 AUMs available for grazing on public lands in CCMA located outside of the ACEC. This would result in a minor, long-term adverse impact on four (4) grazing lessees in the CCMA and a moderate adverse impact to one lessee due to an eighty percent loss of public lands from their allotment. The modification of allotment boundaries may require construction of additional fence along the boundary of the ACEC. | Under this alternative, livestock grazing would be excluded from public lands within the CCMA boundary. The exclusion of grazing on 22,140 acres in CCMA would be a severe adverse impact to 7 individual grazing operations on seven (7) BLM allotments. A total of six (6) grazing allotments would be eliminated by this action due to significant reductions in available public land within their allotment boundaries.<br><br>Removing livestock from the entire CCMA could have moderate long-term beneficial impacts on special status animals and their associated habitats because more forage would be available for cover and consumption for terrestrial species. Conversely, eliminating livestock grazing could have minor, long-term adverse effects on aquatic species because natural succession would reduce existing habitat quality in ponds and meadows. |
| Standards and Guidelines for Rangeland Health in Central California | Potential impacts to sensitive vegetation, wildlife, and special status species habitat from livestock grazing would be identified through rangeland health monitoring. Management actions to achieve compliance with Standards and Guidelines would have minor long-term beneficial impacts on these values. | | NA |

## Energy & Minerals

Under Alternative A, mineral and geothermal exploration and development are considered on a case-by-case basis, and approximately 5,300 acres in Clear Creek Canyon and the SBMRNA would be withdrawn from mineral entry. Alternatives B, C, and D are less restrictive and would allow energy and mineral development throughout CCMA, except for the San Benito Mountain Wilderness Study Area (WSA). Alternatives E and F would pursue withdrawal of the Serpentine ACEC from mineral entry, but continue to authorize or hobby gem and mineral collection through issuance of access permits. Under all alternatives, special status species habitat in the CCMA would be protected. Under Alternative G, BLM would recommend Congress withdraw all public lands in CCMA from mineral entry.

Table 2.6-9 provides a comparison of the impacts to energy and minerals development under the range of alternatives.

**Table 2.6-9 Comparison of Impacts to Energy & Minerals**

| Management Action | Alternative | | |
|---|---|---|---|
| | A - D | E - F | G |
| Lands available for energy and mineral exploration and development in CCMA. | Impacts would be negligible based on existing conditions and reasonably foreseeable development of energy and minerals in CCMA The absence of a management framework for acquired lands and wind energy under Alternative A would represent a minor to moderate adverse impact because demands for increased energy production would not be fully met. | Restriction of energy development in the 30,000-acre ACEC would have a minor adverse impact on energy and minerals development because while other areas in the Planning Area with higher potential for energy development would be available for development, the goal of meeting the demand for energy and mineral production may not be fully met when the ACEC is closed to development. | Withdrawal of all 63,000 acres of public lands in the CCMA from mineral entry would only have a minor adverse impact on energy and minerals because other public lands in the Hollister Field Office with higher potential for energy development would be available, although the goal of meeting the demand for energy and mineral production may not be fully met, including encouraging the development of renewable energy resources. |

## Cultural & Paleontological Resources

The CCMA was previously inventoried for cultural resources in order to generate baseline data to be used in CCMA planning efforts. Based upon that report and other data accumulated over the years, a comprehensive cultural resources management strategy for the region has been developed with protection efforts for cultural resources that include site avoidance, physical barriers, site monitoring, and review of proposed undertakings to address potential effects to cultural resources.

Table 2.6-10 provides a comparison of the impacts to cultural and paleontological resources under the range of alternatives.

**Table 2.6-10 Comparison of Impacts to Cultural & Paleontological Resources**

| Management Action | Alternative | |
|---|---|---|
| | **A – D** | **E – F – G** |
| Resources Protection and Resources Uses, including recreation, livestock, energy, fire, and realty actions. | In general, Alternative A (No Action) would result in a moderate amount of disturbance to cultural resources, but Alternatives B, C, and D would actually increase the potential for long-term adverse impacts from activities or development of public lands on cultural and paleontological resources. | Management actions under these alternatives would provide beneficial impacts for the protection of cultural resources by reducing adverse impacts from unauthorized excavation and vandalism. These alternatives would also promote goals to cooperate with research institutions and avocational societies to the extent possible in development areas. |
| Native American Values | All Alternatives also recognize the increasing importance of government-to-government consultation with Native American tribes and other concerned parties on specific undertakings involving various authorized land uses. Authorized uses with high potential to directly impact historic properties include tree harvesting, mineral extraction, road and pipeline construction, and facilities construction. Undertakings with moderate potential to directly or indirectly impact historic properties include controlled burns and other vegetation management practices, grazing, and increased traffic on public lands as a result of improved recreational opportunities or other land use programs. Compliance with Section 106 of the NHPA is intended to promote the protection and preservation of historic properties so that authorized use of public lands would not result in adverse impacts to National Register-eligible archeological sites, traditional cultural properties, or built environment resources. However, when avoidance of adverse impacts is not feasible due to overriding project or land use considerations, mitigation measures may be implemented. | |

## Social and Economic Conditions

Alternatives A through G offer a range of social and economic opportunities including tourism, production, industry, and other commodity uses of natural resources.

Table 2.6-11 provides a comparison of the impacts to social and economic conditions under the range of alternatives.

**Table 2.6.11 Comparison of Social and Economic Effects**

| Management Action | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Recreation and Allowable Uses | Beyond any economic benefits of public land recreation, population growth in the face of a static number of opportunities for dispersed, outdoor recreation would cause the benefits of these alternatives to be magnified. | | | | Communities with comparatively high employment in retail motorcycle sales are most likely to experience long-term adverse effects under these alternatives as motorized recreation on public lands in CCMA decreases significantly. | | |
| Energy and Minerals | Future production of minerals in the CCMA under these alternatives depends more on the demand for the minerals and the extent of recoverable reserves available than on any BLM management strategy. Therefore, the impacts of energy and mineral management actions on socioeconomic conditions would be negligible. | | | | | | |
| Land Use Authorizations | Alternatives A-D would provide social and economic benefits from multiple uses to local residents, business, visitors, and future generations by allowing various levels of opportunity for tourism, production, industry, and/or commodity use of natural resources.<br><br>Beneficial or adverse effects on social and economic conditions are highly influenced by the range of alternatives and management actions under each resources program, such as recreation, livestock grazing, and other natural resources with values requiring maintenance and protection by law. | | | | The respective social and economic condition impacted by natural and cultural resources management, livestock grazing, and lands and realty management actions are the same as those described under Alternatives A, B, C, and D. | | |

## Visual Resources Management

As outlined in Section 3.16.2, visual resource management (VRM) classes are assigned to the various parts of the landscape based on visual characteristics and/or to meet management objectives. These range from preserving a natural landscape and existing characteristics (Class I) to providing for management activities that allow major modification of the landscape (Class IV). While numerous management activities can impact visual values, the most significant impacts are large-scale or cumulative ground-disturbing activities that alter the existing form, line, color, and texture of the existing landscape.

Table 2.6-12 provides a comparison of the impacts to visual and scenic resources under the range of alternatives.

**Table 2.6.12 Comparison of Impacts to Visual Resources**

| Management Area/Program | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine ACEC and San Benito Mountain WSA/RNA | Management of the WSA as a Class I area would have negligible effects on visual resources because the BLM manages the WSA in a manner as to prevent impairment of the area's suitability for wilderness designation while Congress considers whether to designate the WSA as permanent wilderness. | | | | Alternative E would provide the most protection and enhancement of visual resources in the ACEC/RNA because the Scenic Route Corridor would be managed as a Class II area, and therefore, this alternative would have the most beneficial long-term impact compared to the other alternatives. | Same as Alts. A – D. | |
| Fire Management | Under all alternatives, management actions would limit bulldozer use on wildfires and prescribed burns in the ACEC due to human health risks, and outside the ACEC, where possible, for other resources concerns. All other actions relating to wildfires and prescribed burns would be designed to maintain a particular area's VRM classification.<br><br>Under Alternatives B through G, approximately 1,450 acres in the Planning Area would be targeted for annual prescribed burns, and 14,000 acres for decadal prescribed burns. This would have a similar level of adverse impact on visual resources as Alternative A due to the higher acreage targeted for annual burns, but lower acreage for decadal burns. | | | | | | |
| Recreation and Allowable Uses | Alternative A would have no adverse impact on visual resources because no new access roads or trails are proposed. | Alternatives B through G would allow new motorized access routes to be established in the Planning Area. This would result in minor adverse impacts to visual resources from road cuts. | | | | | |
| Lands and Realty | Management actions would mitigate impacts by limiting communication towers to utility corridors. | These alternatives also emphasize expansion of existing facilities to accommodate rights-of-ways (ROWs) for communications sites. These actions would have a negligible impact on visual resources because new ROWs would be limited to existing facilities within the designated utility corridor. | | | | | |

## Fire Management

All alternatives would comply with Federal wildland fire policy and target the same number of acres treated for treatment of hazardous fuels. Alternatives B through G specify (1) the use of wildland fire to restore and/or sustain ecosystem health, (2) cooperation with regional interagency partners and wildland urban interface (WUI) communities to reduce fire risk, and (3) public outreach to reduce human-caused fire ignitions, with special emphasis in WUI areas.

Table 2.6-13 provides a comparison of the impacts to resources from fire management under the range of alternatives

**Table 2.6-13 Comparison of Impacts from Fire Management for all Alternatives**

| Management Action | Alternative | |
|---|---|---|
| | A | B - G |
| Wildland Fire and Prescribed Fire | Under Alternative A, prescribed fire would provide mosaic patterns of vegetation to protect soil, watersheds, and wildlife, especially mature chaparral dwellers. Prescribed fire would be used to reduce the risk of wildland fire or catastrophic fire through fuels management. Prescribed fire for wildlife habitat improvement would annually burn 5 to 7 percent of a management unit over a 10-year rotation period. | Fire management would be consistent with the Hollister FMP and comply with current Federal wildland fire policy. BLM would collaborate with Federal and State land managers, Fire Safe Councils, and private landowners to develop cross-boundary fire management strategies, working with WUI communities to reduce wildfire risk and implement a public outreach program to reduce the frequency of human-caused fires and minimize smoke in the WUI. Fire suppression and fuels management activities would also minimize impacts on the environment, especially surface water, cultural and paleontological resources, and sensitive habitats. |
| Post-fire rehabilitation and monitoring | Alternative A does not specify post-fire and non-fire fuel treatment rehabilitation and monitoring. | Under Alternatives B through G appropriate rehabilitation and monitoring action would be defined in prescribed fire and fuels treatment plans; however, emergency rehabilitation such as slope stabilization, reestablishment of appropriate native plant species, invasive weed abatement, and/or protection of vegetation and natural and cultural resources may be needed following a wildfire. |
| Other Management Actions | The potential impacts from prescribed fire activities are minor compared to other alternatives, although the threat of wildfire and associated impacts on these resources is then greater. Livestock grazing can reduce the accumulation of fine fuels and break up their continuity in grazing allotments. | Livestock grazing under Alternatives B, C, D, and E would reduce the accumulation of fine fuels and break up their continuity in grazing allotments. However, excluding grazing from the Serpentine ACEC under Alternative F and the entire CCMA under Alternative G would have the opposite effect of increasing density of vegetation and fine fuels in allotments, which would have a major long-term negative impact on fire management in CCMA. |

## Lands & Realty

Land tenure adjustments and land use authorizations are BLM activities that would occur under all alternatives. Management actions within the lands and realty program are administrative in nature and require subsequent analysis at the project level to determine site-specific resources issues ad alternatives for implementation. Therefore, there would be no direct environmental impacts to the human environment under any alternatives. Instead, management actions would have beneficial impacts on efficient management of public lands and greater preservation and enhancement of biological resources in important areas. Other programs and resources would be affected by failure to complete the required resources screening and analysis prior to any land use authorization, acquisition, exchange, or disposal.

Table 2.6-14, below, provides a comparison of the acres available for disposal and an overview of land use authorizations under each alternative.

**Table 2.6-14 Comparison of Impacts from Lands and Realty for all Alternatives**

| Management Actions | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Land Use Authorizations and Land Tenure Adjustments | Management actions would have a minor adverse impact on administration of lands and realty because they would only allow acquisition of lands for efficient management of public lands and to reduce conflicts with other public and private landowners within the CCMA | Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities. | | | | | |
| | Retaining all public lands in CCMA would have negligible effects on land tenure in the planning area. | Making 3,300-acres available for disposal in the Tucker, San Benito River, and Condon zones would have negligible adverse impacts on lands and realty, and moderate long-term benefits for management efficiency because BLM would be able to consider exchange or purchase of lands to acquire inholdings with high biologic, geologic or cultural resource values. In general the public land pattern would be consolidated and access to public lands would be improved.<br><br>Under Alternative D, none of the 3,300 acres in the Tucker, Condon, and San Benito River zones would be available for disposal. Retention of these lands would have minor adverse impacts on management efficiency and public access because all of these parcels have no existing (or reasonably foreseeable) public access. Otherwise, Alternatives E and F would have the same effects as Alternatives B and C. | | | | | |

**Table 2.6-14 Comparison of Impacts from Lands and Realty for all Alternatives**

| Management Actions | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Other Management Actions | | Overall, impacts from other management actions would primarily be related to land use authorizations. Special areas like WSA's, ACEC/RNA's, or the existence of special status plants or animals, wetlands, and cultural resources, among other things, can limit the availability of those areas for certain land use authorizations like rights-of-ways or energy and mineral development. The potential increase of land use permits for renewable energy development would also increase the administrative burden on the BLM. | | | | | |

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# 3.0 AFFECTED ENVIRONMENT

## 3.0.1 Introduction

This chapter describes the current condition, location, and use of the resources on public lands in the Clear Creek Management Area (CCMA) administered by the Bureau of Land Management (BLM) Hollister Field Office (HFO) that could be affected by the range of alternatives described in Chapter 2 of this RMP/EIS. The affected environment descriptions focus on those aspects of the physical, biological, cultural, social, and economic conditions that could be affected by the management actions prescribed in the range of alternatives.

Chapter 3 provides a general discussion of the Planning Area and then focuses in on those specific lands within the CCMA that are administered by the BLM (refer to Map 1 in Appendix I). For clarification:

- The Planning Area includes all lands within the boundaries of the within the Clear Creek Management Area (CCMA), including privately owned lands and State and Federal lands, including those administered by the BLM HFO.
- The Planning Area is divided into five management zones with various combinations of management actions and different land use allocations under the range of alternatives. However, this chapter describes the current resource uses and conditions in CCMA in general. Where possible, resources issues and concerns specific to any of the five management zones are also discussed.
- "BLM-administered lands," or "BLM public lands" are those specific areas within the Planning Area for which BLM has jurisdiction to make land use decisions. The term "Decision Area" may be used to describe these lands throughout this RMP/EIS.

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# 3.1 Recreation

## 3.1.1 Introduction

This section addresses the recreational opportunities and trends in the Planning Area, including off-highway vehicle (OHV) recreation and non-motorized recreation. For further discussion of transportation and travel management, refer to Section 3.3, "Travel and Transportation Management."

BLM administered lands in the CCMA support a variety of recreational opportunities, including hiking, hunting, hobby gem and mineral collections (commonly referred to as 'rockhounding'), and hundreds of miles of OHV use trails. Over the past 20 years, motorized vehicle use has been more closely managed as a result of increasing demand, the listing of threatened and endangered species, and public health and safety hazards associated with abandoned mine lands. Permanent and temporary closures have also increased awareness of environmental issues and public interest and involvement in management of recreation resources on public lands.

## 3.1.2 Regulatory Framework

The primary framework for managing recreation is BLM Manual 8300, Recreation Management (BLM 1990). The objectives of the BLM's outdoor recreation program are to: (1) provide a broad spectrum of resource-dependent recreational opportunities to meet the needs and demands of visitors to public lands; (2) foster agency-wide efforts to improve service to the visiting public; (3) maintain high-quality recreation facilities to meet public needs and enhance the image of the agency; and (4) improve public understanding and support of the BLM by effectively communicating the agency's multiple-use management programs to the recreation visitor.

Vehicle use in the Planning Area is managed under the direction and authority in 43 CFR Part 8340 "Off-Road Vehicles," and Subpart 8342, "Designation of Roads and Trails." The off-highway vehicle (OHV) regulations apply to use of routes by the general public. Certain other routes may be open to private landholders, and grazing or other permittees, to meet specific access needs and/or legal rights.

## 3.1.3 Regional Setting

The Planning Area hosts unique resources and recreation opportunities for thousands of visitors that are attracted to the Southern Diablo Range in Central California, annually. These resources provide natural beauty, solitude, and freedom from the structure and regulations of urban areas. In all recreational opportunities, scenic values are often cited as an important resource to the participant's recreation experience. Virtually all recreation activities are dependent upon availability of access within the planning area, which BLM can acquire through purchase of lands or public easements from willing sellers.

In general, public recreation use of BLM administered lands is unsupervised and unorganized. Clear Creek Management Area is classified as a Special Recreation Management Area (SRMA) by BLM because of the resources monitoring, law enforcement patrol, and investment in facilities needed in order to manage OHV use and recreation on these public lands.

Additional OHV recreation opportunities in the region, are provided in the Hollister Hills State Vehicular Recreation Area (SVRA); Oceano Dunes SVRA, Metcalf County Park, Frank Raines County Park, and BLM's Jawbone Area of Critical Environmental Concern. More information on these areas is presented in Chapter 4 (Environmental Consequences), under Recreation (Section 4.1). Additional non-motorized recreation opportunities in the region, are provided in the Los Padres National Forest and Pinnacles

National Monument; Fort Hunter Liggett; Henry Coe State Park; Coalinga Mineral Springs County Park and BLM public lands; San Antonio, Pine Flat, and San Luis Reservoirs; East Bay Regional Parks; and numerous other Federal, State, regional, local, and private facilities.

## 3.1.4 Current Conditions and Trends

### 3.1.4.1 OHV Use and Other Recreation Opportunities

#### Off-Highway Vehicle Use

Motorcycle and ATV riding are the most prevalent recreation activities in the CCMA, with almost all of the use occurring on more than two-hundred miles of designated routes within the 30,000-acre Serpentine ACEC. The majority of the use occurs within the lower six miles of Clear Creek Canyon., and while motorcycle and ATV riding are the most common OHV recreation activities, four-wheeled drive vehicles and ATVs are also used for access to a variety of other recreational activities in CCMA, including hunting, rockhounding, and hiking.

Since the 1970's, several large organized OHV events have been conducted annually in the CCMA. These include, the Quicksilver Enduro sponsored by the Salinas Ramblers Motorcycle Club (SRMC), and the Wild Boar sponsored by the Timekeepers Motorcycle Club. Other organized OHV events held regularly in CCMA include the SRMC's Picacho Hare Scrambles, the Molina Ghost Run four-wheel drive tour sponsored by California 4-Wheel Drive Association, and the Family Fun Ride sponsored by the Racers Under The Son.

A combination of regulatory signs, route number signs, directional signs, and fencing is used to direct visitors along the trails identified on the user map. BLM park rangers and law enforcement patrol the CCMA, providing visitor assistance and information, and enforcing Federal and State rules and regulations, as appropriate.

There are approximately 5,900 acres of barren areas scattered throughout the CCMA. The 2006 CCMA Amendment for designated 478 acres of BLM barrens available for OHV use that are identified on the CCMA user map. The barrens are used primarily by ATVs and motorcycles as "open play areas" with challenging hill climbs, while some of the more gradually sloped barrens are also used by full-sized 4-wheel drive vehicles and for enjoyment by riders of all skill levels. The barrens designated for OHV use are adjacent to major routes or are located along routes that traverse barren complexes to make them accessible to the various user groups.

#### Other Recreation Opportunities

Other recreational opportunities include hobby gem/mineral collecting, hunting, hiking/backpacking, and sightseeing. Hobby gem and mineral collectors are drawn to the Clear Creek area by the presence of over 100 semi-precious minerals and gemstones. This is one of the most highly mineralized areas in California. Collectable minerals include jadeite, cinnabar, andradite, tremolite, melanite, topazolite, barkevikite, clinochlore, vesuvianite, artinite, natrolite, neptunite, and benitoite. Some minerals such as benitoite are extremely rare and the CCMA is practically the only place in the world where they can be found. Highly mineralized areas generally occur along faults and inclusions/intrusions in and around the serpentine body. Hobby gem/mineral collecting (or rockhounding as it is commonly called) accounts for about five percent of the total recreation use in the CCMA.

Several commercial gem collectors also maintain mining claims and work infrequently in the area. The only known commercial deposit of benitoite is found on a patented mining claim (private land) in the

CCMA. The area's unique geology also attracts geology students and researchers from local and national universities including Stanford and Harvard.

Hunting activities occur primarily on the outskirts of the ACEC boundary, although, access to public lands has traditionally been from Clear Creek Canyon to the remote regions of CCMA to the east and south of the ACEC. The primary game animals sought are wild boar and deer. Deer season occurs during the months of August and September with boar season occurring throughout the year. Hunting for mule deer at CCMA is concentrated in the Clear Creek, Spanish Lake, Condon Peak (Condon Zone), and Joaquin Ridge (Cantua Zone) regions. Hunting can be poor in drought years, resulting in far fewer deer than hunters, especially in the first week of the season. Deer hunting in past years has been accompanied by increased garbage and vandalism at CCMA during years when deer numbers are depressed.

Hiking and sightseeing occurs throughout the year. Visitors are drawn to the area to see the unique ecosystems and experience the rugged terrain present on the CCMA. Sport utility vehicles are used by weekend sightseers to traverse the more commonly used routes. These routes provide views of the unique habitats and geological formations found within the CCMA, and views of the Central Valley and the Sierra Nevada.

Though not as common as other recreation activities, CCMA public lands have been used as a launching place for hang gliders at Goat Mountain, which provides a unique launch site as a peak that is accessible by full size vehicle with a glide path to Coalinga.

#### 3.1.4.2 CCMA Visitor Use

Clear Creek was among the top five most popular areas cited by California off-highway-vehicle (OHV) users in a 1990 study conducted by the California Department of Parks and Recreation (CDPR, 1990). The CCMA continues to be popular with motorcyclists who use the area for hill climbing, trail riding, and camping. Other common activities include 4-wheel drive off-highway vehicle touring, hobby gem/mineral collecting, hunting, hiking/backpacking, and sightseeing.

Most motorcycle users are from the San Jose/San Francisco metropolitan areas with normal travel time of approximately three hours to get to the CCMA. These users travel very close to the 6,800-acre Hollister Hills State Vehicle Recreation Area (SVRA) en route to Clear Creek. This intensively managed OHV use area is one and one-half hours closer, but the unique challenge of the serpentine soils and the amount of area available for OHV recreation use continue to draw motorcycle riders to Clear Creek. Because of the distance to other urban areas in the region, including Fresno, Visalia, Salinas, Santa Cruz, and San Luis Obispo, visits to the CCMA require considerable highway driving.

In 1984, approximately half of the total number of visits to the CCMA was attributed to the use of OHVs and one-third was attributed to hunting. Visitor use now (and then) continues to be most prevalent during the winter months (November – April), because winter rainfall keeps the dust levels lower and temperatures cooler, as opposed to the extreme heat and dust present during the dry summer months. Prior to 2005, public access into CCMA was authorized year-round, and recreation use declined by nearly 80 percent during the summer months, although visitor use would increase significantly with the onset of deer season from August through mid-September.

Beginning in the summer of 2005, the BLM instituted Dry Season Use Restrictions based on air sample results detailed in a Technical Memorandum from the EPA titled “Human Health Risk Assessment - Asbestos Air Sampling Clear Creek Management Area, California” that was published on September 15th, 2004. The BLM’s 2006 Record of Decision (ROD) for the CCMA RMP Amendment and Route

Designation formally adopted the Dry Season Use Restrictions, which limits vehicle use to approximately 35 miles of major routes in the Serpentine ACEC from June 1st through October 15th.

Visitor use data prior to 2005 is based on primitive infrared counters at the two main CCMA entrances, from Coalinga Road and New Idria. These estimates were unable to account for access from adjacent private property, and the counters were subject to vandalism and mechanical failures. When a counter had a period of inoperability, visitor use trends were extrapolated from data immediately prior, or estimated based on trends during the same period from the prior year. The program was updated to a modern and accurate traffic counting system in 2005.

January 2006 marked the signing of the ROD for the CCMA RMP Amendment and Route Designation. As displayed in Table 3.1-1, visitor use appears to have declined as a result of areas being closed to OHV use and changes to the recreation experience in CCMA from 2005 – 2008. .However, the advent of precise traffic counters and record high fuel prices during this period also likely contributed to the decline in visitor use in CCMA.

Fiscal Year 2008 further marked the implementation of a Fee Program. These fees, in conjunction with high fuel costs and the strictly enforced route designations were likely factors influencing visitor use decline when compared to previous years. Also, BLM's temporary closure of the Serpentine ACEC to all forms of public entry in response to the EPA's CCMA Asbestos Exposure and Human Health Risk Assessment released on May 1, 2008 significantly reduced the total number of visitor use days for 2008.

In 2007/2008, recreation use in the Planning Area was estimated at 35,000 visitor days, with about 80% of this attributed to OHVs. These estimates have not changed drastically over the years, even with the increasing popularity of OHV recreation in California.

BLM staff and law enforcement personnel access public lands for administrative purposes on a regular basis. Typically, BLM law enforcement personnel patrol areas with high visitor use by vehicle, while BLM resource staff and specialists make regular visits by vehicle and on foot to various locations to meet annual monitoring requirements and/or review proposed projects or activities on BLM public lands.

Table 3.8-1. CCMA Visitor Use

| Year | Visitors |
|---|---|
| 2003 | 50,000 (Estimated) |
| 2004 | 50,000 (Estimated) |
| 2005 | 43,235 |
| 2006 | 43,187 |
| 2007 | 35,267 |
| 2008 | 28,428 |

### 3.1.4.3 Recreation Trends and Forecast

According to the California State Parks report "Taking the High Road" (2002), off-highway motor vehicle recreation demand has increased dramatically in the last two decades. The study found that California has the highest population in the nation (34 million) and the highest number of OHV enthusiasts (3.5 million, or 14.2 percent of all California households); and San Benito County saw a population increase of 45 percent and a 113 percent increase in OHV registrations during the 1990's. Increases in OHV registrations by vehicle type statewide during that time were: dirt bikes 30 percent (from 153,304 to 199,142), all-terrain vehicles 96 percent (from 91,984 to 180,273), and dune buggies and sand rails 96 percent (from 17,500 to 34,243), and street licensed 4-wheel drive vehicle registrations increased 74 percent (from 290,651 to 506,585). During this same period OHV land availability decreased 48 percent (from 13.5 million to 7.0 million acres). Nonetheless, California State Parks still reports there are approximately 100,000 miles of routes and trails are available for OHV use throughout California. Of these 100,000 miles, 10,000 miles (10 percent) represent single-track trails and 16,000 miles (16 percent) represent trails of interest to 4-wheel drive enthusiasts. The remaining 74,000 (74 percent) miles are connector routes for those pursuing a variety of forms of recreation.

The number of annual recreational visits to CCMA public lands continues to increase, primarily because of their proximity to urban areas such as San Jose, San Francisco, and coastal communities, and because of increasing population growth in the Central Valley and southern California. In the 1980's, California State Parks prepared a Feasibility Study and Draft Environmental Impact Report (EIR) for a proposed State Vehicular Recreation Area (SVRA) on private lands adjacent to CCMA, known as the Martin Ranch, and BLM-administered lands in the Cantua Zone. This area was identified as suitable to consider for off-highway vehicle recreation because of the proximity to major urban centers. Therefore, this RMP/EIS also considers emphasizing off-highway vehicle recreation on BLM public lands in the Cantua Zone, and incorporates information from the California State Parks Martin Ranch SVRA Feasibility Study (1984) and Draft EIR (1985) into the analysis of environmental impacts under Alternative D.

Off-highway vehicle (OHV) use is becoming more popular throughout the country, particularly in California. This trend can be seen through the increase of sales in ATV's, motorcycles, and four-wheel drive vehicles. Political and financial pressures are restricting OHV use and eliminating OHV use from historically available areas. The displaced users are seeking OHV opportunities in other areas. Recreation areas that provide OHV access, like Clear Creek Management Area, will most likely become more congested. This will continue to be a challenge for BLM as budgets continue to be limited. Congressional designations and lawsuits that restrict types of use will cause conflict and impacted groups/individuals will become more vocal.

Hobby gem and minerals collection (rock-hounding) and hunting would also continue to be popular activities in CCMA. Both would probably be subject to more restrictions due to human health risks from exposure to asbestos in CCMA. Areas outside the Serpentine ACEC will likely become more popular as BLM implements public health and safety measures. Volunteers could play a greater role in the development and maintenance of these areas.

Recreational use of public lands can be expected to increase as population grows, not only in the Central Coast and Diablo Range areas that support local use but also throughout the HFO and California. If recreation use were to grow at a rate proportional to projected population growth in the Central Coast and Diablo Range areas, over 50,000 annual visits would be expected, compared to the 43,000 visitor use days recorded in 2006.

Development of trails as well as installation of any other visitor facilities may become necessary to manage public use and meet recreation opportunity demands in the CCMA's San Benito Mountain Research Natural Area. Such infrastructure would require greater law enforcement presence, as well as increased demand for non-motorized trail use and improved facilities outside the Serpentine ACEC.

### 3.1.4.4 Recreation Facilities, Fees, and Permits

**Facilities, Outdoor Kiosks, and Displays**

Visitor facilities are limited to Oak Flat Campground, Jade Mill Area, and five staging areas that have trash receptacles and pit toilets. Bulletin boards with general information and regulatory information are present at these areas, the Condon Peak trailhead, and at the main entrances to the CCMA. Posted information details upcoming events, campfire requirements, asbestos warnings, and user maps showing routes and other geographic points of interest.

**Recreation Fees**

It is BLM's policy to collect fees at all specialized recreation sites, or where the BLM provides facilities, equipment or services, at federal expense, in connection with outdoor recreation use. Fees on public lands managed by BLM are established in accordance with the Federal Lands Recreation Enhancement Act (2005). To meet increasing demands for service and maintenance, the HFO established a fee collection program for the Clear Creek Management Area, beginning in January 2008, as described in the Federal Register (Vol. 72, No. 123).

The CCMA qualifies as an area where fees can be charged based on the significant opportunities for outdoor recreation, substantial Federal investment, the ability to collect fees efficiently, developed parking, permanent toilets, permanent trash receptacles, interpretive signs, picnic tables, and security. The fee is intended to provide funding to maintain existing facilities and recreational opportunities, to provide for law enforcement presence, to develop additional services, and to protect unique and sensitive resources in the area.

The rationale for charging recreation fees was established in the Clear Creek Special Recreation Management Area Business Plan and in a manner consistent with the following criteria: (1) The amount of the recreation fee shall be commensurate with the benefits and services provided to the visitor; (2) The aggregate effect of recreation fees on recreation users and recreation service providers were considered; (3) Comparable fees charged elsewhere and by other public agencies and by nearby private sector operators were considered; (4) Public policy or management objectives served by the recreation fee were considered; (5) Recommendations and guidelines regarding initiating fee sites from the Central California Resource Advisory Council (RAC) was considered and incorporated into the Business Plan; and (6) Other factors or criteria as determined by the Secretary were considered.

As the population of California continues to increase, the public's demand for open space and recreational opportunities is expected to increase as well. Other Federally managed recreation areas annually increase their use fees, which in turn continue to displace and encourage outdoor recreational users to seek lower fees, such as BLM public lands in CCMA.

**Special Recreation Permits**

The HFO issues an assortment of special recreation permits for a range of activities, including commercial use, competitive use, vending, filming, special area use, and organized group activities and event use. Special recreation permits are required for specific recreational uses of the public lands and

related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, and provide a mechanism to accommodate commercial recreational use.

The HFO has regularly issued recreation permits for three annual competitive motorcycle enduro races in CCMA, two annual non-competitive events, and several other miscellaneous permits such as organized field trips in the San Benito Mountain RNA.

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# 3.2 Hazardous Materials and Public Health & Safety

## 3.2.1 Introduction

As managers of the nation's public lands, the BLM is responsible for the health and safety of visitors to public lands. The HFO engages in hazardous material emergency response actions, hazardous waste site evaluations, and prioritization of site remediation activities in accordance with Federal, State, and local laws and regulations. Remediation is typically done in coordination with the U.S. Environmental Protection Agency, California environmental regulatory agencies such as the Department of Toxic Substances Control and the Regional Water Quality Control Boards, counties, and potentially responsible parties (both public and private). This section addresses hazardous materials management on BLM public lands in CCMA, as well as associated risks to the public health and safety.

Historically, public lands located within the CCMA were used for mining of mercury and asbestos, locating communication sites on mountain tops, and other resource uses like timber harvesting. More recently, CCMA public lands have been subject to numerous unauthorized and illegal activities, such as dumping of household and toxic wastes and marijuana cultivation.

Due to environmental and human health risks concerns associated with the presence of asbestos in the bedrock and soils of the New Idria Formation 30,000 acres of BLM-managed lands were designated as the Clear Creek Serpentine Area of Critical Environmental Concern (ACEC) under the Record of Decision for the original Hollister RMP (1984). Refer to Section 3.10, Special Designations) for more information on the Serpentine ACEC designation. Use of these lands, both legally and illegally, has resulted in the release of hazardous substances and the creation of hazardous waste sites.

Located within the Serpentine ACEC, is the Atlas Asbestos Mine Superfund Site, which added to the National Priorities List in 1983. As EPA was finalizing its approach to the cleanup of the Atlas site in 1991, they identified the need to evaluate BLM's management of CCMA and evaluate the overall protection of human health and the environment. As a result, BLM developed a health risk assessment in 1992 to further determine what management actions were necessary to limit public risk to asbestos and incorporated the results into the 1995 CCMA RMP Amendment, and it's associated Record of Decision (1999).

## 3.2.2 Regulatory Framework

The principal Federal regulatory agency for setting laws and guidelines for hazardous materials is the U.S. Environmental Protection Agency (EPA). Key Federal laws and regulations pertaining to hazardous materials associated with the Planning Area include the:

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites; provides for liability of persons responsible for releases of hazardous waste at these sites; establishes a trust fund to provide for cleanup when no responsible party can be identified; and
- Superfund Amendments and Reauthorization Act (SARA): Amendment to CERCLA (above) that establishes a nationwide emergency planning and response program and reporting requirements for facilities that store, handle, or produce significant quantities of hazardous materials; identified requirements for planning, reporting, and notification concerning hazardous materials.

## 3.2.3 Current Conditions and Trends

Within the Planning Area, the hazardous materials of most concern are primarily a result of a numerous historic mine sites and their associated retort piles that contain tailings of mercury and asbestos, in addition to many other heavy metals, such as nickel and cadmium. CCMA public lands are also subject to illegal dumping of hazardous materials such as used tires and autos, household waste, and industrial wastes, as well as waste from illicit drug operations. There are no specific target ranges; however target shooting does occur regularly in CCMA and on adjacent private lands at Mexican Flats. Occasionally, target shooting that involves the use of "e-waste" such as old computers or televisions occurs in scattered remote locations.

### 3.2.3.1 Naturally Occurring Asbestos

In the mid-1950's, an investigation by the California Division of Mines and Geology indicated that the serpentine matrix of the New Idria Formation was mainly chrysotile asbestos. 'Asbestos' is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such a thermal insulation, chemical and thermal stability, and high tensile strength.

The New Idria Formation covers approximately 30,000 acres and was designated as the Serpentine Area of Critical Environmental Concern (ACEC) in 1984 based on the health concerns associated with exposure to naturally occurring asbestos, and because of the unique vegetation and forest types associated with serpentine formation. This area is also referred to as the Hazardous Asbestos Area (HAA).

Asbestos is a known human carcinogen and exposure to airborne asbestos poses a health and safety risk because persons breathing the air may breathe in asbestos fibers. Continued exposure can increase the amount of fibers that remain in the lung. Fibers embedded in lung tissue over time may cause serious lung diseases including: asbestosis, lung cancer, and mesothelioma. The boundaries of the ACEC were defined by mapping of serpentine soils derived from the New Idria Formation.

In 1962, the Atlas Division of the Atlas Corporation began construction of an asbestos mine and mill within the boundaries of the CCMA that was in operation until 1979. The mining activity included digging the asbestos ore out of surface pits and then milling the ore. The by-products (tailings) of the milling process were bulldozed into piles near the asbestos mill. The resulting fluvial and airborne asbestos emissions from the site lead the Atlas Mine to be approved for listing on the Environmental Protection Agency's (EPA) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund") program National Priorities List (NPL) in 1984. The NPL is the EPA's list of the hazardous waste sites potentially posing the greatest long-term threat to health and the environment.

In 1991, U.S. EPA signed the Record of Decision (ROD) selecting the cleanup remedy for the Atlas Asbestos Mine Superfund site in San Benito and Fresno counties, California. In the ROD, EPA noted that it was not proposing any action for the Clear Creek Management Area (CCMA), one of the Atlas site's four geographic areas. Instead, EPA stated that it would evaluate whether the United States Department of Interior Bureau of Land Management's (BLM) plans for management of CCMA were adequate to protect public health from exposure to asbestos found in the area.

Air sampling investigations conducted by EPA to address asbestos air pollution transport indicated that asbestos concentrations were similar within the North Central Coast air basin and San Joaquin Valley air basin. However, the localized on-site generation and inhalation of airborne asbestos was determined by both EPA and BLM to be a potential problem from motorized vehicle use in the CCMA.

In 2004, as part of the process of evaluating the Atlas Mine cleanup for possible delisting of the site from the federal Superfund list, EPA Region 9 initiated an asbestos exposure and human health risk assessment for the CCMA. The goal of the assessment was to use current asbestos sampling and analytical techniques to update a 1992 BLM Human Health Risk Assessment and provide more robust information to BLM on the asbestos exposures from typical CCMA recreational activities and the potential cancer risks associated with those exposures.

In order to assess the risk of exposure to asbestos in CCMA, Region 9 collected air samples while EPA employees and contractors participated in typical recreational activities at the Clear Creek Management Area. The samples were collected from the breathing zone of individuals riding motorcycles and all-terrain vehicles (ATV), driving and riding in sports utility vehicles (SUV), hiking, camping, sleeping in a tent, fence building, and washing and vacuuming vehicles after use at CCMA. Air filter sample cassettes were placed on adult samplers to collect air samples representing the breathing zone heights of both adults and children and samples were collected for both lead and trailing riders. These activity-based air samples were then analyzed for asbestos.

The activity-based sampling showed that activities which disturbed the soil recorded significantly elevated asbestos levels in the breathing zone. Motorcycle riding, ATV riding, and SUV driving/riding had the highest exposure concentrations, in some cases exceeding even the U.S. Occupational Safety and Health Administration (OSHA) 30-minute Excursion Limit for asbestos. Only hiking was near ambient asbestos concentrations. For Overall OHV Riding, combining motorcycling, ATV driving/riding, and SUV driving/riding, trailing riders had significantly higher exposures than lead riders. Chrysotile asbestos was the predominant asbestos type found in the air samples, but almost 8% of the phase contrast microscopy equivalent (PCME) asbestos fibers detected belonged to the amphibole asbestos group. When the sampling results were evaluated by the general meteorological conditions of the dates sampling was conducted, “dry”, “moist”, and “wet”, it was observed that asbestos air concentrations were only reduced when it was actively raining. Additionally, comparison of samples collected at the same time by the same individual wearing sampling cassettes set at different heights to simulate adult and child breathing zones showed that the child exposure concentrations exceeded that of the adult sample approximately 64% of the time.

When the activity-based sampling asbestos concentrations were applied into typical use scenarios and excess lifetime cancer risks were estimated, the EPA report found that using the EPA Integrated Risk Information System (IRIS) toxicity value for asbestos, making five or more visits to CCMA per year over a 30-year period to participate in recreational scenarios of Weekend Riding, Day Use Riding, Weekend Hunting, or Combined Riding/Fence Building could put recreational users at an excess lifetime cancer risk above EPA’s acceptable risk range of $1x\ 10^{-4}$ (1 in 10,000) to 1 in $10^{-6}$ (1 in 1,000,000). The highest IRIS risk estimation, 2 in 1,000 ($2 \times 10^{-3}$), was based on the 95% upper confidence limit exposure concentration for 12 visits per year for the recreational Weekend Rider (EPA 2008).

Using the State of California Office of Environmental Health Hazard Assessment (OEHHA) toxicity value for asbestos, even one visit per year for recreational scenarios of Weekend Riding, Day Use Riding, Weekend Hunting, or Combined Riding/Fence Building put users above EPA’s acceptable risk range. The higher risks reflect the fact that the OEHHA asbestos toxicity value is 8 times larger than the value in IRIS. At the high end of the risk range, excess lifetime cancer risk estimations using the OEHHA toxicity value and the 95% upper confidence limit concentration indicate that recreational users riding motorcycles 12 weekends per year could have as much as a 1 in 100 ($1 \times 10^{-2}$) lifetime chance of developing asbestos related cancer.

As with any assessment of risk, there are assumptions and variables that can cause the calculations to either overestimate or underestimate the actual risk. The CCMA risk assessment report contains a more

detailed discussion of the exposure and toxicity parameters which affect the calculations of estimated risk. The CCMA assessment may overestimate or underestimate risk if EPA's measurements of exposure and the assumptions of exposure frequency are either greater or less than actual conditions.

Additional uncertainty is introduced because both the IRIS and the OEHHA toxicity values for asbestos are based on epidemiological studies of work place exposures to intermittent high asbestos concentrations over extended periods. While the concentrations measured for activities at CCMA are significantly elevated, the exposure is infrequent and episodic. Because there is no clear mode of action for asbestos-induced disease and no threshold for cancer health effects, using a direct time-weighted extrapolation from the longer, chronic occupational exposures to shorter-term, episodic exposures may underestimate or overestimate the risk. The risks could be much lower because the exposures may be too infrequent or the total retained fiber burden too few to initiate the asbestos disease process.

On the other hand, the EPA risk calculations may underestimate the risk because take-home exposures and non-cancer health effects were not considered. Asbestos can adhere to equipment, clothes, and the interior and exterior of vehicles, and can be tracked out of CCMA resulting in future exposures to CCMA users, families, and communities. The offsite exposure could increase the risk, proportional to the time of exposure and the concentration of asbestos tracked offsite. Perhaps most important, there is currently no reference value for calculating non-cancer risks from asbestos exposures and non-cancer risks were therefore not addressed in the EPA assessment. However, epidemiological studies indicate that non-cancer respiratory health effects from exposure to asbestos can be significant and in some studies exceed the cancer cases. Therefore, the general probability of developing disease from exposure related to activities at Clear Creek may be underestimated in the EPA risk estimations.

Asbestos is a known human carcinogen. Despite the uncertainties inherent in risk assessment, the evaluation of asbestos exposures and risks at the Clear Creek Management Area led EPA to conclude:

- The Activity Causes the Exposure – The concentration of asbestos in the breathing zone is directly related to the degree that an activity disturbs the soil and creates dust.

- Children Are of Special Concern – In a majority of the samples, the concentration of asbestos measured in the child's breathing zone exceeded the asbestos concentration in the companion adult sample. Further, a child's life expectancy exceeds the latency period for asbestos-related disease.

- The Higher the Exposure, the Higher the Risk – The activities with the highest exposure - motorcycling, ATV riding, and SUV driving/riding - had the highest corresponding excess lifetime cancer risk.

- Reducing the Exposure Will Reduce the Risk – The risk of developing asbestos-related disease is dependent on the level of exposure, the duration of exposure, and the time since first exposure.

- Reducing exposure will reduce the risk of developing asbestos related cancers and debilitating and potentially fatal non-cancer disease.

In response to the CCMA Asbestos Exposure and Human Health Risk Assessment (2008), BLM issued a temporary closure order simultaneously on May 1, 2008 that closed 30,000-acres within the CCMA's Serpentine ACEC to all public use and entry. The closure order was published in the Federal Register (Volume 73, Number 85), pursuant to 43 CFR 8364.1, to protect public land users from human health risks associated with exposure to airborne asbestos in the CCMA while the BLM completes this Resource Management Plan.

### 3.2.3.2 Illegal Dumping and Illicit Drug Operations

Over the years, substantial marijuana garden encampments have been discovered by law enforcement authorities in CCMA. Law enforcement confiscate the illegal product, but large amounts of solid waste, garbage, food, clothing, fertilizers, pesticides, and batteries remain on public lands. Many of these types of waste also contain hazardous materials that are a potential source of contamination of the air, water, and soil resources in CCMA. Similar waste piles are dispersed throughout CCMA due to illegal dumping of household chemicals and solid waste.

### 3.2.3.3 Abandoned Mine Lands

Some acid mine drainage has been characterized with respect to the mines located in this management area. Hazards associated with these mines include open shafts and adits, tailings piles, and abandoned equipment. Other hazardous materials of concern that may be found in the CCMA abandoned mine lands include cinnabar (mercury ore) deposits and piles of asbestos tailings that have been dispersed throughout the region by wind, water, and anthropogenic sources of disturbances. Current conditions and BLM goals for reclamation of some abandoned mine lands in CCMA are identified below.

#### Aurora Abandoned Mine Lands Project

The Aurora mine was active from 1853 up to the 1950's. Historic photographs of the mine showed that several structures and an improved water source for the mine along with two large metal water tanks. These structures and the furnace used to retort the ore were previously removed, so no above ground structures were left when restoration activities began in the summer of 2000.

Remediation of the site included the removal of 8,000 cubic yards of mercury retort waste rock (calcines) and placement into a repository located nearby. All unearthed mining debris was also placed into the repository. The disturbed areas were recontoured and capped with two to three feet of non-mercury native soil. Native plant seeds from the adjacent vegetated areas were spread out under several inches of weed-free rice straw. Rice straw hay bales were staked in the ground to control erosion and allow for the germination of the native plants. However, severe winter storms have caused the ephemeral drainage that was recontoured through the site to overflow and cut into the cap material causing additional erosion concerns.

#### Alpine Abandoned Mine Lands Project

This mine was active from 1910 up to the 1950's and consisted of several shallow open cuts and 100 feet of subsurface workings. Historic photographs of the mine in operation indicated several structures were present which may have housed the miners. However, very little evidence of these structures remained just prior to the site cleanup. During mine operations, the calcines were dumped into the steep ravine and, over time, a substantial portion of the wastes were washed downstream. Therefore, the remediation plan called for the excavation and entombment of 3,000 cubic yards of calcines and other mining debris.

In 2001, the calcines were removed and transported to a repository on the west side of the mill site. The retort wastes were capped with two-three feet of native (non-mercury ore) soil, seeded with the native plants and then covered with the weed-free rice straw. The excavated calcine pit was recontoured with native soil, reseeded with the same native plants and five rows of rice bales were staked along slope contours to reduce stormwater runoff.

#### Jade Mill Site Abandoned Mine

The Jade Mill Site began operations around 1900, and based on the volume of retort tailings, produced an estimated 50 flasks of mercury. In the 1970's the site was used for gemstone production. The mill site contained two brick and one metal retorts estimated at about 500 cubic yards. Site restoration began in the Spring of 2001 and was completed in the Summer of the same year. All structures were removed, all retort brick and calcine wastes were buried on site and capped. The site was fenced and seeded.

Following the discovery of San Benito evening primrose in 1960 (*Camissonia benitensis*; CABE) and subsequent listing by the Fish and Wildlife Service as Threatened in 1985, the BLM began making efforts to protect the species' habitat. Habitat protection efforts included establishing formal campgrounds and staging areas and fencing habitat to exclude OHV and other recreation impacts. Formal campgrounds established included Jade Mill. Upper Jade Mill campground is underlain by nonserpentine soils and thus, BLM first identified the Jade Mill site for development of recreation facilities in the Hollister RMP (BLM, 1984). Subsequently, BLM's policy has been modified to not encourage use within Jade Mill area due to the asbestos hazard. However, the Upper Jade Mill site remains a favorite camping location and consistently receives heavy use.

Conversely, Lower Jade Mill is underlain by serpentine soils and is regarded as potential habitat for the species. Due to the impacts of heavy OHV traffic and camping, this area has been prevented them from supporting San Benito evening primrose. There is also a known prehistoric archaeological site within the Jade Mill vicinity; CA-SBn-64 is a small lithic scatter that was extensively impacted by indiscriminant recreational use as early as 1975. The site had probably been impacted much earlier in time, during the historic mining and logging interests of the 19th and early 20th centuries. Until the remediation of Jade Mill, the area was not a likely candidate for the encouraged use of camping. Since the millsite was removed, camping pressures have moved into the site area and created the need for restoration of potential habitat for the San Benito evening primrose and better protection of the remnants of site CA-SBn-64.

### Xanadu Mill Site Abandoned Mine

The Xanadu Mil Site was a small commercial operation within a riparian zone that produced very little calcines. However, the site was very heavily used by the visiting public for camping and target shooting, and the retort area was contaminated with mercury. The remediation plan called for the removal and on-site encapsulation of the milling retort oven debris, contaminated soils and building remnants.

### Larious Canyon Mill Site Abandoned Mine

The Larious Canyon mill site was another small operation with a retort oven similar in size and construction to that of the Xanadu Mill site. This site is within a perennial riparian zone. Cleanup action was especially necessary to reduce downstream transport of mercury contaminated sediments. The remediation plan was developed for entombment of all retort oven materials and associated calcines, to remediate both remove the human health and environmental impacts.

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# 3.3 Travel and Transportation Management

## 3.3.1 Introduction

Travel and transportation management is aimed at providing adequate public and administrative access to BLM lands for visitor use and for management of those lands, while regulating travel to protect public safety, prevent damage to resources, and resolve conflicts among users. Central to travel management are OHV designations. All public lands are required to be designated as open, limited, or closed to motorized vehicle access (43 CFR 8342.1).

Areas designated as "open" have primarily been selected for intensive motorized vehicle recreation and do not have compelling resource protection needs, user conflicts, or public safety issues that warrant limiting cross-country use. On lands designated as "limited", cross-country travel is prohibited and travel is limited to designated "open" routes. The network of routes available and the terms and conditions of use on those roads and trails are usually identified on published maps. In areas designated as closed, no motorized or vehicle use is permitted. Cross-country travel by foot or horse is usually permitted in all areas regardless of route designation.

## 3.3.2 Regulatory Framework

Current vehicle management is based on the 1984 Hollister RMP and associated amendment, including the BLM's 2006 Record of Decision for CCMA RMP Amendment and Route Designation. This plan addressed a variety of concerns related to vehicle use, roadways, and resource protection, and provided guidelines for future road improvements, maintenance activities, and management decisions. The: baseline for analysis of transportation in this RMP/EIS is the designated route network that was approved in the 2006 Record of Decision for the CCMA RMP Amendment and Route Designation.

Vehicle use in the Planning Area is managed under the direction and authority in 43 CFR Part 8340 "Off-Road Vehicles," and Subpart 8342, "Designation of Roads and Trails." The off-highway vehicle (OHV) regulations apply to use of routes by the general public. Certain other routes may be open to private landholders, and grazing or other permittees, to meet specific access needs and/or legal rights.

## 3.3.3 Regional Setting

A network of Federal, State, and County roads provide access to the Planning Area. Currently, public lands in the area are generally accessible by motorized vehicles to agency personnel (for resource management), to commercial enterprise (for use or extraction of public resources), and to the general public (for recreation and enjoyment of public lands). The population in the Planning Area is overwhelmingly urban, and rural areas are becoming increasingly less common as urbanization expands, especially in the San Francisco Bay Area, Central Coast communities, and in the San Joaquin Valley. Therefore, the wildland experiences in the Clear Creek Management Area are increasingly valuable as the supply of open space decreases in the region.

There is a need to balance access to public lands with resource management and protection, including public health and safety. Areas where there is no public motorized access or access can be improved include the Condon, Tucker, and Cantua management zones. In southern Fresno County, the BLM-managed portion of Joaquin Ridge is an area with limited roads, where public access is restricted by private lands and BLM-locked gates. As a result, there has been a trend of route proliferation, redundancy, and frequent trespasses and other unauthorized uses on BLM and private lands in the region.

Whenever possible, BLM makes the public lands accessible, whether by motorized vehicles or non-motorized means; and reasonable access is provided to persons engaged in valid uses such as mining claims, mineral leases, livestock grazing, and other land use authorizations.

## 3.3.4 Current Conditions and Trends

### 3.3.4.1 Routes and Trails

The BLM maintains over 242 miles of roads and trails in the Planning Area. Motorized vehicles used throughout the area include two-wheeled drive vehicles, four-wheeled drive trucks and jeeps, all-terrain or universal-terrain vehicles (ATV/UTV), and motorcycles. The vast majority of routes are unpaved, four-wheeled drive recommended, jeep trail, ATV/UTV trail, and single track trails; although there is approximately 3 miles of paved road formerly used to access the KCAC mine. Of these 242 miles of routes, 100 miles are single track which are accessible by motorcycle, 35 miles are trails which are accessible by ATV/UTVs and motorcycles, 78 miles are jeep trails, four-wheeled drive recommended, and the remaining 26 miles are improved/unpaved, or paved roads (3 miles) that are accessible by four – wheeled drive, ATV/UTV, and motorcycle.

Motorcycle and ATV riding are the most prevalent recreation activities in the CCMA with almost all of the use occurring within the 30,000-acre Serpentine ACEC, with the majority of the use occurring within the lower six miles of Clear Creek Canyon. While motorcycle and ATV riding are the most common OHV recreation activities, four-wheeled drive vehicles and ATV/UTVs are also used for access to a variety of other recreational activities in CCMA, including hunting, rockhounding, and hiking. In addition, OHVs are also used on CCMA public lands for to access particular areas, such as communication sites, mining claims, and private in-holdings; and for activities requiring a permit, such as energy and mineral exploration and livestock grazing,

A combination of regulatory signs, route number signs, directional signs, and fencing is used to direct visitors along the trails identified on the user map. BLM park rangers and law enforcement patrol the CCMA, providing visitor assistance and information, and enforcing Federal and State rules and regulations, as appropriate.

In 1999, CCMA was designated a “Limited” OHV use area available for motorized recreation on designated routes and trails. In 2006, BLM approved the CCMA RMP Amendment for Route Designation, which identified “open” routes and trails on CCMA public lands. Therefore, the baseline for the analysis of impacts from BLM transportation management actions is limited to routes on public lands designated ‘open’ in the 2006 ROD.

Road system management has focused on maintaining major access roads, which generally receive most of the recreation traffic. Corrective maintenance occurs as problems are identified and funds permit. Road construction has been limited to improving or upgrading road segments to improve access or to alleviate maintenance or environmental problems. Best management practices include drainage improvements, construction of rolling dips, water bars, rock armored/hardened stream crossings, hardened sills, and half-pipe bridges.

### 3.3.4.2 Maintenance & Operations

Logistically speaking, CCMA is a very unique and challenging place to manage. Transport time from the Hollister Field Office (HFO) is approximately 1 hour to the BLM’s decontamination facility (Section 8). A stop is made at the Section 8 administration site to obtain personal protective equipment (PPE), work gear and tools, air sampling equipment, etc. This usually takes 0.75-1.0 hrs. Transport to the CCMA

entrance is 0.5 hrs. Transport to the more remote sites in CCMA from the entrance can take up to 2 hrs, depending on weather and road conditions. Once work is completed for the day, employees return to Section 8, about 1.5-2.5 hrs. At Section 8, decontamination of vehicles, gear and OHV's takes 1-1.5 hours, followed by a decontamination shower and completion of air sample calibration, another 0.5-0.75 hrs. At this point, an hour drive back to HFO completes the cycle. This cycle does not take into account mechanical breakdowns or other logistical issues typical of remote locations.

The non-project related portion of a work day takes approximately 6 hours. That means only 4 hours of actual mission critical work is accomplished during a 10 hour work day. This typically doubles or triples the time necessary to complete projects. Frequently, a 12-14 hour work day is utilized to offset the logistical issues surrounding the accomplishment of work within CCMA. While making for a more efficient CCMA work schedule, cost is greatly increased through overtime compensation. Decontamination facility maintenance and employee health monitoring also greatly contribute to project costs.

### 3.3.5 Trends and Forecast

During the 1990's the Department of Parks and Recreation estimated there are over 100,000 miles of OHV roads and trails at more than 200 sites on public lands managed by the federal, state, and local county governments in California. During this same time, the State reported a 52 percent increase in visitation to the six main State Vehicle Recreation Areas (SVRAs). Hollister Hills SVRA is one of the most heavily used OHV state parks and is closest to the CCMA.

Studies done by the State of California, Off-Highway Motor Vehicle Recreation Division, indicate that over the last twenty years the number of registered OHVs has increased statewide. In the same time period, the available areas for riding have decreased significantly. For example, in the southern desert areas, there was a 40 percent decrease in available lands due to the California Desert Protection Act of 1994.

The US Forest Service prepared a report in June 2005 titled Off-Highway Vehicle Recreation in the United States, Regions and States: A National Report from the National Survey on Recreation and the Environment (NSRE). According to this report, driving motor vehicles 'off-road' became one of the fastest growing activities in the country from 1982 to 2000-01 Growth in OHV use from an earlier study conducted in 1994-1995 and a 1999 -2000 NSRE report, showed a 32-percent increase. This represented growth from about 27.3 million OHV users in 1994-1995 to about 36.0 million in 1999-2000 (USDA 2005). The 2005 study reports "a slightly higher growth rate continued from 1999-2000 to the most recent NSRE interviewing period in late 2004. This resulted in growth in the number of OHV participants during that time period from 36.0 million to 51.0 million, a 42 percent increase." Further, the study determined there has been consistent growth in OHV use between 1999 and 2004, with conservative estimates on OHV use from the combined or pooled NSRE 1999-2004 sample of more than 73,000 individuals to arrive at an estimate of 39.7 million OHV participants, 18.6 percent of the population, or almost 1-in-5 people age 16 and older.

Nevertheless, urban sprawl has increased recreational use on BLM lands near urban zones. This has led to overcrowding of some recreation areas, accompanied by a deterioration of resources. With the state areas being heavily impacted and open areas harder to find, the BLM lands will likely see increased legal and illegal OHV use. The OHV-related environmental impacts from increasing OHV use on the CCMA route network would affect soil erosion, damage to vegetation, wildlife habitat fragmentation, and the spread of invasive species. Unauthorized OHV use is also likely to damage riparian zones and habitat for threatened or endangered species.

Table 3.3-1. Comparison of Dust Mitigation Measures
for Reducing Chrysotile Emissions From Unpaved Road

| Mitigation Measure | Initial Cost $1000/mile | Annual Maintenance Cost $1000/mile | Ten Year Total Cost $1000/mile | Frequency of Application | Adverse Environmental Impacts |
|---|---|---|---|---|---|
| Base-Rock [1,2,3,4] | 247 | 26 | 481 | Replenishment at 1" annual avg. | None |
| Single-Coat Chip Seal[1,2,3,4] | 301 | 10 | 391 | Patch/repair Annual-10 year life | None |
| Double-Coat Chip Seal[1,2,3,4] | 328 | 5 | 373/209[7] | Patch/repair Annual-20 year life | None |
| Petroleum Products | 44[5]/59[2] | 88 | 836[5]/851[2] | 6 month intervals | Yes |
| Lignosulfonate | 19[5]/34[2] | 19 | 190[5]/205[2] | 12 month intervals | None |
| Calcium Chloride | 15[5]/30[2] | 45 | 420[5]/435[2] | 3 applications/year | Yes |
| H2O/Wetting Agents | 42[5]/57[2] | 1260 | ~ $10 million | 30[+] applications/year | None |
| Liquid Copolymer | 20[5]/35[2] | 8 | 107 | 12 month intervals | None |
| Asphalt Cement[1,2,3,4] | 501 | 3 | 528/194[7] | Patch/repair Annual-30 year life | None |

Table modeled on EPA report "450/3-81-006, Assessment & Control of Chrysotile Asbestos"

1. Calculation includes a 25% HazMat contingency allowance.
2. Sub-grade preparation included at $15,000/mile.
3. Base rock application included at $47,000/mile.
4. Logistics and overhead for contract administration included at 15%.
5. Materials cost only. Delivery costs and labor costs vary.
6. 20 year cost = initial cost divided by 2 + 9 years annual maintenance = cost/10 years.
7. 30 year cost = = initial cost divided by 3 + 9 years annual maintenance = cost/10years.

Design Criteria.

Roads are 12-24 feet wide, with an 18 foot average. Initial base-rock application is at 6 inch depth. Does not include cost for engineered drainage control (culverts). Dust suppressant treatment does not include product delivery to site.

Initial improvement of roads is necessary for the application of any dust mitigation measures. Road conditions at CCMA are in a severely degraded state and would require a sub-grade preparation and initial application of base-rock at a six inch depth. Most cost estimates, where indicated, also include costs associated with Hazardous Materials work, such as decontamination of equipment and personnel. The profit and overhead calculation is a conservative estimate of costs associated with the administration of contracts. Most products require multiple applications per year.

Base-rock is calculated at $113,666 materials cost per mile.

Single coat chip-seal is calculated at $54,000/mile.

Double coat chip-seal is calculated at $81,000/mile.

Petroleum products are calculated at $44,000 materials cost per mile.

Lignosulfonate is calculated $19,000 materials cost per mile.

Calcium Chloride is calculated at $190 materials cost per ton at ~60 tons per mile.

Wetting agents is calculated at $42,000 per mile and includes materials cost and labor, etc.

Liquid Co-polymer is calculated at $20,000 materials cost per mile.

Asphalt Cement is calculated at $254,000.

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# 3.4 Biological Resources – Vegetation

## 3.4.1 Introduction

Vegetation resource is essential for, or adds aesthetic value to, livestock grazing, wildlife habitat, soil stability, recreation, hunting, and sightseeing. The Planning Area consists of structurally and compositionally diverse plant communities that include barrens completely devoid of vegetation, grasslands, chaparral, oak woodland, and conifer forest. Variations in climate, terrain, geology, and soils support a mosaic of unique plant communities and rare species. The 1995 Clear Creek Management Area Proposed Resource Management Plan Amendment and Final Environmental Impact Statement identified 23 special status and sensitive plant species occurring within the Clear Creek Management Area that require special management attention. Threats to vegetation resources include unauthorized off-highway vehicle (OHV) travel, inappropriate livestock grazing, surface disturbances from mineral extraction, and noxious and invasive weed establishment.

## 3.4.2 Regulatory Framework

Because vegetation is central to many management decisions, there are several regulatory directives that influence its management. These include the Endangered Species Act (ESA) (1973), the Taylor Grazing Act (1934), and Rangeland Health Standards and Guidelines (approved on July 13, 2000).

## 3.4.3 Regional Setting

The CCMA overlays two primary geologic units including 1) the New Idria serpentine mass, which forms the core of the management area (32,000 acres total), and 2) a nonserpentine sedimentary rock complex which surrounds the serpentine mass (42,000 acres total). The Serpentine ACEC boundary encompasses the New Idria serpentine mass. The Tucker, San Benito River, Condon, and Cantua Zones are composed almost entirely of the nonserpentine sedimentary rock complex. Topography is rugged with an elevation range of 1,830 at Pine Canyon to 5,241 feet on San Benito Mountain. The climate, like most of California is classified as Mediterranean, punctuated by cool, wet winters and hot, dry summers. Annual precipitation occurs primarily as winter rain with some snow occurring most years at the highest elevations on San Benito Mountain. Average annual precipitation in the CCMA is 12 inches.

## 3.4.4 Current Conditions and Trends

### 3.4.4.1 Inventory

Soil type (serpentine vs. nonserpentine) and topography strongly influence the diversity of plant communities within the CCMA. Recent vegetation mapping of the CCMA (Evens *et al.* 2006) revealed high vegetation diversity with nine tree-overstory alliances, thirty shrub-overstory alliances, ten herbaceous alliances, and one rock outcrop/barrens association (ref. Map 3, Appendix I). Major vegetation communities (series) as defined by Sawyer and Keeler-Wolf (1995) include “Coulter pine”, “leather oak”, “mixed willow”, “foothill pine”, “chamise-wedgeleaf ceanothus”, “California annual grassland”, “mixed saltbush”, “blue oak”, “interior live oak”, and “California buckwheat”. Two major unique vegetation series not described in Sawyer and Keeler-Wolf were added to the list due to their prominence within the Serpentine ACEC (New Idria serpentine mass). Those vegetation series include “serpentine willow” and “serpentine barrens.” “Serpentine willow” series dominates serpentine riparian zones within the Serpentine ACEC. “Coulter pine”, “leather oak”, “serpentine barrens”, “foothill pine”, and “chamise-wedgeleaf ceanothus” series dominate serpentine upland areas within the Serpentine ACEC (Figure 1). The higher elevations of San Benito mountain, located within the ACEC, support a unique

conifer forest composed of foothill pine (*Pinus sabiniana*), Coulter pine (*Pinus coulteri*), Jeffrey pine (*Pinus jeffreyi*), and incense cedar (*Calocedrus decurrens*) (Figure 2). "Mixed willow" series dominates nonserpentine riparian zones outside of the ACEC. "foothill pine", "chamise-wedgeleaf ceanothus", "California annual grassland", "mixed saltbush", "blue oak", "interior live oak", and "California buckwheat" series dominate nonserpentine upland areas outside of the Serpentine ACEC (Figure 3).

Vegetation types may be generally grouped as "serpentine riparian," "serpentine upland," "nonserpentine riparian," and "nonserpentine upland" types. Table 3.4-1 summarizes the vegetation communities (series) that exist within the CCMA and how they are categorized for analysis as "serpentine riparian," "serpentine upland," "nonserpentine riparian," and "nonserpentine upland" types. Table 3.4-2 lists the vegetation alliances within the CCMA as identified by Evans *et al*. (2006). Table 3.4-1 shows which vegetation alliances are associated with the different vegetation communities.

**Figure 1**. Typical vegetation types within the Serpentine ACEC (New Idria serpentine mass). Serpentine chaparral (foreground); Serpentine barren (middle-ground); Conifer forest (background, top of ridge).

**Figure 2**. San Benito mountain conifer forest within the Serpentine ACEC. San Benito Mountain Research Natural Area.

**Figure 3**. Typical vegetation types of the nonserpentine Franciscan, Moreno, and Panoche complexes outside of the Serpentine ACEC.

**Table 3.4-1**. Vegetation communities in the planning area. * - Vegetation communities follow those designated by Sawyer and Keeler-Wolf (1995). † - designations applied by the BLM Hollister Field Office to represent unique vegetation types found within the Serpentine ACEC on the New Idria serpentine mass.

| Vegetation community* | General vegetation type | Dominant species | Vegetation alliances (see Table 3.4-2) | Soil type: Serpentine | Soil type: Nonserp. | Elevation (feet) | Management Area (%) |
|---|---|---|---|---|---|---|---|
| Serpentine willow† | **Serpentine riparian** | Brewer's willow, hoary coffeeberry | 1, 11, 21, 31, 41 | X | | 2800-4500 | 1 |
| Coulter pine | **Serpentine upland** | Coulter pine, foothill pine, Jeffrey pine, incense cedar | 1, 42 | X | | 3400-5241 | 5 |
| Leather oak | **Serpentine upland** | Leather oak, bigberry manzanita, pointleaf manzanita, hoary coffeeberry, rabbitbrush, chamise | 6, 10, 11, 13, 16, 17, 21, 22, 26, 31, 33, 40 | X | | 2800-5241 | 25 |
| Serpentine barrens† | **Serpentine upland** | None | 50 | X | | 2800-5241 | 10 |
| Foothill pine | **Both Serpentine & Nonserpentine upland** | Foothill pine, Coulter pine | 1, 4 | X | X | 1830-5241 | 10 |
| Chamise-wedgeleaf ceanothus | **Both Serpentine & Nonserpentine upland** | Chamise, wedgeleaf ceanothus, mountain mahagony, scrub oak, bigberry manzanita | 10, 11, 12, 14, 15, 16, 18, 19, 20, 21, 22, 36 | X | X | 2600-5241 | 20 |
| Mixed willow | **Nonserpentine riaprian** | Cottonwood, arroyo willow, mulefat | 7, 37, 38, 39, 44, 46, 48 | | X | 1830-3600 | 1 |
| California annual grassland | **Nonserpentine upland** | Brome, wild oats, medusa head, filaree, lupine, tarweed | 42 | | X | 1830-3600 | 6 |
| Mixed saltbush | **Nonserpentine upland** | Saltbush | 30, 43 | | X | 1830-2400 | 1 |
| Blue oak | **Nonserpentine upland** | Blue oak, foothill pine, California juniper | 8, 9, 36, 42, 43 | | X | 1830-3600 | 5 |
| Interior live oak | **Nonserpentine upland** | Interior live oak, toyon, California buckeye | 5, 6 | | X | 1830-3600 | 2 |
| California buckwheat | **Nonserpentine upland** | California buckwheat, black sage, rabbitbrush, matchweed, chamise | 23, 24, 25, 26, 27, 28, 29, 34, 35, 36, 43 | | X | 1830-4500 | 15 |

**Table 3.4-2**. Vegetation alliances associated with vegetation communities (see Table 3.4-1) in the planning area. Vegetation alliances follow those designated by Evans *et al*. (2006).

| | Alliance | Association | | |
|---|---|---|---|---|
| | **Tree-Overstory** | | **Soil type** | |
| **Alliance #** | **Conifer Alliances** | | **Serpentine** | **Nonserp.** |
| 1 | **Pinus coulteri** | | | |
| | | *Pinus coulteri -Calocedrus decurrens /Quercus durata -Arctostaphylos glauca* | X | |
| | | *Pinus coulteri -Calocedrus decurrens /Rhamnus tomentella /Aquilegia eximia* | X | X |
| | | *Pinus coulteri -Calocedrus decurrens-Pinus jeffreyi/Quercus durata* | X | |
| | | *Pinus coulteri -Pinus sabiniana /Quercus durata -Arctostaphylos pungens* | X | |
| | | *Pinus coulteri /Arctostaphylos glauca* | X | X |
| | | *Pinus coulteri /Quercus durata* | X | |
| 2 | ***Pinus coulteri-Quercus chrysolepis*** | | | |
| | | No association defined | X | X |
| 2 | ***Pinus jeffreyi*** | | | |
| | | No association defined | X | |
| 4 | ***Pinus sabiniana*** | | | |
| | | *Pinus sabiniana /Juniperus californica* /Annual-Perennial Herb | | X |
| | **Hardwood Evergreen Alliances** | | | |
| 5 | ***Quercus chrysolepis*** | | | |
| | | *Quercus chrysolepis* | X | X |
| 6 | ***Quercus wislizeni -Quercus chrysolepis*** | | | |
| | | *Quercus wislizeni -Quercus chrysolepis* | X | X |
| | **Hardwood Deciduous Alliances** | | | |
| 7 | ***Populus fremontii*** | | | |
| | | No association defined | | X |
| 8 | ***Quercus douglasii*** | | | |
| | | *Quercus douglasii-Pinus sabiniana /Cercocarpus betuloides* | | X |
| | | *Quercus douglasii-Quercus wislizeni-Pinus sabiniana* | X | |
| | | *Quercus douglasii* /Annual-Perennial Herb | X | X |
| | | *Quercus douglasii /Ceanothus cuneatus* | | X |
| | | *Quercus douglasii /Ericameria linearifolia -Juniperus californica* | X | X |
| | | *Quercus douglasii /Eriogonum fasciculatum* /Annual-Perennial Herb | | X |
| | | *Quercus douglasii /Juniperus californica -Cercocarpus betuloides* | | X |
| | | *Quercus douglasii /Juniperus californica -Quercus john-tuckeri* | X | X |
| 9 | **Quercus lobata** | | | |
| | | No association defined | | X |
| | **Shrub-Overstory** | | | |
| | **Chaparral Alliances** | | | |
| 10 | ***Adenostoma fasciculatum*** | | | |
| | | *Adenostoma fasciculatum* (pure) | | X |
| | | *Adenostoma fasciculatum* Serpentine | X | |
| 11 | ***Adenostoma fasciculatum -Arctostaphylos glauca*** | | | |
| | | *Adenostoma fasciculatum -Arctostaphylos glauca* Serpentine | X | |
| | | *Adenostoma fasciculatum -Arctostaphylos glauca -Salvia mellifera* | | X |
| 12 | ***Adenostoma fasciculatum -Salvia mellifera*** | | | |
| | | Alliance only | | X |
| 13 | ***Arctostaphylos glauca*** | | | |
| | | *Arctostaphylos glauca -Quercus durata /Pinus sabiniana* | X | |
| 14 | ***Ceanothus cuneatus*** | | | |
| | | No association defined | | X |
| 15 | ***Ceanothus leucodermis*** | | | |
| | | No association defined | | X |
| 16 | ***Cercocarpus betuloides*** | | | |
| | | *Cercocarpus betuloides -Ceanothus cuneatus -Quercus john-tuckeri* | X | X |
| | | *Cercocarpus betuloides -Juniperus californica* /Annual-Perennial Herb | X | X |
| 17 | ***Cercocarpus betuloides -Eriogonum fasciculatum*** | | | |
| | | No association defined | X | |
| 18 | ***Prunus ilicifolia*** | | | |
| | | No association defined | | X |
| 19 | ***Prunus virginiana*** | | | |
| | | No association defined | | X |

| | Alliance | Association | | |
|---|---|---|---|---|
| | **Shrub-Overstory** | | **Soil type** | |
| **Alliance #** | **Chaparral Alliances** | | **Serpentine** | **Nonserp.** |
| 20 | ***Quercus berberidifolia*** | | | |
| | | No association defined | | X |
| 21 | ***Quercus john-tuckeri*** | | | |
| | | No association defined | | X |
| | | *Quercus john-tuckeri-Adenostoma fasciculatum* | X | X |
| | | *Quercus john-tuckeri-Juniperus californica-Ericameria linearifolia* | | X |
| | | *Quercus john-tuckeri-Juniperus californica-Fraxinus dipetala* | X | X |
| | | *Quercus john-tuckeri-Quercus wislizeni-Garrya flavescens* | | X |
| 22 | ***Quercus durata*** | | | |
| | | *Quercus durata/Pinus sabiniana* | X | |
| | | *Quercus durata-Adenostoma fasciculatum-Quercus wislizeni* | | X |
| | | *Quercus durata-Arctostaphylos glauca/Pinus sabiniana* | X | |
| | | *Quercus durata-Arctostaphylos glauca/Pinus sabiniana* | | X |
| | | *Quercus durata-Arctostaphylos glauca-Garrya congdonii/Melica torreyana* | X | |
| | | *Quercus durata-Arctostaphylos pungens/Pinus sabiniana* | X | |
| | | *Quercus durata-Cercocarpus betuloides* | X | |
| | **Coastal Sage Scrub Alliances** | | | |
| 23 | ***Artemisia californica*** | | | |
| | | *Artemisia californica-Lepidospartum squamatum* /Annual Herb | | X |
| | | *Artemisia californica-Malacothamnus aboriginum* | | X |
| | | *Artemisia californica* /Annual herb | | X |
| 24 | ***Artemisia californica-Eriogonum fasciculatum*** | | | |
| | | *Artemisia californica-Eriogonum fasciculatum-Ephedra californica* | | X |
| 25 | ***Artemisia californica-Salvia mellifera*** | | | |
| | | No association defined | | X |
| 26 | ***Eriogonum fasciculatum*** | | | |
| | | *Eriogonum fasciculatum* /Annual grass-Herb | X | X |
| | | *Eriogonum fasciculatum-Juniperus californica* /Annual-Perennial herb | X | X |
| | | *Eriogonum fasciculatum-Yucca whipplei* /Annual-Perennial Grass-Herb | X | X |
| 27 | ***Lotus scoparius*** | | | |
| | | No association defined | | X |
| 28 | ***Lupinus albifrons*** | | | |
| | | No association defined | | X |
| 29 | ***Salvia mellifera*** | | | |
| | | *Salvia mellifera-Eriogonum fasciculatum - Eriodictyon tomentosum* | | X |
| | **Desert Scrub and Desert Transition Alliances** | | | |
| 30 | ***Atriplex spinifera*** | | | |
| | | *Atriplex spinifera* /Annual herb | | X |
| 31 | ***Chrysothamnus nauseosus*** | | | |
| | | Alliance only | X | |
| | | *Chrysothamnus nauseosus-Juniperus californica* /Annual-Perennial Herb | | X |
| 32 | ***Ephedra californica*** | | | |
| | | *Ephedra californica* /Annual-Perennial Herb | | X |
| 33 | ***Eriogonum heermanii*** | | | |
| | | No association defined | X | |
| 34 | ***Eriogonum wrightii*** | | | |
| | | *Eriogonum wrightii-Eriophyllum confertiflorum/Monardella antonina* | X | X |
| | | *Eriogonum wrightii-Juniperus californica* /Annual-Perennial Herb | X | X |
| 35 | ***Gutierrezia californica*** | | | |
| | | *Gutierrezia californica* /Annual-Perennial herb | | X |
| 36 | ***Juniperus californica*** | | | |
| | | *Juniperus californica-Ericameria linearifolia* /Annual-Perennial Herb | | X |
| | **Riparian Scrub Alliances** | | | |
| 37 | ***Baccharis salicifolia*** | | | |
| | | *Baccharis salicifolia-Lepidospartum squamatum-Hazardia squarrosa* | | X |
| 38 | ***Salix breweri*** | | | |
| | | *Salix breweri/Muhlenbergia asperifolia* | X | X |
| 39 | ***Tamarix* ssp.** | | | |
| | | No association defined | X | X |

| | Alliance | Association | | |
|---|---|---|---|---|
| | **Herbaceous** | | **Soil type** | |
| **Alliance #** | **Upland Coastal and Coast Range Grasslands** | | **Serpentine** | **Nonserp.** |
| 40 | ***Elymus multisetus*** | | | |
| | | No association defined | X | |
| 41 | ***Eriogonum nudum*** | | | |
| | | *Eriogonum nudum* var. *indictum*-*Eriogonum vestitum* | | X |
| 42 | **Upland Annual-Perennial Herbaceous** | | | |
| | | No association defined | X | X |
| 43 | ***Vulpia microstachys*** | | | |
| | | *Vulpia microstachys-Plantago erecta* | | X |
| | **Wet Meadow Alliances** | | | |
| 44 | ***Carex* spp.** | | | |
| | | *Carex* spp.-*Juncus mexicanus-Leymus triticoides* | X | X |
| 45 | ***Eleocharis macrostachya*** | | | |
| | | No association defined | X | |
| 46 | ***Juncus mexicanus*** | | | |
| | | *Juncus mexicanus* | X | X |
| 47 | ***Phragmites australis*** | | | |
| | | No association defined | X | |
| 48 | ***Typha latifolia*** | | | |
| | | No association defined | X | X |
| 49 | **Serpentine Vernal Pool** | | | |
| | | Habitat (placeholder) | X | |
| | **Rock/Barren** | | | |
| 50 | **Sparsely Vegetated** | | | |
| | | *Pinus coulteri* Barren | X | |
| | | *Pinus jeffreyi-Pinus sabiniana* Barren | X | |
| | | *Pinus sabiniana-Pinus coulteri* Barren | X | |

Vegetation of the CCMA, particularly the Serpentine ACEC, has a long history of human use and impacts. Mining for cinnabar (mercury ore), chromite (chromium ore), asbestos and other minerals since the 1850's, has removed vegetation over large areas. Trees were cut for mine timbers and building construction (Figure 4) and chaparral was cut as cord wood (Figure 5) to fuel the cinnabar retorts (Sloane, 1914) at New Idria which operated from 1854 to 1974. More recent impacts to vegetation (post-1950) have occurred from OHV recreation (Figure 6). Massive disturbances caused by mining, particularly for cinnabar and asbestos, eclipses the vegetation loss due to OHV impacts (Figure 7). Although, one might surmise that the barren landscapes of the New Idria serpentine mass are due to mining or other human impacts, most of the barrens are in fact natural. Serpentine soils are extremely stressful to plant establishment and productivity due to abnormally low nutrient levels and toxic levels of heavy metals (Kruckeberg, 1984; Brooks, 1987). The uniquely-adapted plant species and abundance of barrens found on the New Idria serpentine mass are a testament to the harsh growing conditions imposed by serpentine soils (Figure 8).

**Figure 4**. CCMA circa 1932. Timber harvesting within the ACEC.

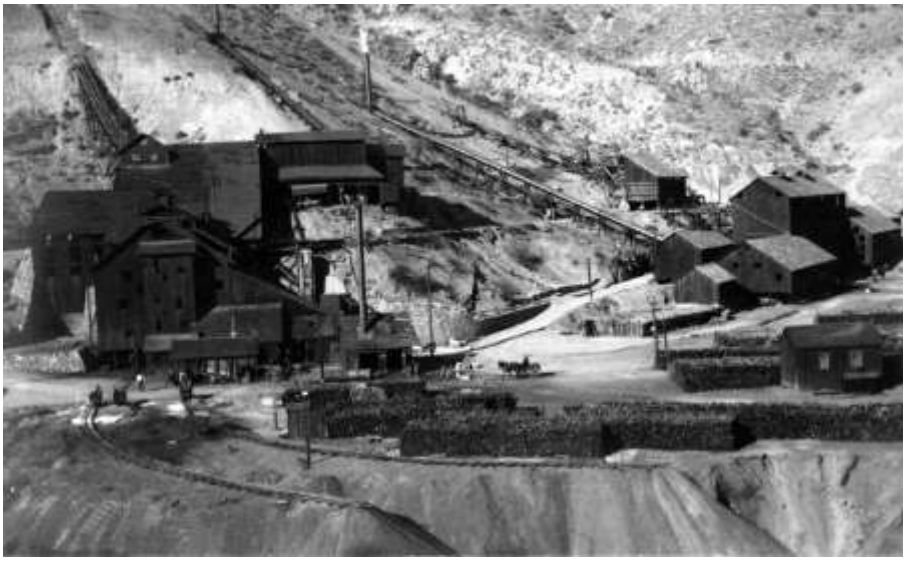

**Figure 5**. New Idria mine circa 1910. Stacks of cord wood (foreground) obtained from within the CCMA to fuel the cinnabar retorts.

1975 2008

**Figure 6**. Vegetation loss due to OHV impacts at Indian Hill, one of the most heavily-used OHV areas within the Serpentine ACEC.

Circa 1920. Aurora mine (currently inactive). 2007. KCAC mine (currently inactive).

**Figure 7**. Vegetation loss from cinnabar (left) and asbestos (right) mining within the Serpentine ACEC.

1932 2007

**Figure 8**. Natural serpentine barren at Cinnabar Hill (within the Serpentine ACEC) in 1932 and 2007. Note the lack of growth of the pine tree to the right of photo center and the slow decomposition of the log at lower left.

### 3.4.4.2 Noxious and Invasive Weeds

Noxious and invasive plant species are a serious problem in California. Noxious and invasive plant species are typically non-native, meaning that they were either intentionally or inadvertently introduced into an area not within their natural habitat range. Some invasive plant species were introduced for agricultural, landscaping, or erosion control purposes and later escaped into rangeland or forest ecosystems. Noxious weeds are those listed by State and Federal law and are generally considered to negatively affect agriculture, navigation, fish, wildlife, or public health. Currently, more than 226 noxious plants occur in California and many occur in rangeland or forest ecosystems. In wildland ecosystems, noxious and invasive species may continue to reproduce and become viable populations, displacing native plant species by reducing their productivity, cover, and diversity. Invasive plant species are effective competitors against native plant species for space, soil, water, nutrients, and sunlight.

Noxious and invasive plant species are an increasing problem on BLM lands throughout the West. Currently, their ecological and economic impact on rangelands and forestland is not fully understood or appreciated. Invasive species can rapidly and seriously degrade the quality of rangelands by altering the natural composition and processes of native vegetation, ultimately reducing biodiversity. Noxious and invasive species rapidly displace desirable plants that provide habitat for wildlife, livestock forage, and human aesthetic quality. Some species are poisonous or cause physical injury to wildlife, livestock, and people. Many invasive plant species become highly flammable and flashy fuels as they reach maturity in the summer causing wildland fires to burn faster and hotter than they would normally occur with rangeland or forests. The burned land can then be rapidly recolonized by invasive species, resulting in shorter periods between subsequent fires. Methods to control invasive vegetation include prescribed fire, herbicides, livestock grazing, and other biological methods. Proper management and monitoring are necessary after controlled applications to ensure that desirable vegetation becomes established.

The Serpentine ACEC is relatively free of invasive plant species, owing to the harsh conditions imposed by serpentine soils. Areas outside of the ACEC, in contrast, contain an elevated level of invasive annual species. This is especially true for the annual grassland vegetation type. Of greatest concern is the invasion of noxious invasive plant species from nonserpentine plant communities into serpentine plant communities. Invasive species currently controlled within the CCMA include yellow starthistle (*Centaurea solstitialis*) and common reed (*Phragmites australis*). The San Benito River Zone of the CCMA is regarded as a leading edge for yellow starthistle invasion. Its control there is critical to prevent invasion of the species into areas beyond the leading edge and to improve habitat for rare plant species that exist there including San Benito evening primrose (*Camissonia benitensis*) and slender pentachaeta (*Pentachaeta exilis* ssp. *aeolica*).

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# 3.5 Biological Resources – Fish and Wildlife

## 3.5.1 Introduction

This section describes the fish and wildlife resources within the Planning Area. Clear Creek Management Area contains a subset of inner Coast Range habitats as well as unique ecosystems associated with serpentine soils. San Benito Mountain is a sky island that has long been regarded as a unique vegetative zone due to the co-occurrence of Coulter, Jeffrey pines, foothill pines, and incense cedar. Table 3.5-1 identifies the habitat types and associated species.

**Table 3.5-1 Habitat Types and Associated Species**

| Habitat Types | Associated Species |
|---|---|
| California annual grassland | Game species, mountain lion, American badger, coast horned lizard. |
| Mixed saltbush | San Joaquin kit fox, coast horned lizard. |
| Blue oak | Game species, mountain lion, bats, important raptor nesting, and roosting. |
| Interior live oak | Game species, mountain lion, bats, important raptor nesting, and roosting. |
| Valley oak | Game species, mountain lion, bats, important raptor nesting, and roosting. |
| Foothill pine | Game species, mountain lion, bats, important raptor nesting, and roosting. |
| Coulter pine | Game species, migratory birds, mountain lion, bats, important raptor nesting, and roosting. |
| Chamise-wedgeleaf ceanothus | Game species, mountain lion, big-eared kangaroo rat, coast horned lizard. |
| California buckwheat | Game species, mountain lion, coast horned lizard. |
| Leather oak | Game species, mountain lion, coast horned lizard. |
| Mixed willow/riparian | Migratory passerine birds, native fish, foothill yellow-legged frog, two-striped garter snake, invertebrates, and a high diversity of wildlife species that exploit streams as movement corridors. |
| Serpentine barrens | Migratory birds |
| Vernal pool | Fairy shrimp |

This RMP addresses key species and their habitat when developing management actions. These species include those of economic interest such as deer, wild pigs, and upland game including California quail and mountain quail; and sensitive, rare, threatened, and endangered species and other species or groups that serve as indicators of ecosystem health or indicate the effects of management activities.

## 3.5.2 Regulatory Framework

The primary regulatory framework relating to fish and wildlife resources under the management of the BLM includes the Endangered Species Act of 1973, Migratory Bird Treaty Act, and Executive Order 13112 (Invasive Species).

## 3.5.3 Regional Setting

CCMA is located within a group of interior coast ridges and peaks at the southern end of the Diablo Range. The region is characterized by generally low rainfall, rare snowfall, and frequent winter freezing at the upper elevations. Vegetation in the region ranges from xeric communities dominated by yucca to lush riparian and meadow habitats as well as oak woodlands. Outside of the densely populated San

Francisco Bay Area, the Coast Ranges are largely untouched, and therefore support diverse wildlife assemblages. Hunting and wildlife viewing are major public activities throughout the region

### 3.5.4 Current Conditions and Trends

This section summarizes the current conditions and trends for mule deer, elk, wild pig, cougar, wild turkey, upland game birds, small game species (e.g., rabbits), nongame (e.g., coyotes), and fur-bearing mammals (e.g., gray fox).

Mule deer herd populations are thought to be either stable or in decline as a result of foraging habitat senescence and drought. In past years, local prescribed burning may have contributed to temporary increases in deer herd numbers, but the overall trend is flat or downtrending.

Tule elk are concentrated in the environs Tucker Mountain Zone as a result of introductions in areas near Hernandez Reservoir. Elk populations have generally increased as a result of introductions and management agreements between private landowners and CDFG.

The current condition of wild pigs within the Planning Area is unknown. However, they are undergoing range expansion and local populations increase throughout the state. The wild pig was classified as a game mammal in 1957, which requires hunters to obtain license tags to hunt the species. Currently, the hunting season for pigs is year round, with no tag or possession limits. Habitat conditions for the wild pig are also unknown; the species is found within a variety of habitats where water and suitable cover are present. The most abundant population of wild pigs in the CCMA is found in areas of oak woodland and riparian areas. Wild pigs are a popular species for hunters, but they are also considered a destructive pest and have been removed or eradicated from some public lands.

Mountain lion populations are protected throughout California as a result of a decades-old hunting ban.

Wild turkey populations have grown within California and are fairly abundant within mixed pine-oak woodland habitats. CCMA provides suitable habitat for wild turkey, especially in oak woodlands and riparian areas. Currently, there are approximately 242,000 wild turkeys within California. The species is considered a valuable resource for hunters and wildlife enthusiasts.

Upland game birds such as quail are abundant throughout woodland and grassland habitats with some water source and are likely stable or increasing. Populations of small game, nongame, and fur-bearing mammals found at CCMA are presumed to be generally stable.

#### 3.5.4.1 Fisheries

Water bodies in Clear Creek Management Area are classified as warm water fisheries, and include the upper reaches of the San Benito River as well as Larious, Cantua, San Carlos, and White Creeks and their tributaries. Although a "very limited" trout fishery was present in the headwaters of the San Benito River as late as 1960, no trout have been taken there in decades. Monterey roach (*Lavinia symmetricus subditus*), Hitch (*Lavinia exilicauda harengus*), and Sacramento sucker (*Catostomus occidentalis*) are widespread in the San Benito River watershed, whereas speckled dace (*Rhinichthys osculus*) are present only above Hernandez Reservoir. The upper San Benito River population of speckled dace is one of only two populations left in Monterey Bay-draining watersheds (the other is in the San Lorenzo River watershed) (Smith 2002). Representative fish species presently occupying or having the potential to occupy habitats in CCMA are identified in Table 3.5-2.

**Table 3.5-2 Fish Occurring Within Clear Creek Management Area**

| Species | Status |
|---|---|
| Monterey roach (*Lavinia symmetricus subditus*) | Nongame; CDFG-SSC |
| Hitch (*Lavinia exilicauda harengus*) | Nongame |
| Sacramento sucker (*Catostomus occidentalis*) | Nongame |
| Speckled dace (*Rhinichthys osculus*) (undescribed ssp.) | Nongame |

#### 3.5.4.2 Wildlife

Only key species and their habitats are accounted for in management actions and are given consideration in the RMP. These species include those of economic interest, such as upland game birds; game, nongame, and fur-bearing mammals; sensitive, threatened and endangered species; and other species or groups that serve as indicators of ecosystem health or indicate the effects of management activities.

The ecological values of healthy sustainable fish and wildlife populations are increasingly better understood by ecologists and wildlife managers. Wildlife species have unique interspecific relations, which link assemblages of species on a landscape to one another and to specific habitats contained within the landscape. Some of these relationships are as simple as predator-prey and some are more complex. Understanding the important of these relationships is critical during the development of management strategies, and conservation measures taken for one particular wildlife species or habitat must also conserve an entire assemblage of species and their habitat.

Game populations are managed based on habitat condition and the quality of the animals being produced. Population levels are linked to a variety of factors, including vegetation quality and quantity, adequate space, shelter, cover, water distribution, and regional weather patterns and trends such as prolonged drought. Through cooperative transplants from other areas, introduction of game species have historically occurred on lands within or adjacent to CCMA. CDFG formally coordinates these activities with BLM and other public or private entities on a case-by-case basis. Certain management activities may be augmented by cooperative efforts with nonprofit conservation groups.

CCMA supports populations of mountain lions, mule deer, and tule elk herds, and provides habitat for wild pigs, wild turkeys, upland game birds, small game, nongame, and fur-bearing mammals. A summary of the species occurrence, habitat requirements, and management goals is presented below.

**Cougar (Mountain Lion)**

The cougar (*Puma concolor*) is a North American native and one of North America's largest cats. The status of the mountain lion in California evolved from that of "bountied predator" between 1907 and 1963, meaning monetary incentives were offered for every mountain lion killed, to "game mammal" in 1969, to "special protected mammal" in 1990. Today's population estimate ranges between 4,000 and 6,000 animals.

Mountain lions occupy virtually every ecological zone and habitat type in California, therefore suitable habitat is not strongly constrained by abiotic or botanical features. Instead, mountain lion density is largely dependent on prey abundance. Mountain lions are very powerful and normally prey upon large animals, such as deer, bighorn sheep, pigs, and elk. However, they can survive preying on small animals as well. They usually hunt alone at night. They prefer to ambush their prey, often from behind. They usually kill with a powerful bite below the base of the skull, breaking the neck. They often cover the carcass with dirt, leaves, or snow and may come back to feed on it over the course of a few days. Their generally secretive and solitary nature is what makes it possible for humans to live in mountain lion

country without ever seeing a mountain lion. However, mountain lion attacks on humans, some fatal, have increased in recent years.

The mountain lion is the largest carnivore occurring in CCMA and can be expected throughout the area. They generally will be most abundant in areas with plentiful deer. An adult male's home range often spans over 100 square miles. Females generally use smaller areas – about 20 to 60 square miles.

**Mule Deer**

Mule deer are the dominant ungulate in California. They are found in a variety of habitats rangewide, with some habitat elements are common to all populations, namely, the presence of browse species (mixed-age shrubbery, chaparral, or oak woodland) and sufficient density of undergrowth to provide shelter.

CCMA falls entirely within a single CDFG Deer Management Unit (DMU), Zone A South, unit 110. Mule deer at CCMA are assigned by CDFG to the San Benito deer herd and are members of the subspecies *Odocoileus hemionus columbianus*, the Columbian black-tailed deer. The herd is considered to be resident although some elevational movement likely occurs, and the population is stable or declining. CDFG biologists believe that long-term degradation in habitat condition is largely responsible for population decline. A chief cause of habitat degradation is the predominance of late-seral stage chaparral, which reduces forage for deer. Self-reporting by hunters in 2007 (prior to the emergency closure) indicating buck kills in the environs of CCMA are summarized as follows: Clear Creek = 2; Condon Peak = 3, Fawn Lake = 4, New Idria = 1, San Benito Mountain = 4, San Carlos Bolsa = 2. According to CDFG data, 152 deer were killed in San Benito County in 2007, 18 (11%) of which were recorded as killed on public lands. The locality data provided above suggest that a significant portion of the buck kills occurring on public lands were located in CCMA.

A Proposed Wildlife Management Plan for the New Idria National Cooperative Land and Wildlife Management Area was signed by BLM and CDFG in 1963, and is incorporated by reference into this RMP. The primary species to be managed was deer. Important actions included in the plan were resource inventories and spot kill maps, with other actions to be cleared with the cooperating agencies. The plan also covered water appropriations and improvements.

BLM and CDFG signed the San Benito Deer Herd Management Plan in 1984 (also incorporated here by reference). The plan identifies a New Idria subunit that includes lands within CCMA. Recommendations for prescribed burning, harvest strategies, and other management tools are provided. In particular, it is recommended habitat improvement projects be concentrated on Condon Peak, Meyers Canyon and San Carlos Bolsa and that OHV use be restricted in those areas. Herds were historically designated by county, i.e. they were delineated by political rather than biological criteria. In recent years CDFG has shifted from the herd-management model and is now focusing on Deer Assessment Units (DAUs).

BLM is signatory to a 2008 Memorandum of Understanding (MOU) with other Federal resources agencies and the Western Association of Fish and Wildlife Agencies (WAFWA) to manage mule deer on public lands, here included by reference. Parties to the MOU agreed to recognize the importance of mule deer in all land use and populations management planning.

**Tule Elk**

The subspecies of elk that occurs in CCMA is the tule elk (*Cervus elaphus nannodes*). A small portion of CCMA falls within the Southern San Benito County Tule Elk Management Unit. The herd originated from three populations outside of San Benito County: 63 animals from the Owens Valley Independence herd, 57 from the Grizzly Island herd, and 7 bulls from San Luis National Wildlife Refuge. The

introductions occurred in 1985, 1986, and 1987, respectively (Rohrer 1988). All of these source populations were themselves the result of prior introductions ultimately originating from the Miller and Lux Buttonwillow Cattle Ranch in Kern County, which constituted the last remaining population of tule elk following the near-extinction of the species in the 1860's. CCMA falls within the La Panza Elk Hunt Area, which covers portions of San Benito, Monterey County San Luis Obispo counties. Most of the hunting in the La Panza hunt zone occurs on private lands. Private landowners manage for tule elk on large hunting ranches in the immediate vicinity of CCMA, mostly in the environs of Hernandez Reservoir adjacent to the Tucker Mountain Zone. A radiotelemetry study immediately following the 1985-87 introductions found elk rarely using public lands in CCMA.

Tule elk are indigenous to California and once lived in large numbers in California's San Joaquin and Sacramento Valleys. The species' original distribution was quite large, stretching from the Sacramento Valley to the San Joaquin Valley to the Sierra Nevada Foothills in the east to the coast in the west. Market hunting following the Gold Rush dramatically reduced herd numbers. Genetic studies suggest that the tule elk population may have dropped to as few as three animals before being protected by the state of California (Meredith et al. 2007).

In the 1970s the total population numbered about 500 animals with 3 herds; today there are about 3,500 animals with 22 herds. This comeback has occurred because of protective legislation passed by the State in the 1970s. In addition, the Tule Elk State Reserve (formerly the Tupman Reserve) near Bakersfield was established in 1932 to provide a permanent habitat for the elk, and tule elk are protected on other parks and wildlife refuges statewide.

The goals of the CDFG Elk Management Program are to maintain healthy elk herds, reestablish elk in suitable historic range, provide public educational and recreational opportunities involving elk, and alleviate conflicts involving elk on private property.

**Wild Horses and Burros**

CCMA has no herd units, and no wild free-roaming horses and burros.

**Wild Pig**

Pigs (*Sus scrofa*) are not native to North America and did not exist in California before the early 1700s. Spanish and Russian explorers and settlers introduced domestic pigs to California and allowed them to forage freely. In 1925, wild boars from Europe were introduced to California by a private landowner for hunting purposes. The wild boars escaped and hybridized with the feral pigs abandoned by Spanish and Russian settlers. Wild pigs now exist in 56 of the state's 58 counties and their numbers continue to increase.

Prior to the mid-1950s, wild pigs were unclassified under State law and could be killed with no restrictions. In 1957, the State legislature designated the wild pig as a game mammal. Although CDFG has not established specific herd units or a designated hunting season for wild pigs in California, hunters are required to have wild pig license tags to hunt wild pigs.

Wild pigs degrade riparian habitat, depress oak regeneration, consume and compete with native fauna, and cause nonnative vegetation to proliferate. Due to their multiple negative environmental impacts, wild pigs were the subject of a successful eradication program at Pinnacles National Monument, which resulted in the removal of 200 feral pigs from a $57^2$km area in 2004-2005.

Suitable habitat for wild pigs is characterized by moderate water availability, especially for the creation of mud wallows for heat regulation, and to some extent litter-producing overstory, such as oaks or mature

chaparral. Due to these habitat preferences, wild pigs degrade riparian habitat. Wild pigs are present at CCMA and are actively hunted there and on nearby private and public lands.

**Wild Turkey**

Populations of the non-native wild turkey (*Meleagris gallopavo*) resulting from numerous introductions have grown to become an established part of much of California's mixed pine-oak woodlands. The first introduction of wild turkeys was reported in 1877. Current population estimates for wild turkeys in California place the population at 242,000. An important resource, valued by both hunters and other wildlife enthusiasts, turkeys are an important game bird, and turkey hunting is a growing hunting sport in California.

Throughout the range of wild turkeys, suitable habitat contains a combination of two key components: trees and open grasslands. Trees provide food, escape cover, and roosting sites. Open grasslands provide food and open areas where turkeys can effectively forage while avoiding predation. Lateral cover, associated with nest selection, is commonly provided by shrubs, herbaceous vegetation, and woody debris.

Wild turkey has been identified by CDFG as a game species present at CCMA and turkey sign are abundant near the entrance station on Hwy 25 (San Benito River Zone).

**Upland Game Birds**

CCMA provides habitat for California (or valley) quail (*Callipepla californica*, mountain quail (*Oreortyx pictus*) and mourning dove (*Zenaida macroura*). The introduced chukar partridge (*Alectoris chukar*) were historically present in CCMA but are not presently hunted there. California quail are present at lower elevations on the fringes of the serpentine regions and are most abundant in the San Carlos Bolsa (Cantua Zone) and south of Condon Peak (Condon Zone). California quail habitat typically contains a combination of brushy vegetation, woodlands, canyons, foothills, and more open grassy habitat with some water supply. Two guzzlers were installed at CCMA in the late 1950's, but only one, near Condon Peak, was documented by CDFG in a 1995 survey. Mountain quail are at low abundance at higher elevations in the vicinity of Santa Rita and Condon Peak (Condon Peak Zone). Hunting pressure is considered to be low by CDFG.

**Small Game, Nongame, and Fur-Bearing Mammals**

CCMA provides habitat for small game, nongame, and fur-bearing mammals throughout the Planning Area. Suitable habitat for such species typically includes understory for shelter and a mix of grass and herb species for forage (for the herbivorous species). Depending on species, presence of water may or may not be crucial. Small game include desert cottontail rabbit (*Sylvilagus auduboni*), brush rabbit (*Sylvilagus bachmani*), blacktailed jackrabbit (*Lepus californicus*), and western gray squirrel (*Sciurus griseus*). Nongame species include bobcat (*Lynx rufus*), coyote (*Canis latrans*), and California ground squirrel (*Spermophilus beecheyi*). Species classified by CDFG as fur-bearing species that occur in the Planning Area are limited to the gray fox (*Urocyon cineroargenteus*), raccoon (*Procyon lotor*), and American badger (*Taxidea taxus*). BLM rangers have observed deer hunters taking squirrel during drought years when deer are scarce.

**Raptors**

CCMA includes considerable habitat of value to raptors. Suitable habitat includes mixed understory and grassland where prey animals (small mammals, smaller birds, and reptiles) abound. Most raptors also require trees, tall bushes, or rocks that serve as foraging roosts and nest sites. Threats to raptors include

poisoning, vehicle collisions, habitat loss, illegal hunting, illegal trading and egg collecting, power lines and towers, falconry, a reduced prey base, and disturbance of nesting and roosting sites. Adult raptors have few predators and may live for 20 to 30 years. In common with other long-lived species, raptors have a slow breeding rate and a high mortality among young birds. Approximately one-quarter of raptors survive their first year, and only half of these will reach maturity and raise their own young. With a reduction in adult survivorship due to the abovementioned causes, the population of the affected species declines as a result.

**Migratory Birds**

CCMA contains unique habitats for migratory birds, particularly the high elevation conifer habitat on San Benito Mountain. Suitable habitat for migratory birds depends on the presence of prey (chiefly invertebrates) and forage (seeds and fruit) as well as nestsites for those species that breed in a particular area. Migratory birds are typically drawn to riparian zones ranging from shrubby willow thickets to tall-canopy cottonwood forests. Other types of woodland and chaparral are also magnets for migratory birds.

The San Benito Mountain Research Natural Area is an important area for scholarly study of migratory birds as well as for recreational bird watching. Some species of note known to breed on San Benito Mountain include Western Tanager (*Piranga lucoviciana*), Nashville warbler (*Vermivora ruficapilla*), and Dark-eyed Junco (*Junco hyemalias pinosus*). Hollister Field Office staff conduct the San Benito Mountain transect for the annual Breeding Bird Survey.

**Amphibians**

Public concern for declining amphibians has resulted in a number of State and Federal actions, including Congressional funding of amphibian malformation research and numerous agency level actions by USGS, NPS, and USFWS. The foothill yellow-legged frog is presently under intense study by USFS as an indicator species for stream flow regime in drainages impacted by dams. BLM has been a collaborator in a study of chytrid fungus infection in populations of foothill yellow-legged frogs at CCMA, and a recent genetic study has identified the CCMA population as containing several unique mtDNA haplotypes. (Lind 2007, BLM unpublished data) Foothill yellow-legged frogs have been intensively surveyed at CCMA since the 1990's and excellent data are available on presence/absence and abundance of the frog in numerous streams in CCMA that represent several major watersheds, including the Pajaro River and San Joaquin River watersheds.

Other amphibians present in CCMA include the arboreal salamander (*Aneides lugubris*), the Gabilan slender salamander (*Batrachoseps gavilanensis*), California toad (*Bufo boreas halophilus*) and Pacific chorus frog (*Pseudacris regilla*). Take of otherwise unprotected amphibians is permitted by CDFG under a sport fishing license.

**Reptiles**

Collecting of reptiles is permitted under a CDFG sport fishing license and take is regulated, with limits established for individual species. In the environs of CCMA, reptiles of interest to collectors include California mountain king snakes (*Lampropeltis zonata*), California king snakes (*Lampropeltis getulus californiae*), and gopher snakes (*Pituophis catenifer*). Pacific rattlesnakes (*Crotalus viridis oreganus*) are abundant in the region and present a potential hazard to humans, pets, and livestock but are also subjects of interest to amateur herpetologists. Other species of interest include the sagebrush lizard (*Sceloporus graciosus*), which is confined to higher elevations in coastal regions. Sensitive species that require a special permit from CDFG to collect include the California horned lizard (*Phrynosoma coronatum*

*frontale),* two-striped garter snake *(Thamnophis hammondii),* and Southwestern pond turtle *(Actinemys marmorata pallida).*

**Invertebrates**

The western fairy shrimp, *(Linderiella occidentalis),* has been documented from the Spanish Lake vernal pools (Hopkins and Silverman 2004). Although USFWS has determined that the western fairy shrimp is not in danger of extinction, the species is an important indicator of vernal pool habitat and habitat quality.

**Table 3.5-3 Wildlife Habitat Conditions in the Planning Area**

| Species/Group | Habitat Conditions | Comments |
|---|---|---|
| Mule deer | Poor-good[1-4] | Population fluctuates with yearly rainfall. |
| Tule Elk | Poor-good[1-4] | Habitat managed mostly on private lands outside the planning area. |
| Wild pig | Good[1] | Present in oak woodlands and riparian areas. |
| Wild turkey | Fair[1] | Numbers increasing throughout state |
| Mountain lion | Fair[2,3] | Numbers increasing throughout state, conflicts with humans continue to increase as habitat and subpopulations become further fragmented |
| Upland game birds | Good[1] | Populations subject to wide annual fluctuations, primarily due to timing and amount of rainfall |
| Small game, nongame, fur-bearing | Good[1,4] | Population numbers generally stable to increasing, with the exception of the badger, which is experiencing a statewide population decline[2,4] |
| Raptors | Good[1,4] | Populations likely stable. |
| Migratory Birds | Good[1,4] | Populations likely stable. |
| Amphibians | Good[1,4] | Populations likely stable. |
| Reptiles | Good[1,4] | Populations likely stable. |
| Invertebrates | Good[1,4] | Populations likely stable. |

*Notes:*
[1] Vegetation resource condition.
[2] Development/density of intrusions.
[3] Competition with other resources.
[4] As reflected by population levels.

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# 3.6 Biological Resources – Special Status Species

## 3.6.1 Introduction

Special status species are those species federally listed as threatened, endangered, proposed, or candidate, as well as BLM sensitive species, and State of California sensitive species. This section describes the special status species that occur or may occur within the BLM-administered lands within the Planning Area and the BLM management approach for these species. A brief discussion of each special status species is provided in Section 3.6.5 and Tables 3.6-1 through 3.6-8, which have been organized by plants, fish, invertebrates, amphibians, reptiles, birds, and mammals.

## 3.6.2 Regulatory Framework

The regulatory framework relating to special status species under the management of the BLM includes the Endangered Species Act (ESA) of 1973; California Endangered Species Act of 1984 (CESA); and California Fish and Game Code § 2050-2116.

## 3.6.3 Regional Setting

Coastal Central California has a disproportionately high percentage of sensitive species compared to other regions in the United States. The complex tectonic and geologic history of the region historically fostered high levels of biodiversity at the landscape scale, while the booming development of the region following European colonization in the 19$^{th}$ and 20$^{th}$ centuries caused vast regions of wholesale habitat conversion to agricultural and urban uses. Some listed species such as the California red-legged frog (*Rana draytonii*) and California tiger salamander (*Ambystoma californiense*) once had a widespread regional distribution in California and are still present over a large area in the Coast Ranges. Other species are adapted to, and dependent upon, isolated and unusual habitat types such as inland dunes or serpentine soils, and therefore show a high level of local endemism. Examples of local endemics include the flightless Ciervo aegialian scarab beetle (*Aegialia concinna*) that lives in isolated sand dunes in the Ciervo Hills and San Benito evening primrose (*Camissonia benitensis*), which is locally endemic to serpentine soils of the Clear Creek Management Area. The inner Coast Ranges provide habitat for floral and faunal assemblages representative of the Central Valley and the outer Coast Range as well as forms unique to the ranges themselves. The San Joaquin Valley to the east of the CCMA historically sustained a California perennial grassland ecosystem with endemic plant species such as San Joaquin woolythreads (*Monolopia congdonii*), California jewelflower (*Caulanthus californicus*) and animal species such as San Joaquin kit fox (*Vulpes macrotis mutica*), numerous species of kangaroo rat (*Dipodomys* sp.), and blunt nosed leopard lizard (*Gambelia silus*). Following intensive agricultural conversion, virtually all of these endemic species suffered precipitous declines and many, if not most of them, are now listed or proposed for listing under the Federal Endangered Species Act. Coastally, numerous ESUs of anadromous salmonids, as well as several species of marine mammals and birds and endemic coastal dune plants and animals, have become listed at the state or Federal levels, or both.

## 3.6.4 Current Conditions and Trends

The BLM has completed or is in the process of identifying areas of ecological importance, designating priority species and habitats, and identifying restoration strategies, opportunities, and management decisions to protect or prevent avoidable loss of habitat supporting special status species within each of the management areas. In addition, consultation with the USFWS and NOAA Fisheries is required by the

Endangered Species Act for Federal actions that may affect listed species and designated critical habitat. The consultation process ensures that actions taken are not likely to jeopardize the continued existence of any threatened or endangered species or their critical habitat.

BLM has expended considerable effort in species-directed inventories throughout the State, particularly as part of efforts to conserve listed animals and plants in the San Joaquin Valley bioregion, of which the HFO is a major land holder. Map 4 in Appendix I shows all known special status species locations within the CCMA administered BLM GIS databases and the California Natural Diversity Database (CNDDB).

### 3.6.5 Special Status Species within the Planning Area

The CCMA has a relatively high percentage of rare species relative to surrounding areas due to its diversity of habitats. The CCMA contains both serpentine and nonserpentine-derived soils and an elevation range of 1,830 to 5,241 feet with rugged topography. The combination of drastically different soil types, elevational range, and topography (slope, aspect) support a variety of different vegetation types that include conifer forest, chaparral, grasslands, riparian areas, and even stark serpentine barrens which are completely devoid of vegetation. Due to the stressful physical and chemical conditions imposed by serpentine soils, the New Idria serpentine mass supports a high proportion of rare, edaphic endemic plant species. The unique vegetation types of the New Idria serpentine mass including serpentine chaparral and the San Benito Mountain conifer forest provide habitat for several sensitive bird species.

Despite its unique floral communities and its proximity to regions occupied by entire suites of Federally protected species, CCMA is known to harbor only one Federally-listed species, the San Benito evening primrose (*Camissonia benitensis*). Other Federally listed species potentially present within the CCMA include the California condor (*Gymnogyps californicus*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) and San Joaquin kit fox (*Vulpes macrotis mutica*). The paucity of potential habitat for Tipton kangaroo rat and San Joaquin kit fox make their presence within the CCMA possible but unlikely. The longstanding presence of Hernandez Dam on the San Benito River downstream from the CCMA precludes the current presence of anadromous fish, including federally-listed Coho salmon (*Oncorhynchus kisutch*) and steelhead (*Oncorhynchus mykiss*). Moreover, there are no historical records of those species in the CCMA. California red-legged frogs (*Rana draytonii*), while present in the San Benito River watershed fifteen miles or more downstream, have never been recorded in or near the CCMA. California tiger salamanders are present in sag pond habitat in the San Andreas Rift Zone to the west and in vernal pool habitat in the Central Valley to the east but have never been recorded in the environs of CCMA. Special status species known to occur on the BLM-administered lands within CCMA and listed under the ESA or the CESA or otherwise identified by BLM as a special status species are enumerated in Tables 3.6-1 through 3.6-8 below. Figures 5 and 6 provide maps of known or potential occurrences of special status species.

#### 3.6.5.1 Plants and Habitats

Special status plants occurring within the Planning Area are shown in in Table 3.6-1. The New Idria mass (Serpentine ACEC) within the CCMA harbors a large number of rare serpentine endemic plant species.

**Special Status Plant Species**

San Benito Evening primrose (*Camissonia benitensis*)

Family Onagraceae. Federally-listed Threatened. The US Fish and Wildlife Service proposed to list the San Benito evening-primrose as an endangered species on October 31, 1983 (48 FR 50126) based on

impacts to the species and its habitat from OHV activity. The USFWS designated the species as a threatened, rather than endangered, species on February 12, 1985 (50 FR 5758). San Benito evening primrose is a diminuitive annual with wiry, greenish-purple stems, clusters of linear, pubescent leaves, and yellow four-petaled flowers (Figure 1). The species is a narrow serpentine endemic, with most populations being located upon or with close proximity to the New Idria and nearby Laguna Mountain serpentine masses. A detailed description of the species and its ecology may be found in a report by Taylor (1990). Most San Benito evening primrose occupied and potential habitat consists of serpentine alluvial fans, terraces (Figure 2), and debris flows, often adjacent to perennial streams within the Serpentine ACEC. Some occupied and potential habitat occurs at the margins of moist upland meadows within the ACEC near Picacho Peak. Other San Benito evening primrose populations occur outside of the ACEC on serpentine terraces adjacent to lower Clear Creek and White Creek. The terraces were created from high serpentine sediment loads transported from within the ACEC to outside of the ACEC and deposited adjacent to streams. There are sixty-three know populations (suboccurrences) total with fifty-one populations located within the Serpentine ACEC and seven populations outside of the Serpentine ACEC and within the CCMA. Five populations are located entirely outside of the CCMA. No critical habitat has been designated for this species.

The occupied and potential habitat of San Benito evening primrose has a long history of impacts from human activities, including road construction, logging, mining, and OHV use. Many routes, such as R1, R11, R15, and T158 were established on San Benito evening primrose habitat. The relatively level terraces have also been favored as staging areas for logging, mining, and more recently, for OHV use activities. Habitat disturbance has promoted the invasion of noxious species such as yellow starthistle (*Centaurea solstitialis*) into San Benito evening primrose habitat just outside of the Serpentine ACEC. Red brome (*Bromus madritensis*) has invaded some San Benito evening primrose habitat within the ACEC, but it is sparse and does not appear to be adversely impacting San Benito evening primrose. Invasive species are controlled through Integrated Pest Management. Most of the occupied and potential San Benito evening primrose habiat is now closed to OHV use and protected by fences and barricades.

**Figure 1**. San Benito evening primrose.

**Figure 2**. San Benito evening primrose serpentine stream terrace habitat (suboccurrence 51200).

Rayless layia (*Layia discoidea*)

Family Asteraceae, BLM Sensitive, CNPS 1B. Tiny annual with a basal rosette of leaves and small, bright yellow aster flowers on a wiry infloresence. Like San Benito evening primrose, rayless layia is a narrow serpentine endemic. Its habitat consists primarily of serpentine outcrops and scree on the New Idria and nearby Laguna Mountain and Hepsedam Peak serpentine masses (San Benito county). It occasionally co-occurs with San Benito evening primrose on serpentine stream terraces. Fencing of occupied and potential habitat for the San Benito evening primrose has afforded the rayless layia some protection. Most of the rayless layia occupied and potential habitat, however, is not physically protected. Twenty-five populations are known with twenty-three populations located within the Serpentine ACEC and two are located entirely outside of the CCMA.

San Benito fritillary *(Fritillaria viridea)*

Family Liliaceae, BLM Sensitive, CNPS 1B. Perennial lily with whorled leaves on a lanky infloresence, bearing nodding, small yellowish-green flowers. San Benito fritillary is a serpentine endemic with a southern Coast Range distribution in San Benito, Monterey, and San Luis Obispo counties. It primarily grows as scattered individuals in the understory beneath serpentine chaparral. San Benito fritillary is sparse, but widespread within the Serpentine ACEC of the CCMA.

Talus fritillary (*Fritillaria falcata*)

Family Liliaceae, BLM Sensitve, CNPS 1B. Perennial lily with a basal rosette of leaves and erect, yellow flower with brown speckles. Talus fritillary is a serpentine endemic restricted to the northern part of the southern Coast Range in San Benito, Monterey, Santa Cruz, and Stanislaus counties. It grows on serpentine barrens and scree. Only nine populations in total are known with average population size being less than 100 individuals. Two populations are located within the Serpentine ACEC of the CCMA.

One of the populations contains several hundred individuals and is the largest population of the species. This population is protected by an exclosure fence.

Mariposa cryptantha (*Cryptantha mariposae*)

Family Boraginaceae, BLM Sensitive, CNPS 1B. Small annual bristly herb with small white flowers borne on curled infloresences. Mariposa cryptantha is a serpentine endemic found at a few locations on serpentine in Stanislaus, Calaveras, Tuolumne, and Mariposa counties, as well as San Benito county within the Serpentine ACEC of the CCMA. The species grows as an understory species in serpentine chaparral. Mariposa cryptantha is very uncommon within the Serpentine ACEC of the CCMA.

Mt. Diablo phacelia (*Phacelia phacelioides*)

Family Hydrophyllaceae, BLM Sensitive, CNPS 1B. Perennial plant with basal rosette of bristly leaves and small light purple flowers borne on curled infloresences. Mt. Diablo phacelia is distributed throughout the south Coast Range in Contra Costa, Santa Clara, Stanislaus, Monterey, San Benito, and Kern counties. Although it often grows on serpentine soils as a chaparral understory species, it occasionally grows on nonserpentine soils as well. Mt. Diablo phacelia is very uncommon within the Serpentine ACEC of the CCMA.

Chaparral harebell (*Campanula exigua*)

Family Campanulaceae, BLM Sensitive, CNPS 1B. Annual herb with small, light purple, five-petaled flowers. Chaparral harebell is found in Contra Costa, Alameda, Santa Clara, Stanislaus, and San Benito counties. Othough it most often grows on serpentine soils as a chaparral understory species, it occasionally grows on nonserpentine soils as well. Chaparral harebell is very uncommon within the Serpentine ACEC of the CCMA.

Santa Cruz Mountains pussypaws (*Calyptridium parryi* var. *hesseae*)

Family Polygonaceae, BLM Sensitive, CNPS 1B. Rosetted annual herb with prostrate, compact pink flowers. Santa Cruz Mountains pussypaws occurs in Santa Clara, Santa Cruz, Montery, Fresno, and San Benito counties. Although the species is often found on nonserpentine soils, within the Serpentine ACEC of the CCMA, the species is only associated with serpentine vernal pools north of Clear Creek and at Spanish Lake. Most populations of the species within the CCMA are protected by exclusion fences. Santa Cruz Mountains pussypaws is locally abundant around the serpentine vernal pools, but very uncommon within the Serpentine ACEC of the CCMA as a whole.

San Benito spineflower (*Chorizanthe biloba* var. *immemora*)

Family Polygonaceae, BLM Sensitve, CNPS 1B. Small, annual prostrate plant with spiny reddish-purple leaves and tiny light purple flowers. San Benito spineflower is a very rare species known from only San Benito and Monterey counties. The species grows on nonserpentine sandy soils in valleys. The single known population located outside of the Serpentine ACEC and within the CCMA is protected by an exclusion fence.

Slender pentachaeta (*Pentachaeta exilis* ssp. *aeolica*)

Family Asteraceae, BLM Sensitve, CNPS 1B. Tiny annual with yellow aster flowers. Slender pentachaeta is also a very rare species known from only San Benito and Monterey counties. The species

grows on nonserpentine clay soils in valleys. The single large population located outside of the Serpentine ACEC (same area as San Benito spineflower) and within the CCMA, is protected by an exclusion fence.

Indian Valley bush mallow (*Malacothamnus oboriginum*)

Family Malvaceae, BLM Sensitive, CNPS 1B. Small perennial shrub with light pink hibiscus-like flowers. Indian Valley bush mallow is an infrequent species that is distributed throughout the south Coast Range in San Mateo, Santa Clara, Monterey, Kings, Fresno, and San Benito counties. The species typically grows on rocky, nonserpentine soils. It responds favorably to fire and can appear in great numbers within burned areas. A few populations of Indian Valley bush mallow have been documented outside of the Serpentine ACEC within the CCMA.

Pale yellow layia (*Layia heterotricha*)

Family Asteraceae, BLM Sensitive, CNPS 1B. Small annual with light yellow aster flowers. Pale yellow layia is distributed throughout the south Coast Range in Monterey, San Benito, Fresno, Kings, San Luis Obispo, Kern, Santa Barbara, Ventura, and Los Angeles counties. It grows on sandy nonserpentine soils in uplands. A few populations of pale yellow layia have been documented on nonserpentine soils outside of the Serpentine ACEC in the southeast portion of the CCMA.

Showy madia (*Madia radiata*)

Family Asteraceae, BLM Sensitive, CNPS 1B. Small, aromatic annual with sticky foliage and small, bright yellow aster flowers. Showy madia is distributed throughout the south Coast Range in Contra Costa, San Joaquin, Santa Clara, San Benito, Fresno, Monterey, Kings, San Luis Obispo, Kern, and Santa Barbara counties. Like pale yellow layia, it also grows on sandy nonserpentine soils in uplands. Showy madia has been documented on nonserpentine soils outside of the Serpentine ACEC in the southern portion of the CCMA.

**Table 3.6-1 Special Status Plants and Habitats Occurring within the Planning Area.**
Species with affinity for serpentine soils (Serpentine ACEC). Species with affinity for nonserpentine soils (outside of ACEC). CNPS 1B = Rare, threatened, or endangered in California and elsewhere.
[1]Serpentine endemic status according to Safford *et al*. 2005.

| Common Name | Scientific Name | Status | Serpentine endemic status[1] | Habitat type | Vegetation community |
|---|---|---|---|---|---|
| San Benito evening primrose | *Camissonia benitensis* | Federally-listed Threatened | Strict endemic | Serpentine riparian and upland | Mixed willow, leather oak |
| Rayless layia | *Layia discoidea* | BLM Sensitive Species, CNPS 1B | Strict endemic | Serpentine upland | Coulter pine, leather oak, serpentine barrens |
| San Benito fritillary | *Fritillaria viridea* | BLM Sensitive Species, CNPS 1B | Strict endemic | Serpentine upland | Coulter pine, leather oak |
| Talus fritillary | *Fritillaria falcata* | BLM Sensitive Species, CNPS 1B | Strict endemic | Serpentine upland | Coulter pine, leather oak, serpentine |

| Common Name | Scientific Name | Status | Serpentine endemic status[1] | Habitat type | Vegetation community |
|---|---|---|---|---|---|
| | | | | | barrens |
| Mariposa cryptantha | *Cryptantha mariposae* | BLM Sensitive Species, CNPS 1B | Strict endemic | Serpentine upland | Coulter pine, leather oak, serpentine barrens |
| Mt. Diablo phacelia | *Phacelia phacelioides* | BLM Sensitive Species, CNPS 1B | Broad endemic or indicator | Serpentine upland | Coulter pine, leather oak |
| Chaparral harebell | *Campanula exigua* | BLM Sensitive Species, CNPS 1B | Broad endemic or indicator | Serpentine upland | Coulter pine, leather oak |
| Santa Cruz Mountains pussypaws | *Calyptridium parryi* var. *hesseae* | BLM Sensitive Species, CNPS 1B | No status | Serpentine riparian and upland | Mixed willow, leather oak |
| San Benito spineflower | *Chorizanthe biloba* var. *immemora* | BLM Sensitive Species, CNPS 1B | No status | Nonserpentine upland | California annual grassland, blue oak |
| Slender pentachaeta | *Pentachaeta exilis* ssp. *aeolica* | BLM Sensitive Species, CNPS 1B | No status | Nonserpentine upland | California annual grassland, blue oak |
| Indian Valley bush mallow | *Malacothamnus aboriginum* | BLM Sensitive Species, CNPS 1B | No status | Nonserpentine upland | California annual grassland, chamise-wedgeleaf ceanothus, blue oak |
| Pale yellow layia | *Layia heterotrichia* | BLM Sensitive Species, CNPS 1B | No status | Nonserpentine upland | California annual grassland |
| Showy madia | *Madia radiata* | BLM Sensitive Species, CNPS 1B | No status | Nonserpentine upland | California annual grassland |

**Other Plant Species of Concern**

Other plant species of concern occurring within the Planning Area are shown in in Table 3.6-2.

Guirado's goldenrod (*Solidago guiradonis*)

Family Asteraceae, CNPS 4. Perennial with basal rosette and lanky infloresence with dense clusters of bright yellow aster flowers. Guirado's goldenrod is a serpentine endemic with distribution in the south Coast Range limited to San Benito and San Luis Obispo counties. Its habitat consists of moist serpentine stream terraces and seeps. Guirado's goldenrod is very common in all riparian areas within the Serpentine ACEC of the CCMA.

Serpentine leptosiphon (*Leptosiphon ambiguus*)

Family Polemoniaceae, CNPS 4. Small annual with pink phlox-like flowers. Serpentine leptosiphon is a serpentine endemic that has a widespread distribution throughout the south Coast Range in Contra Costa, Alameda, Santa Clara, San Mateo, Santa Cruz, Stanislaus, Merced, San Benito, Monterey, Fresno, and San Luis Obispo counties. Its habitat is primarily serpentine streamside terraces. Serpentine leptosiphon is uncommon within the Serpentine ACEC of the CCMA.

San Benito monardella (*Monardella antonina* ssp. *benitensis*)

Family Lamiaceae, CNPS 4. Small, aromatic (minty), perennial herb with purple flowers. San Benito monardella is a serpentine endemic with a very limited distribution in Monterey and San Benito counties. It's habitat includes serpentine soils of both stream terraces and uplands. San Benito monardella is common in all riparian areas (serpentine stream terraces) within the Serpentine ACEC of the CCMA.

Hernandez bluecurls (*Trichostema rubisepalum*)

Family Lamiaceae, CNPS 4. Small, aromatic, annual with sticky foliage and purple flowers. Hernandez bluecurls is a serpentine endemic found only in San Benito county (New Idria, Laguna Mountain and Hepsedam serpentine masses) in the south Coast Range. It is also found on serpentine in Calaveras, Tuolumne, Mariposa, and Trinity counties. It's habitat is limited to moist serpentine stream terraces and seeps. Hernandez bluecurls is common in all riparian areas within the Serpentine ACEC of the CCMA.

Carlotta Hall's lace fern (*Aspidotis carlotta-halliae*)

Family Pteridaceae, CNPS 4. Small fern. Carlotta Hall's lace fern is a serpentine endemic with a south Coast Range distribution in Marin, Alameda, Santa Clara, San Benito, Monterey, and San Benito counties. Its habitat consists of serpentine rock outcrops and scree. Carlotta Hall's lace fern is very uncommon within the Serpentine ACEC of the CCMA.

South Coast Range morning glory (*Calystegia collina* ssp. *venusta*)

Family Convolvulaceae, CNPS 4. Small, perennial herb with a basal rosette of leaves and a white morning glory-like flower. South Coast Range. South Coast Range morning glory is a serpentine endemic distributed throughout the south Coast Range in Monterey, San Benito, Fresno, San Luis Obispo, and Santa Barbara counties. It's habitat includes serpentine soils of both stream terraces and uplands. South Coast Range morning glory is very uncommon within the Serpentine ACEC of the CCMA.

Andrew's bedstraw (*Galium andrewsii* ssp. *gatense*)

Family Rubiaceae, CNPS 4. Small, compact, herbaceous perennial with tiny spiny leaves. Andrew's bedstraw is a serpentine endemic distributed throughout the south Coast Range in Contra Costa, Alameda, Santa Clara, Stanislaus,Santa Cruz, Monterey, San Benito, Fresno, and San Luis Obispo counties. It grows on serpentine soils in uplands. Andrew's bedstraw is sparse, but widespread within the Serpentine ACEC of the CCMA.

Benitoa (*Benitoa occidentalis*)

Family Asteraceae, CNPS 4. Small, bushy annual with sticky foliage and bright yellow aster flowers. Benitoa has a limited distribution in the south Coast Range in Monterey, San Benito, and Fresno counties. Although it often grows on serpentine soils, it occasionally grows on nonserpentine soils as well. Benitoa is very uncommmon in the CCMA. The only documented population of the species near the CCMA (and San Benito county) is ½ mile west of New Idria (just outside of the CCMA).

San Benito thorn mint (*Acanthomintha obovata* ssp. *obovata*)

Family Lamiaceae, CNPS 4. Small, aromatic, spiny annual with white, snapdragon-like flowers. San Benito thornmint has a limited distribution in the south Coast Range in Monterey, San Benito, Fresno, and Ventura counties. Although it often grows on serpentine outcrops, it occasionally grows on nonserpentine rock outcrops as well. A few populations of San Benito thornmint have been documented both within and outside of the Serpentine ACEC of the CCMA.

Brewer's clarkia (*Clarkia breweri*)

Family Onagraceae, CNPS 4. Small annual with pink four-petaled flowers. Brewer's clarkia is distributed throughout the south Coast Range in Alameda, Santa Clara, Stanislaus, Merced, San Benito, Monterey, and Fresno counties. Although it often grows on serpentine outcrops and scree, it occasionally grows on nonserpentine rock outcrops as well. Brewer's clarkia is very uncommon within the Serpentine ACEC of the CCMA.

Sulphur flower buckwheat (*Eriogonum umbellatum* var. *bahiiforme*)

Family Polygonaceae, CNPS 4. Small prostrate subshrub with compact, pink clusters of flowers. Sulphur flower buckwheat is a common, widespread species throughout California. Variety *bahiiforme* has a limited distribution in California, primarily found in the north and south Coast Range. The variety is found as commonly on serpentine soils as nonserpentine soils throughout that range. Within the CCMA, the species is only found on serpentine soils within the Serpentine ACEC. Sulphur flower buckwheat is uncommon within the Serpentine ACEC of the CCMA.

Western Heerman's buckwheat (*Eriogonum heermannii* var. *occidentale*)

Family Polygonaceae, CNPS 4. Small woody shrub with clusters of tiny white flowers. Western Heerman's buckwheat is a very rare species distributed in the northern portion of the south Coast Range in Monterey, San Benito, and Fresno counties. Its habitat consists of sandy, alluvial soils. In the CCMA, it grows outside of the ACEC on serpentine alluvium near the confluence of Clear Creek and San Benito River. The population is protected by an exclosure fence.

One-sided monkeyflower (*Mimulus fremontii*)

Family Phrymaceae (Scrophulariaceae), CNPS 4. Small annual with purple shapdragon-like flowers. One-sided monkeyflower has a widespread distribution throughout the southern portion of the south Coast Range and into the Transverse and Peninsular Ranges and beyond into the Mojave desert. In the south Coast Range, it is found in San Benito, Monterey, San Luis Obispo, Kern, and Santa Barbara counties. Its habitat is primarily serpentine stream terraces within the ACEC of the CCMA, but it also frequently grows on nonserpentine soils as well. One-sided monkeyflower is common within the Serpentine ACEC of the CCMA.

Santa Clara thorn mint (*Acanthomintha lanceolata*)

Family Lamiaceae, CNPS 4. Small, aromatic, spiny annual with white, snapdragon-like flowers. Santa Clara thorn mint is distributed throughout the south Coast Range in Alameda, San Joaquin, Santa Clara, Stanislaus, Merced, San Benito, Monterey, and Fresno counties. Although it often grows on serpentine outcrops, it occasionally grows on nonserpentine rock outcrops as well. A few populations of San Benito thorn mint have been documented both within and outside of the Serpentine ACEC of the CCMA.

Protruding buckwheat (*Eriogonum nudum* var. *indictum*)

Family Polygonaceae, CNPS 4. Herbaceous perennial with a basal rosette of leaves and inflated infloresence stems bearing light pink flowers. Protruding buckwheat has a widespread distribution throughout the south Coast Range in Stanislaus, Merced, Monterey, San Benito, Fresno, San Luis Obispo, Kern, and Santa Barbara counties. Its habitat consists of sandstone rock and shale outcrops. Protruding buckwheat occurs primarily on the north and east sides of the CCMA outside of the Serpentine ACEC.

Oval leaved snapdragon (*Antirrhinum ovatum*)

Family Scrophulariaceae, CNPS 4. Annual herb with light pink, snapdragon-like flowers. Oval leaved snapdragon is a rare species found in the south Coast Range in San Benito, Monterey, San Luis Obispo, Kern, Santa Barbara, and Ventura counties. It grows primarily on sandy soils. Oval leaved snapdragon occurs just outside the eastern border of the CCMA with potential to occur within the CCMA.

Stinkbells (*Fritillaria agrestis*)

Family Liliaceae, CNPS 4. Perennial lily with a basal rosette of fleshy leaves, lanky infloresence, and nodding, dull yellow or red flower. Stinkbells has a widespread distribution in northern and central California. In the south Coast Range, it occurrs in Contra Costa, Alameda, San Mateo, Stanislaus, Monterey, San Benito, Fresno, San Luis Obispo, and Kern counties. Its habitat includes clay soils (occasionally serpentine-derived) in grasslands. Stinkbells occurs within the CCMA outside of the Serpentine ACEC.

Salinas milkvetch (*Astragalus macrodon*)

Family Fabaceae, CNPS 4. Perrenial herb with dissected leaves, forming a small shrub. Bears clusters of light yellow flowers. Salinas milkvetch is found in the south Coast Range in San Benito, Monterey, San Luis Obispo, Kern, and Santa Barbara counties. Its habitat consists primarily of sandy or gravelly substrates, especially alluvium. Salinas milkvetch occurs just outside the eastern border of the CCMA with potential to occur within the CCMA.

**Table 3.6-2 Other Plant Species of Concern and Habitats Occurring within the Planning Area.** Species with affinity for serpentine soils (ACEC). Species with affinity for nonserpentine soils CNPS 4 = Limited distribution (watch list). [1]Serpentine endemic status according to Safford *et al*. 2005.

| Common Name | Scientific Name | Status | Serpentine endemic status[1] | Habitat type | Vegetation community |
|---|---|---|---|---|---|
| Guirado's goldenrod | *Solidago guiradonis* | CNPS 4 | Strict endemic | Serpentine riparian | Mixed willow |
| Serpentine leptosiphon | *Leptosiphon ambiguus* | CNPS 4 | Strict endemic | Serpentine riparian and upland | Leather oak, mixed willow |
| San Benito monardella | *Monardella antonina* ssp. *benitensis* | CNPS 4 | Strict endemic | Serpentine riparian and upland | Leather oak, mixed willow |
| Hernandez bluecurls | *Trichostema rubisepalum* | CNPS 4 | Broad endemic | Serpentine riparian | Leather oak, mixed willow |
| Carlotta Hall's lace fern | *Aspidotis carlotta-halliae* | CNPS 4 | Broad endemic | Serpentine upland | Leather oak, serpentine barrens |
| South Coast Range morning glory | *Calystegia collina* ssp. *venusta* | CNPS 4 | Broad endemic | Serpentine upland | Leather oak, mixed willow |
| Andrew's bedstraw | *Galium andrewsii* ssp. *gatense* | CNPS 4 | Broad endemic | Serpentine upland | Coulter pine, leather oak |
| Benitoa | *Benitoa occidentalis* | CNPS 4 | Broad endemic | Serpentine upland | Leather oak |
| San Benito thorn mint | *Acanthomintha obovata* ssp. *obovata* | CNPS 4 | Broad endemic or indicator | Serpentine upland | Leather oak, serpentine barrens |
| Brewer's clarkia | *Clarkia breweri* | CNPS 4 | Broad endemic or indicator | Serpentine upland | Leather oak, serpentine barrens |
| Sulphur flower buckwheat | *Eriogonum umbellatum* var. *bahiiforme* | CNPS 4 | Broad endemic or indicator | Serpentine upland | Coulter pine, leather oak, serpentine barrens |
| Western Heerman's buckwheat | *Eriogonum heermannii* var. *occidentale* | CNPS 4 | No status | Serpentine riparian | Mixed willow |
| One-sided monkeyflower | *Mimulus fremontii* | CNPS 4 | No status | Serpentine riparian and upland | Leather oak, mixed willow |
| Santa Clara thorn mint | *Acanthomintha lanceolata* | CNPS 4 | No status | Serpentine upland | Leather oak, serpentine barrens |
| Protruding buckwheat | *Eriogonum nudum* var. *indictum* | CNPS 4 | No status | Nonserpentine upland | Chamise-wedgeleaf ceanothus, California buckwheat |

| Common Name | Scientific Name | Status | Serpentine endemic status[1] | Habitat type | Vegetation community |
|---|---|---|---|---|---|
| Oval leaved snapdragon | *Antirrhinum ovatum* | CNPS 4 | No status | Nonserpentine upland | Chamise-wedgeleaf ceanothus, California buckwheat |
| Stinkbells | *Fritillaria agrestis* | CNPS 4 | No status | Nonserpentine upland | California annual grassland, Blue oak |
| Salinas milkvetch | *Astragalus macrodon* | CNPS 4 | No status | Nonserpentine upland | Chamise-wedgeleaf ceanothus, California buckwheat |

#### 3.6.5.2 Fish

No federally listed fish species occur within the Planning Area. One California (fish) species of special concern may occur within the Planning Area, as presented in Table 3.6-3. The Monterey roach is thought to be in decline rangewide, partly through the action of dams, which may lead to increased competition from hitch (*Lavinia exilicauda*).

**Table 3.6-3 Special Status Fish Occurring within the Planning Area**

| Common Name | Scientific Name | Status |
|---|---|---|
| Monterey roach | *Lavinia symmetricus subditus* | State species of special concern |

#### 3.6.5.3 Invertebrates

Two special status species of invertebrates may occur within the Planning Area, as presented in Table 3.6-4. Critical habitat has been designated for the longhorn fairy shrimp and vernal pool fairy shrimp (*Federal Register* 68:46683; August 6, 2003). A recovery plan, Vernal Pools of Northern California, is under development. The vernal pool fairy shrimp is federally listed as threatened. The longhorn fairy shrimp is federally listed as endangered. These crustaceans inhabit rain-filled ephemeral pools within the vernal pools that form in depressions in bedrock and meadows. Pools must fill frequently and persist long enough for the species to complete its life cycle, which takes place entirely within vernal pools. Although neither species was found in a recent survey of CCMA vernal pools (Figure 3), their potential presence could not be ruled out, while two other sensitive crustaceans, the Conservancy fairy shrimp and the vernal pool tadpole shrimp, are considered unlikely to occur within the Planning Area (Hopkins and Silverman 2004).

**Table 3.6-4 Special Status Invertebrates Occurring within the Planning Area**

| Common Name | Scientific Name | Status |
|---|---|---|
| Longhorn fairy shrimp | *Branchinecta longiantenna* | Federal endangered |
| Vernal pool fairy shrimp | *Branchinecta lynchi* | Federal threatened |

Figure 3. Spanish Lake, a vernal pool underlain by serpentine within the CCMA. Potential habitat for fairy shrimp species.

#### 3.6.5.4 Amphibians

One BLM sensitive amphibian species occurs within the Planning Area: the foothill yellow-legged frog. Table 3.6-5 lists the species, its status as a State species of special concern. Foothill yellow-legged frogs are locally abundant within the many streams of the CCMA (Figure 4), but its abundance is dependent on complex stream environments that allow them to choose optimal oviposition sites. Populations downstream from reservoirs are particularly susceptible to local extirpation due to non-natural pulsed flows. Siltation is also a potential problem because it can occlude the cobble-bottomed stream habitat frogs prefer. No other sensitive amphibians are known to occur or potentially occur in the planning area.

**Table 3.6-5 Special Status Amphibians Occurring within the Planning Area**

| Common Name | Scientific Name | Status |
|---|---|---|
| Foothill yellow-legged frog | *Rana boylii* | BLM sensitive species, State species of special concern |

Figure 4. Riparian zone on the New Idria serpentine mass (upper San Benito River) provides habitat for foothill yellow-legged frogs and two-striped garter snakes.

#### 3.6.5.5 Reptiles

The four sensitive reptiles known to occur within the Planning Area are presented in Table 3.6-6. All four are protected by CDFG and cannot be handled without a scientific collecting permit. Threats to reptiles include direct mortality and habitat loss due to OHV activity, as well as predation from mesomammals such as raccoons (*Procyon lotor*) whose populations may be artificially increased by presence of garbage and hand feeding by the public. Coast horned lizards (*Phrynosoma coronatum frontale*) are at risk due to the replacement of native ant species by the inedible Argentine fire ant (*Linepithema humile*). California legless lizards (*Anniella pulchra*) are particularly vulnerable to disturbances that reduce shrubs and associated leaf litter from the sandy soils they inhabit. Two-striped garter snakes (*Thamnophis hammondii*) are comparatively robust but are dependent on healthy riparian systems with sustainable populations of fish. Southwestern pond turtles require pools and associated riparian structure and also needs undisturbed sandy uplands in which to bury eggs in late spring, and are at risk from vehicular traffic when moving from aquatic habitat to upland nesting sites.

**Table 3.6-6 Special Status Reptiles Occurring within the Planning Area**

| Common Name | Scientific Name | Status |
|---|---|---|
| California horned lizard | *Phrynosoma blainvillii (=coronatum frontale)* | BLM sensitive species, SSSC[1] |
| California legless lizard | *Anniella pulchra* | SSSC[1] |
| Two-striped garter snake | *Thamnophis hammondii* | BLM sensitive species, SSSC[1] |
| Southwestern pond turtle | *Actinemys marmorata pallida* | BLM sensitive species, SSSC[1] |

[1]California State Species of Special Concern

### 3.6.5.6 Birds

The sixteen avian species presented in Table 3.6-7 occur or have the potential to occur within the Planning Area; the planning area includes considerable habitat of value to raptors. Sensitive raptor species that utilize habitats provided in the Planning Area include the California condor, bald and golden eagle, Swainson's and sharp-shinned hawk, northern harrier, short-eared, long-eared, and burrowing owl, and prairie falcon. Threats to raptors include poisoning, vehicle collisions, habitat loss, illegal hunting, illegal trading and egg collecting, power lines and towers, falconry, a reduced prey base, and disturbance of nesting and roosting sites. California condors and bald eagles are expected to increase in frequency of sightings as their populations recover from historical declines.

**Table 3.6-7 Special Status Avian Species Occurring or Potentially Occurring within the Planning Area**

| Common Name | Scientific Name | Status |
|---|---|---|
| California Condor | *Gymnogyps californicus* | Federal Endangered, State Endangered |
| Bald Eagle | *Haliaeetus leucocephalus* | FBEPA[3] |
| Swainson's Hawk | *Buteo swainsoni* | State-listed Threatened, BCC[1] |
| Golden Eagle | *Aquila chrysaetos* | PT[2], FBEPA[3],FP[4] |
| Northern Harrier | *Circus cyaneus* | SSSC[5], BSSC[5] |
| Prairie Falcon | *Falco mexicanus* | BCC[1] |
| Short-eared Owl | *Asio flammeus* | SSSC[5] |
| Long-eared Owl | *Asio otus* | SSSC[5] |
| Burrowing Owl | *Athene cunicularia* | BLM Sensitive Species, BCC[1,] SSSC[5] |
| Olive-sided Flycatcher | *Contopus cooperi* | SSSC[5] |
| | | |
| Loggerhead Shrike (mainland populations) | *Lanius ludovicianus* | SSSC[5] |
| Yellow-breasted chat | *Ichteria virens* | SSSC[5] |
| Grasshopper Sparrow | *Ammodramus savannarum* | SSSC[5] |

[1]FWS Bird of Conservation Concern; [2]Proposed threatened; [3]Federal Bald Eagle Protection Act; [4]State Fully Protected Species; [5]California State Species of Special Concern.

### 3.6.5.7 Mammals

Thirteen sensitive mammal species occur or have the potential to occur within the Planning Area, as listed in Table 3.6-8. Ringtail (*Bassariscus astutus*) have been anecdotally observed in the CCMA. Bats of one or more unidentified species are known to inhabit abandoned mine shafts, and bats also likely roost in conifers and rock outcrops. Big-eared kangaroo rats are associated with chaparral and have been collected on San Benito Mountain and in Sawmill Creek.

**Table 3.6-8 Special Status Mammals Occurring or Potentially Occurring within the Planning Area**

| Common Name | Scientific Name | Status |
|---|---|---|
| Western mastiff-bat | *Eumops perotis californicus* | BLM Sensitive Species, SSSC[1] |
| Townsend's western big-eared bat | *Corynorhinus townsendi townsendi* | BLM Sensitive Species, SSSC[1] |
| Pallid bat | *Antrozus pallidus* | BLM Sensitive Species, SSSC[1] |
| Yuma myotis | *Myotis yumanensis* | BLM Sensitive Species |
| Long-eared myotis | *Myotis evotis* | BLM Sensitive Species |
| Fringed myotis | *Myotis thysanoides* | BLM Sensitive Species |
| Small-footed myotis | *Myotis ciliolabrum* | BLM Sensitive Species |
| Big-eared kangaroo rat | *Dipodomys venustus elephantinus* | SSSC[1] |
| Short-nosed kangaroo rat | *Dipodomys nitratoides brevinasus* | BLM Sensitive Species |
| Tipton kangaroo rat | *Dipodomys nitratoides nitratoides* | Federal and State Endangered |
| San Joaquin pocket mouse | *Perognathus inornatus inornatus* | BLM Sensitive Species |
| San Joaquin kit fox | *Vulpes macrotis mutica* | Federal Endangered |
| American badger | *Taxidea taxus* | SSSC[1] |
| Ringtail | *Bassariscus astutus* | State Fully Protected Species |

[1]California State Species of Special Concern

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# 3.7 Air Quality

## 3.7.1 Introduction

As identified in the purpose and need (Section 1.1) for this RMP/EIS, the major air quality concern in the CCMA is the release of airborne asbestos emissions that pose a risk to human health and the environment when CCMA soils are disturbed from visitor use activities in the Serpentine ACEC. Six types of 'asbestos' are classified as a hazardous air pollutant under the Clean Air Act Amendments of 1990, Section 112(b), including chrysotile, which is the type of asbestos most commonly found in CCMA soils.

In order to evaluate overall protection of human health and the environment in this RMP/EIS, hazardous air pollutants and the human health risk from exposure to airborne asbestos emissions are addressed under "Hazardous Materials and Public Health and Safety" in Sections 2.4.2, 3.2, and 4.2. The remainder of the affected environment discussion for air quality is based on the total Vehicle Miles Traveled (VMT) by approximately 35,000 visitors/year in the 75,000-acre CCMA and is not directly related to the selection of a particular route network.

For the purpose of monitoring and regulating air quality, the state of California has been divided into 15 air basins based on meteorological and geographic similarities. Whenever practical, political boundary lines also affect the location of air basin boundaries. The two air basins encompassing CCMA are the North Central Coast and the San Joaquin Valley. There are two regional air quality boards that oversee these air basins: Monterey Bay Unified Air Pollution Control Board (MBUAPCD) and the San Joaquin Valley Unified Air Pollution Control Board (SJVUAPCD). The North Central Coast Air Basin (NCCAB) includes Monterey, Santa Cruz and San Benito Counties. A portion of western Fresno County is located in the CCMA is located in the SJVAB.

In addition to federal designations based on the National Ambient Air Quality Standards, the California Air Resources Board (CARB) has further designations based criteria established for nine pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter, sulfates, lead, hydrogen sulfide and visibility reducing particles.

Other air quality concerns in the air basins within the CCMA are ground-level ozone and particulate matter (PM10, PM2.5). The air pollutant concentrations of ozone and particulate matter recorded by monitoring stations in these air basins do not meet State of California ozone air quality standards. Ozone is not a directly emitted pollutant; it forms in the presence of sunlight from oxides of nitrogen ($NO_x$) and reactive organic gases (ROGs). Ambient air concentrations of particulate matter, measured as respirable particulate matter ($PM_{10}$) and fine particulate matter ($PM_{2.5}$), also are found above Federal and State standards. Particulate matter is directly emitted to the atmosphere by travel on paved and unpaved roads and surfaces, from combustion of fuels, waste burning, and agricultural practices; it is also indirectly emitted from the reaction of gases that result in the formation of smog.

## 3.7.2 Regulatory Framework

Federal and State regulations protect ambient air quality include:

- **The Clean Air Act (CAA) of 1970**, 42 United States Code (USC) 7401 et seq., as amended in 1977 and 1990.
- **Code of Federal Regulations (CFR) Title 40**, Parts 50-99.
- **The Comprehensive Environmental Responsibility and Clean-Up Liability Act (CERCLA)**
- **National Emission Standards for Hazardous Air Pollutants (NESHAP)**

## 3.7.3 Regional Setting

Title I of the Clean Air Act (CAA), as amended, established National Ambient Air Quality (NAAQ) standards for a variety of air pollutants. National "primary" standards represent thresholds for six "criteria" pollutants, which may result in known impacts on human health when they are exceeded. National "secondary" standards for these "criteria" pollutants define levels of air quality judged necessary to protect the public welfare from any known or anticipated adverse affects of a pollutant, or to protect other resources.

The State of California has also established a set of ambient air quality standards to provide additional protection. In particular, the State of California has begun to implement a long-term program to identify, assess, and control ambient levels of hazardous air pollutants. This program was initiated by passage of the Air Toxics "Hot Spots" Information and Assessment Act of 1987. As the name implies, "hot spots" are localized point-source emissions of air toxics generated by both large and small industrial operations such as mining, oil and gas, manufacturing, and processing. This Act is in accordance with Title III of the CAA as amended in 1990. The regulation specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) that set limits on emissions of especially harmful air pollutants. Air Toxic "hot spot" violations are monitored and regulated by the local Air Pollution Control Districts (APCDs). For example, NESHAPS applied to asbestos mines and mill sites, state that there can be no visible dust emissions from these operations.

$PM_{10}$ in the atmosphere can be caused by both environmental factors and human activities. Human activities that contribute to $PM_{10}$ emissions in CCMA include combustion sources, fugitive dust sources, and off-highway vehicle (OHV) travel on un-paved roads and barrens. The 2002 Estimated Annual Average Emissions (CARB) for San Benito County, indicate a total of 6.31 tons per day of $PM_{10}$ emissions from unpaved road sources, however it is likely that these estimates do not account for emissions from the CCMA. The other pollutants associated with exhaust from motorized vehicles are: Reactive Organic Gases (ROG), Nitrogen Oxides (NOX), and Carbon Monoxide (CO). For Off-Road Recreational Vehicles (Other Mobile Sources), the 2002 Estimated Annual Average Emissions (CARB) for San Benito County, from these pollutants in tons per day is, ROG/0.03 and CO/0.34. Since the San Joaquin Valley Air Pollution Control Board adopted a $PM_{10}$ reduction plan effective December 1993, all land-use decisions for the CCMA will need to conform to this plan.

The US EPA has established new NAAQ standard for $PM_{2.5}$ emissions. These fine particles have been implicated as an increased health risk. Sources for $PM_{2.5}$ emissions mostly consist of chemical compounds from combustion processes in vehicles. However, natural processes and human activities, such as motorized vehicle operation, easily erode serpentine rocks bearing asbestos (Wrucke 1995). Vehicle travel on unpaved serpentine roads and trails can also generate asbestos emissions and other fine dust of less than ten microns ($PM_{10}$), all of which can negatively impact air quality. The BLM's National Science and Technology Center prepared an Air Conformity Analysis and updated PM emission inventory for the CCMA based on soil type, silt loading, and vehicle type to analyze the impacts to air quality from the Proposed CCMA RMP Amendment and Final EIS for Route Designation (2005). This data quantifies the $PM_{10}$ and $PM_{2.5}$ contribution from vehicles under the no action alternative and is located in Appendix IX.

## 3.7.4 Current Conditions and Trends

### 3.7.4.1 Climate

In general, the summer climate of the West Coast is controlled by high pressure centered over the northeastern Pacific Ocean. The summer period is rarely stormy due to the high-pressure center. During this period, precipitation is negligible and winds are generally from the northwest. Air from the northwest, passing over cold, upwelling water off the coast frequently forms low clouds and/or fog along the coast.

This generally tranquil weather period also is characterized by the presence of atmospheric temperature inversions, which tend to inhibit the dispersion of air pollutants and allow for high air pollution potential.

During winter, the high pressure over the northeastern Pacific Ocean generally weakens and moves southward, allowing storms to occur more frequently along the West Coast. The summertime atmospheric temperature inversions and cold, upwelling water off the coast disappear during the winter, and wind speeds tend to be higher; these factors generally result in low air pollution potential. However, during winter, on occasions when the Pacific high-pressure area strengthens, strong atmospheric temperature inversions can develop near the land surface and winds weaken, resulting in high air pollution potential.

Several climate subregions are within the Planning Area. These subregions are locations where local topography plays a significant role in modifying regional weather conditions along the West Coast. In the Central Coast regions, temperatures along the coast are milder, and there is less variation in day/night or seasonal temperatures than at inland locations (BAAQMD 2005). In the San Joaquin valley, the generally flat topography results in cool, wet winters and hot, dry summers (CARB 2005). Climate conditions within the North Central Coast Air Basin vary due to the rather mountainous topography found there; however, coastal areas have mild temperatures throughout the year (MBUAPCD 2004).

#### 3.7.4.2 Air Basins

The western Fresno County portion of CCMA is in the San Joaquin Valley Air Basin, and the San Benito County portion of CCMA is in the North Central Coast Air Basin. Air quality within these air basins is managed by two Air Pollution Control Districts (APCDs) that are identified below. Ambient air pollutant concentration levels are monitored within each basin and summarized by the California Air Resources Board. The California Almanac of Emissions and Air Quality – 2005 Edition, was used to summarize current air quality conditions (CARB 2005).

**San Joaquin Valley Air Basin**

Air quality in this air basin is managed by the San Joaquin Valley Unified Air Pollution Control District (APCD). The San Joaquin valley is a relatively flat area at an elevation at or below 400 feet above sea level. Twenty-nine ambient air quality monitors are located throughout the air basin. Rather than being dominated by one or two large sources, emissions in this air basin originate primarily from several modestly sized urban areas spread along a roughly north-south axis in the valley.

Emissions of $NO_x$, ROG, and carbon monoxide (CO) have been trending downward since 1990; during this same period, emissions of $PM_{10}$ and $PM_{2.5}$ have been increasing slightly. Controls on motor vehicle emissions are primarily responsible for these decreases, even though population and motor vehicle miles traveled in the air basin have increased between 1990 and 2005. Emissions of ROG also have decreased due to the implementation of stationary source controls on petroleum facilities in the air basin. The tons per day (on an annual average basis) of $NO_x$, ROG, and CO emissions have decreased as shown in Table 3.7-1. Emissions of $PM_{10}$ and $PM_{2.5}$, also shown in Table 3.7-1, have remained steady and are primarily due to vehicle travel on paved and unpaved roads, agricultural activities, and waste burning.

**Table 3.7-1 Emissions into the San Joaquin Valley Air Basin (in tons per day on an annual average basis)**

| Year | $NO_x$ | ROG | $PM_{10}$ | $PM_{2.5}$ | CO |
|---|---|---|---|---|---|
| 1990 | 811 | 642 | 351 | 149 | 3,336 |
| 2005 | 479 | 386 | 358 | 149 | 1,670 |
| 2015 (projected) | 335 | 357 | 385 | 157 | 1,187 |

*Source*: CARB 2005

The San Joaquin Valley Air Basin currently exceeds both Federal and California ambient air quality standards for ozone. The air basin is designated as extreme nonattainment for ozone under the Federal 1-hour standard and severe nonattainment for ozone under the California 1-hour standard. It also is designated serious nonattainment for ozone under the Federal 8-hour standard (there is no California 8-hour ozone standard). Although the 1-hour peak ozone concentration has not declined significantly between 1990 and 2004, the number of days exceeding the 1-hour ozone standard has decreased by 55 percent, likely due to the decrease in $NO_x$, and ROG emissions. CARB has found that the air basin serves as both a source of ozone-forming compounds that are transported to other air basins, as well as a receiver of ozone-forming compounds and ozone from other air districts.

The air basin is designated as nonattainment for the Federal $PM_{10}$ and $PM_{2.5}$ standards. Although there is year-to-year variation, the general trend in ambient $PM_{10}$ concentration is slightly downward during the period 1990 through 2003. However, the rate of decrease in $PM_{10}$ levels was not sufficient to achieve compliance with the standard for several years. CARB does not provide trend information for ambient $PM_{2.5}$ due to the relatively short data set available; trends in $PM_{2.5}$ generally follow the same pattern as for $PM_{10}$.

Air quality has improved in the San Joaquin valley for CO and for ozone in terms of the number of days exceeding the 1-hour ozone standard. The prognosis for improvement of air quality in the San Joaquin Air Basin is moderate. As shown for the period 1990 through 2005, reductions in the emissions of ROG and $NO_x$ reduced the number of 1-hour ozone exceedance days, although compliance with the standard has not yet been achieved. The CARB projects an approximately 10 percent decrease in ROGs and a 30 percent decrease in $NO_x$ from 2005 to 2015, as shown in Table 3.7-1. Attainment of Federal air quality standards by 2015 for ozone is possible but remains uncertain.

Much progress has been made in lowering CO levels in the air basin. Measured CO concentrations in the air basin have not exceeded the Federal CO standards since 1991, nor have they exceeded State of California standards for the last eight years. The trend of decreasing ambient CO levels is expected to continue. As shown in Table 3.7-1, CARB anticipates CO emissions will decrease another 29 percent between 2005 and 2015 (CARB 2005).

**North Central Coast Air Basin**

Air quality in this air basin is managed by the Monterey Bay Unified Air Pollution Control District (MBUAPCD). The district operates 10 air quality monitors in the basin to collect data for determining compliance with Federal and State air quality standards. Air quality also is monitored by the National Park Service at Pinnacles National Monument. The basin is designated as attainment, with a maintenance plan, for the Federal 8-hour ozone standard, and as attainment/unclassifiable for all other Federal standards. The basin is designated nonattainment for the California ozone and $PM_{10}$ standards.

This air basin was in violation of the State ozone standard for a total of 14 days in 1994 and 1995. Analysis of those violations revealed that on 11 days the violation was due to the transport of pollutants from other basins. On the remaining three days, the analysis was either inconclusive or revealed that the cause of the ozone exceedance was beyond regulatory control (e.g., weather related). Thus, this air basin is significantly affected by the air quality of the surrounding air basins, and less so by emissions from within the basin boundary (MBUAPCD 2004).

Emissions of $NO_x$ and ROG in the North Central Coast Air Basin are shown in Table 3.7-2. These emission values are much lower than those for the San Francisco Bay Area or San Joaquin Valley air basins. By 2015, the mix of sources producing $NO_x$ and ROG emissions is expected to shift away from being dominated by mobile sources. For example, emissions resulting from prescribed burning are

expected to become a larger fraction of the total emissions, as are emissions from coatings/solvent use for ROG emissions and natural gas combustion for $NO_x$ emissions.

**Table 3.7-2 Emissions During the Ozone Season (May through September) into the North Central Coast Air Basin (in tons per day)**

| Year | $NO_x$ | ROG |
|---|---|---|
| 1990 | 135 | 114 |
| 2005 (projected) | 84 | 76 |
| 2015 (projected) | 62 | 69 |

*Source*: MBUAPCD 2004

Despite population in the North Central Coast Air Basin increasing by 44 percent by 2015, $NO_x$ and ROG emissions are projected to decrease (MBUAPCD 2004).

The MBUAPCD has also adopted smoke management plans to control the emissions of $NO_x$, ROG, and particulate matter from various types of vegetation burning (MBUAPCD 2004). Prescribed burns and agricultural burning are conducted regularly in the air basin.

### 3.7.5 Climate Change

The Intergovernmental Panel on Climate Change reports that the southwestern United States is likely to become hotter and drier (Christensen et al. 2007). This prediction is the most current and thorough analysis of expected global climate change and is based on information from four potential sources: Atmosphere-Ocean General Circulation Model (AOGCM) simulations, downscaling of AOGCM-simulated data using techniques to enhance regional detail, physical understanding of the processes governing regional responses, and recent historical climate change. Analysis using a Regional Climate Model (RCM), shown to have good predictive value for California, also indicates that the CCMA is likely to be hotter and drier by the end of the 21st century (Kueppers et al. 2005). The RCM scenario was considered better than its AOGCM counterpart because the RCM had a much finer resolution and was based on local topography, distance from the coast, latitude, and other fine-scale attributes not available in an AOGCM. The California Energy Commission (2005), using older analyses, also predicted increased temperatures, but precipitation trends were unclear.

Drier conditions for the CCMA mean that, overall, there would be less vegetative growth by the end of the 21st century. Therefore, a change in vegetation zones is also expected, where oak woodlands would potentially trend towards scrublands, scrublands to grasslands, and grasslands to desert-like habitat with significant portions of bare soils or biological crusts. As the general area becomes drier, plant communities and animal guilds are expected to migrate northward or upward in elevation. Depending on the strength and rapidity of the change, some elements of the flora may also 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 mulch generated, but, because winter moisture levels would be lower, less mulch 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 herbivores. With less precipitation, there would be less annual production and, overall, less food and water resources for animals.

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 California deserts such as yellow star thistle and tamarisk. With fewer wet years, soils moisture content would decrease, and dust emissions would likely increase and management may be needed to control exposure to releases of hazardous air pollutants.

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# 3.8 Soil Resources

## 3.8.1 Introduction

This section describes soil resources in the Planning Area, including faults and slopes.

## 3.8.2 Regulatory Framework

Regulations for geologic and soils resources include:

- **Alquist-Priolo Earthquake Fault Zoning Act of 1972** (Public Resources Code, Section 2621 et seq.). The Alquist-Priolo Earthquake Fault Zoning Act of 1972 applies to development projects, and is designed to protect the health and safety of people from geologic hazards.
- **General Plans and/or SOAR Initiatives.** The General Plan from local cities and counties may provide regulations or guidelines relating to seismic hazards and soil resources as it applies to agriculture.

Additional regulations such as those related to rangeland, paleontological resources, and water/wetlands are addressed in those sections of this report.

## 3.8.3 Regional Setting

The Planning Area is within the California Coast Ranges of the Pacific Border Physiographic Province. CCMA is located in the southernmost extension of the Diablo Range between the San Andreas Fault zone to the west and the San Joaquin valley to the east. Topography is rugged with an elevation range of 1,830 at Pine Canyon to 5,241 feet on San Benito Mountain.

## 3.8.4 Current Conditions and Trends

### 3.8.4.1 Geology

The CCMA is composed of two primary geologic units including 1) the New Idria serpentine mass at the core of the management area (32,000 acres total), and 2) nonserpentine sedimentary rock complex which surrounds the serpentine mass (42,000 acres total) (ref. Map 5, Appendix I). The Serpentine ACEC entirely contains and is delineated by the New Idria serpentine mass. The Tucker, San Benito River, Condon, and Cantua Zones are composed almost entirely of a nonserpentine sedimentary rock complex. The 15 mile long by 5 mile wide New Idria serpentine mass forms the center of an asymmetric anticlinal dome which is flanked by Jurassic and Cretaceous-aged sedimentary rocks (Coleman, 1986). The dome demarcates the northernmost extension of the Coalinga anticline. High angle faults and shear zones surrounding the dome serve as a record of the tectonic movement of the New Idria serpentine mass up through the adjacent sedimentary rock complex.

The New Idria serpentine mass was formed from peridotite (harzburgite or dunite) which has been completely mineralogically-altered, sheared, and crushed to yield a nearly incoherent mass of serpentinite (Coleman, 1986; Coleman, 1996). The serpentinization and shearing process also produced abundant chrysotile asbestos widely disseminated throughout the serpentine mass. As such, the New Idria serpentine mass contains one of the largest reserves of chrysotile asbestos in North America (Merritt, 1962).

The poor structural integrity of the New Idria serpentine mass has resulted in an unstable terrain composed of low, rounded hills that have a high tendency to slide when slopes become over-steepened. Evidence of this unstable terrain is represented by many prehistoric (<30 million years old; Miocene age) landslides including those which deposited serpentine in the nearby Vallecitos Valley and Big Blue Hills (Casey and Dickson, 1976). Smaller, more geologically recent landslides (< 10,000 years old; Holocene age) are indicated by tongues of material that project outward from the serpentine mass on the northern and eastern boundaries (Cowan and Mansfield, 1979). The New Idria serpentine mass contains many economically-important minerals including cinnabar (mercury sulfide), chromite (iron-chromium oxide), and asbestos, which have all been commercially-mined during the past 150 years. The serpentine mass also hosts many rare minerals including jadeite, fresnoite, joaquinite, neptunite, and benitoite which are highly valued by gem and mineral collectors. The privately-owned Gem Mine within the CCMA is the only known source of gem-grade benitoite in the world.

The surrounding sedimentary rock complex is composed of three formations including the Jurassic-aged Franciscan formation and the Cretaceous-aged Moreno and Panoche formations. The Franciscan formation is primarily comprised of greywacke sandstone, greenstone, and chert, while the Moreno and Panoche formations are composed of marine sandstone and shale. The structure of the steeply-inclined sedimentary rocks has resulted in rugged terrain punctuated by steep slopes and deep gorges.

### 3.8.4.2 Soils

Soil types

Soil type varies greatly throughout the CCMA and is strongly influenced by parent material (bedrock type), topography, local precipitation, and vegetation cover. Like, the geologic units, soil type may also be divided into those derived from serpentine and those derived from nonserpentine parent materials such as sandstone and shale. Since the serpentine-derived soils of the CCMA are derived from the asbestos-rich New Idria serpentine mass, those soils typically contain high concentrations of asbestos. In general, soil types may be grouped as "serpentine soils" and "nonserpentine soils." Map 5 in Appendix I shows the distribution of soil series within the CCMA. The Serpentine ACEC Zone consists almost entirely of serpentine soils, whereas the Tucker, San Benito River, Condon, and Cantua Zones located outside of the Serpentine ACEC, consist primarily of nonserpentine soils. Table 3.8-1 below summarizes all of the soil series found within the CCMA and how they are categorized for analysis as "serpentine soils" and "nonserpentine soils."

**Table 3.8-1**. Attributes for soil series found within the CCMA. Soils derived from serpentine (asbestos-rich). Soils derived from nonserpentine parent materials (sandstone, shale).

| Soil Series | Unit | Parent material | Slope (%) | Permeability class | Surface runoff class | Erosion hazard | Soil survey |
|---|---|---|---|---|---|---|---|
| Atravesada-Pits | 765 | Serpentine | 2 to 30 | Moderate | Medium | Not determined | Western Fresno County |
| Atravesada-Pits, asbestos complex | 767 | Serpentine | 30 to 65 | Moderately slow-Moderate | Very rapid | Not determined | Western Fresno County |
| Dumps-Pits, complex, asbestos | 769 | Serpentine | 2 to 30 | Not determined | Not determined | Not determined | Western Fresno County |
| Henneke fine gravelly loam; eroded | HnF2 | Serpentine | 15 to 50 | Slow | Rapid-Very rapid | Moderate-Severe | San Benito County |
| Henneke soils, severely eroded | HsG3 | Serpentine | 15 to 75 | Slow | Rapid-Very rapid | Very severe | San Benito County |
| Hentine-Rock outcrop complex | 773 | Serpentine | 30 to 65% | Moderately slow | Very rapid | Not determined | Western Fresno County |
| Hentine-Franciscan rock outcrop complex | 774 | Serpentine | 30 to 65 | Moderately slow | Very rapid | Not determined | Western Fresno County |
| Mine pits and dumps | MnG | Serpentine | Not specified | Excessive | Rapid | Not determined | San Benito County |
| Montara rocky silty clay loam | MtF2 | Serpentine | 15 to 50 | Moderately slow | Rapid-Very Rapid | Severe-Very Severe | San Benito County |
| Climara clay | CmF2 | Serpentine, Graywacke, and/or Schist | 15 to 50 | Slow | Medium-Rapid | Moderate-Severe | San Benito County |
| Igneous rock land | IgC | Serpentine or Igneous rock | Not specified | Not determined | Not determined | Not determined | San Benito County |
| Yolo loam | YoC | Allivium derived from sandstone and shale | 2 to 9 | Moderate | Slow-Medium | None-Slight | San Benito County |
| Anela-Vernalis association | 741 | Allivium derived from sandstone and shale | 0 to 5 | Moderately slow | Negligible | Not determined | Western Fresno County |
| Kettleman loam; eroded | KeF2 | Calcareous sandstone and shale | 15 to 50 | Moderate | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Kettleman soils, eroded | KmF2 | Calcareous sandstone and shale | 15 to 50 | Moderate | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Nacimiento clay loam | NaE | Calcareous sandstone and shale | 15 to 30 | Moderately slow | Medium-Rapid | Moderate-Severe | San Benito County |
| Nacimiento clay loam; eroded | NaF2 | Calcareous sandstone and shale | 30 to 50 | Moderately slow | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Nacimiento clay loam; eroded | NaG2 | Calcareous sandstone and shale | 50 to 75 | Moderately slow | Rapid | Very severe | San Benito County |
| San Benito clay loam | SbD | Calcareous sandstone and shale | 9 to 15 | Moderately slow | Medium | Moderate | San Benito County |
| San Benito clay loam; eroded | SbE2 | Calcareous sandstone and shale | 15 to 30 | Moderately slow | Rapid | Severe | San Benito County |
| San Benito clay loam; eroded | SbF2 | Calcareous sandstone and shale | 30 to 50 | Moderately slow | Rapid-Very rapid | Severe-Very severe | San Benito County |
| San Benito clay loam; severely eroded | SbF3 | Calcareous sandstone and shale | 30 to 50 | Moderately slow | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Sorrento gravelly loam | SoB | Calcareous sandstone and shale | 0 to 5 | Moderate | Very slow-Slow | None-Slight | San Benito County |
| Sorrento silt loam | SnC | Calcareous sandstone and shale | 2 to 9 | Moderate | Slow-Medium | None-Slight | San Benito County |
| Sorrento silty clay loam | SrC | Calcareous sandstone and shale | 2 to 9 | Moderately slow | Very slow-Slow | None-Slight | San Benito County |
| Domengine-Lilten-Rock outcrop complex | 740 | Calcareous sandstone and shale | 30 to 65 | Slow | Very rapid | Not determined | Western Fresno County |
| Grazer-Wisflat-Arburua association | 745 | Calcareous sandstone and shale | 8 to 50 | Slow | Very rapid | Not determined | Western Fresno County |
| Lilten-Grazer-Arburua association | 747 | Calcareous sandstone and shale | 15 to 55 | Slow | Very rapid | Not determined | Western Fresno County |
| Borreguero-Grazer-Rock outcrop association | 755 | Calcareous sandstone and shale | 15 to 65 | Moderately slow | Very rapid | Not determined | Western Fresno County |
| Gazos clay loam | GtE2 | Clay shale | 15 to 30 | Moderately slow | Rapid | Severe | San Benito County |
| Gazos clay loam | GtF2 | Clay shale | 30 to 50 | Excessive | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Gazos clay loam | GtG3 | Clay shale | 50 to 75 | Excessive | Rapid | Very severe | San Benito County |
| Gazos silty clay loam | GsD | Clay shale | 9 to 15 | Moderately slow | Medium | Moderate | San Benito County |
| Getrail-Vernando-Rock outcrop association | 735 | Marine sandstone | 15 to 65 | Slow-Moderately rapid | Medium-Very rapid | Not determined | Western Fresno County |
| Rock outcrop-Borreguero complex | 757 | Marine sandstone | 30 to 65 | Moderately slow | Very rapid | Not determined | Western Fresno County |
| Wisflat-Borreguero-Rock outcrop complex | 758 | Marine sandstone | 50 to 70 | Moderately slow-Moderately rapid | Very rapid | Not determined | Western Fresno County |
| Lilten-Millsholm association | 744 | Marine sandstone and shale | 30 to 65 | Slow-Moderate | Very rapid | Not determined | Western Fresno County |
| Millsholm-Borreguero complex | 743 | Marine sandstone and shale | 30 to 65 | Moderately slow-Moderate | Very rapid | Not determined | Western Fresno County |
| Millsholm-Wisflat-Lilten association | 742 | Marine sandstone and shale | 30 to 65 | Slow-Moderately rapid | Very rapid | Not determined | Western Fresno County |
| Roacha-Millsholm-Lilten association | 770 | Marine sandstone and shale | 30 to 65 | Slow-Moderate | Very rapid | Not determined | Western Fresno County |
| Rock outcrop-Wisflat-Arburua complex | 746 | Marine sandstone and shale | 50 to 65 | Moderately rapid-Moderate | Rapid-Very rapid | Not determined | Western Fresno County |
| Vallecitos loam | VaF | Metamorphosed sandstone and shale | 15 to 30 | Slow | Rapid | Moderate-Severe | San Benito County |
| Vallecitos rocky loam; eroded | VrF2 | Metamorphosed sandstone and shale | 30 to 50 | Slow | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Los Gatos clay loam | LvE | Sandstone | 15 to 30 | Moderately slow | Medium-Rapid | Moderate-Severe | San Benito County |
| Los Gatos clay loam; eroded | LvF2 | Sandstone | 30 to 50 | Moderately slow | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Gaviota loam | GaE | Sandstone and shale | 15 to 30 | Moderate | Medium-Rapid | Moderate-Severe | San Benito County |
| Gaviota loam; eroded | GaE2 | Sandstone and shale | 15 to 30 | Moderate | Rapid | Severe | San Benito County |
| Gaviota loam; eroded | GaE2 | Sandstone and shale | 15 to 30 | Moderate | Rapid | Severe | San Benito County |
| Gaviota loam; eroded | GaF2 | Sandstone and shale | 30 to 50 | Moderate | Very rapid | Severe-Very severe | San Benito County |
| Gaviota rocky loam | GrF2 | Sandstone and shale | 15 to 50 | Excessive | Rapid-Very rapid | Severe-Very severe | San Benito County |
| Sedimentary rock land | SeG | Sandstone and shale | Not specified | Not determined | Not determined | Not determined | San Benito County |
| Riverwash | Rw | Mixed alluvium | Not specified | Not determined | Not determined | Not determined | San Benito County |
| Sandy alluvial land | Sc | Mixed alluvium | Not specified | Not determined | Not determined | Not determined | San Benito County |
| Badland | BaG | Not specified | Not specified | Not determined | Rapid | Not determined | San Benito County |
| Landslides | LdF | Not specified | Not specified | Not determined | Not determined | Not determined | San Benito County |

Soil erosion

Susceptibility of a soil to erosion is dependent upon a complex combination of soil factors including vegetative cover, soil aggregate stability (factor of organic matter and clay content), soil permeability (infiltration), and slope. Table 3.8-1 summarizes the slope, permeability class, surface runoff class, and erosion hazard for soils found within the CCMA. Although most soil types within the CCMA have moderate permeability, most of the soils are located on slopes between 15 and 75% grade which causes them to have medium to very rapid runoff, resulting in a moderate to very severe erosion hazard.

The Atravesada and Henneke serpentine soil series are especially vulnerable to erosion due to sparse vegetative cover. Erosion assessment of serpentine barrens within the CCMA was conducted by PTI Environmental Services (1993) and Dynamac Corporation Environmental Services (1998). The PTI (1993) study focused exclusively on the Clear Creek watershed. Clear Creek is classified as an impaired watershed due to excessively high sediment rates and elevated mercury levels. Erosion factors including soil type, slope, vegetative cover, and road/trail type and concentration per unit area were used to estimate erosion rates for subwatersheds within the Clear Creek watershed. That study identified nine subwatersheds out of a total of forty-one, which had estimated erosion rates of more than 3,000 $yd^3$/year (Figure 1). Most of the subwatersheds were rated at between 1,000 and 3,000 $yd^3$/year. PTI's best management practice recommendations for erosion and sediment control included limiting OHV access to soils having high erosion risk and structural erosion controls such as water energy dissipaters and sediment retention catchments.

Dynamac (1998) conducted a more extensive evaluation of the erosion risk of serpentine barrens and their associated watersheds throughout the CCMA. Individual barrens and watersheds were relatively ranked based on a combination of key attributes that determine erosion risk and sediment delivery including drainage area size, barren area percentage of drainage area, soil color (indicator of soil disturbance), vegetative cover, gullying, slope, stream order, OHV use density, soil armoring (gravel lag), mining history, accessibility, and sediment trapping capability. A total of eleven watersheds and forty-seven barren polygons were evaluated throughout the CCMA. Following rank calculations, the results were divided into three erosion and sediment delivery groups including minor contributors, "at risk", and major contributors. Eleven barren polygons were ranked as minor contributors, twenty-four were ranked as "at risk", and twelve were ranked as major contributors. Dynamac's best management practice recommendations for erosion and sediment control included silt fences, erosion control blankets, rock backfilling of gullies, check dams, interceptor dike and swales, sediment basins, rock filters, and gabion mattresses. Erosion and sediment control measures currently implemented by the BLM at the CCMA include vehicle barriers (fences), water diversion, rock armoring, rock gabion mattresses, gully plugs, sediment catchments, check dams (straw bales), and erosion control blankets (jute).

The results of the PTI and Dynamac studies were important in the CCMA route designation process (2005 ROD). Although extensive watershed-level studies on erosion and sediment delivery rates have been conducted for the New Idria serpentine mass, essentially no studies have been conducted for the nonserpentine watersheds surrounding the serpentine mass.

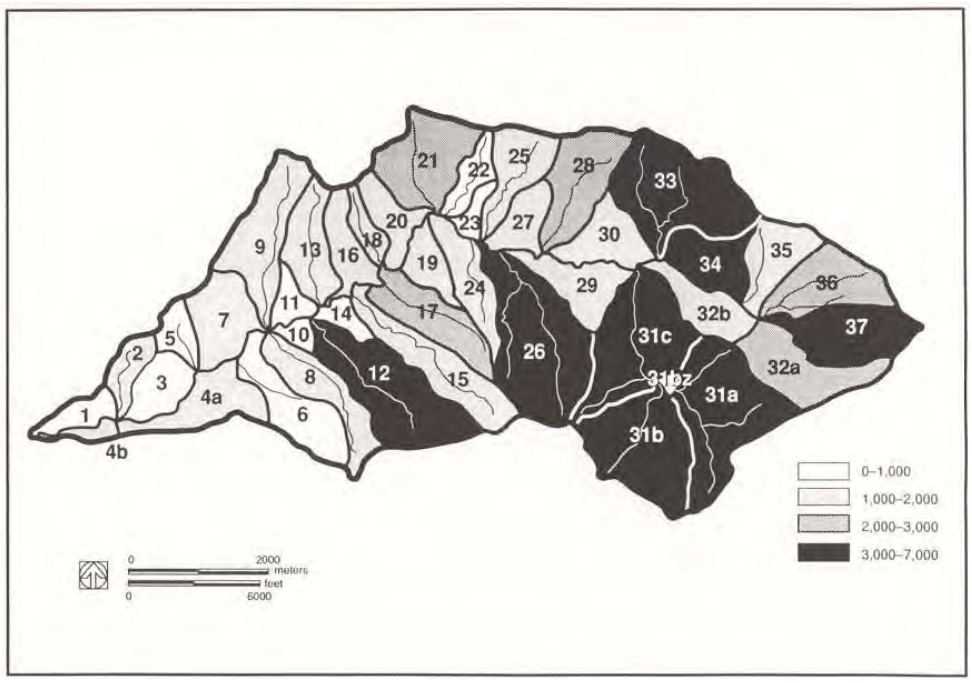


**Figure 1**. Estimated erosion ($yd^3$/year) from subwatersheds (numbered 1 to 37) in the Clear Creek watershed as predicted by the Universal Soil Loss Equation. Figure from PTI (1993). Clear Creek appears as a bold line bisecting the watershed from left to right.

Soil fertility and vegetative cover

Parent material strongly influences the physical and chemical properties of soils derived from it. Those soil physical and chemical properties, in combination with topography and local climatic factors, determine the vegetative cover types that a soil type may support. Serpentine soils are stressful for plant establishment and productivity due to severe nutrient deficiency (nitrogen, phosphorus, potassium, calcium) and toxic concentrations of heavy metals (magnesium, nickel, chromium, cobalt) derived from the underlying serpentine parent material (Kruckeberg, 1984; Brooks, 1987). Due to the harsh growing conditions imposed by serpentine soils, the Atravesada and Henneke soil series within the CCMA are sparsely vegetated and have a preponderance of natural barrens which are very susceptible to both wind and water erosion (Figure 2). When left undisturbed, soils of the serpentine barrens develop a gravel lag (through removal of finer particle sizes) which partially protects the soil from further erosion (Figure 3). Soils derived from nonserpentine parent materials such as sandstone and shale, in contrast, are relatively fertile and support dense vegetative cover. Although nonserpentine soils have higher fertility and support more vegetative cover, natural revegetation following disturbance can be slow with the disturbed soils being highly susceptible to erosion (Figure 4).

**Figure 2**. Severely eroded serpentine barren. Henneke soil series.

**Figure 3**. Natural gravel lag on serpentine barren. Henneke soil series.

**Figure 4**. OHV impacts and erosion on Gaviota soil series (above Jade Mill campground) within the CCMA. Erosion control including straw bales and straw rolls were installed in gullies and rills to slow erosion.

# 3.9 Water Resources

## 3.9.1 Introduction

Water resources refer to all surface water runoff into rivers and creeks within the CCMA and the values that this water provides to people, wildlife, and vegetation. The San Benito River is impounded by a dam, forming the Hernandez Reservoir, approximately six miles north of the mouth of Clear Creek. The Hernandez Reservoir provides for groundwater recharge for northern San Benito County. The State of California Regional Water Control Boards (CRWCB) with jurisdiction over water resources in the CCMA, as authorized by the Environmental Protection Agency under the Clean Water Act are: the Central Valley Regional Water Control Board and the Central Coast Regional Water Control Board. The former agency oversees all waters flowing into the Central Valley, known collectively as the "West Side Streams", and the latter agency oversees those waters within the CCMA that flow into the San Benito River.

The Central Valley Regional Water Control Board has designated nine beneficial uses for this the "West Side Streams" (SWRCB 1975): Agricultural Supply (i.e. vegetation for livestock grazing), Industrial Process Supply (i.e. fire protection), Water Contact Recreation (i.e. swimming and wading), Non-Contact Water Recreation (i.e. camping, hunting and hiking), Warm Fresh Water Habitat (i.e. to sustain warm water aquatic species), Wildlife Habitat (i.e. for food, water, and shelter for wildlife), Preservation of Rare and Endangered Species, and Groundwater Recharge.

The Planning Area is encompassed by two hydrologic regions: Central Coast and San Joaquin River. Approximately 11 waters and 43 National Wetlands Inventory mapped wetlands exist within the Planning Area. These aquatic areas function to recharge aquifers, slow flood waters, and assimilate and neutralize some pollutants before they enter rivers and lakes.

Water demand exceeds water supply in many areas throughout the Planning Area, though more commonly east of the coast range. Watershed function and improved water quality is key to increasing water supply to support various resource needs within the Planning Area.

## 3.9.2 Regulatory Framework

Water resources and quality are managed and protected under multiple regulations and policies, including:

- **U.S. Clean Water Act (33 USC 1251)** – aims to restore and maintain the chemical, physical, and biological integrity of the Waters of the United States.
- **Watershed Protection and Flood Prevention Act (16 USC 1001-1009).**
- **Wild and Scenic Rivers Act, as amended, 16 USC 1271 et seq.**
- **Safe Drinking Water Act, as amended, 33 USC 1531 et seq.**
- **Executive Order 11990:** Protection of wetlands – establishes the protection of wetlands and riparian systems as the official policy of the federal government. It requires all federal agencies to consider wetland protection as an important part of their policies; take action to minimize destruction, loss, or degradation of wetlands; and preserve and enhance the natural and beneficial values of wetlands.

### 3.9.3 Regional Setting

The Planning Area encompasses eleven watersheds located within the CCMA: Clear Creek, Larious Creek, Upper San Benito River, San Carlos Creek, East Fork San Carlos Creek, Cantua Creek, Sawmill Creek, Picacho Creek, Diaz Creek, Arroyo Leona Creek, and White Creek. These areas represent distinct watersheds, often with extreme geographic, topographic, and mineralogical variability. The watersheds are drained by higher order perennial streams that, with the exception of White Creek and Diaz Creek, descend from San Benito Mountain. White Creek descends from Wright Mountain and flows to the southeast, converging with Diaz Creek and then with Los Gatos Creek, which flows into Arroyo Pasajero near Coalinga and thence drains into a landlocked basin in the southern San Joaquin Valley. Clear Creek and Picacho Creek converge with the San Benito River, which discharges into the Pajaro River watershed, which drains into Monterey Bay. Larious Creek and both forks of San Carlos Creek flow to the north where they discharge to Silver Creek and thence into the Panoche Creek watershed, which drains into the San Joaquin River, which empties into San Francisco Bay.

The topography of the CCMA is dominated by convex gently sloping ridges, with slopes becoming quite steep as they approach the stream channels and inner gorges. Elevations within the CCMA range from approximately 2,500 feet at the mouth of the drainage to 5,000 feet along the crest of the Diablo Range. The ridges and slopes are dominated by naturally occurring areas of serpentinite soils forming complexes of barren areas interspersed with chaparral and conifers. Climate within the Planning Area is Mediterranean with cool, wet winters and hot, dry summers; there is commonly a water supply surplus in the winter and deficit during the summer (Cal Alive 2005). Annual precipitation varies across the Planning Area from 8 inches on the drier eastern side of the Diablo Mountains to 40 inches in Hernandez Valley.; the predominant form of precipitation is rainfall (CARA 2005). Water demand exceeds water supply in many areas throughout the Planning Area.

The serpentine watershed and riparian areas in the CCMA have been subject to widespread surface disturbances over the last century. In general, the watershed conditions observed in the CCMA reflect naturally high rates of erosion that have been accelerated by human impacts. These watershed conditions result from a long history of surface disturbance, beginning in the mid-1850, from road construction, logging, and mineral exploration and extraction, and in more recent times by off-road vehicle travel and recreation. These watersheds have high erosion rates due to the steep, unstable slopes which are composed of soft sheared serpentine bedrock. Since the mid-1970's motorized vehicle recreation has been the dominant public use within the area. Road maintenance operations and techniques also influence erosion and sedimentation rates. Maintenance of the route network is based on, to prioritize the work and determine the appropriate measures to reduce erosion and off-site sedimentation impacts, and to provide for safe motorized access.

The riparian zones around the perennial streams and some intermittent streams, and the barren or sparsely vegetated serpentine slopes, exhibit a fragile ecology, diversity and assemblage of rare and unique plants. In addition, several special status plant and animal species occur in the CCMA and are dependent in some stage of their life cycles on proper functioning condition of creeks and streams. In total, Clear Creek and surrounding watersheds support plant and animal communities that are important from the perspective of California native biodiversity. The management of watershed resources for the CCMA necessitates understanding the relationships between surface water, soil erosion and sedimentation, with respect to surface disturbances from human activities.

## 3.9.4 Current Conditions and Trends

### 3.9.4.1 Surface Water

The Central Coast Regional Water Control Board has not specifically designated beneficial uses for any streams in the CCMA that drain into the San Benito River. Designated uses for the San Benito River include; Municipal and Domestic Water Supply, Agricultural Supply, Industrial Service Supply, Groundwater Recharge, Recreation Contact/Non-Contact, Wildlife Habitat, Freshwater Habitat, Spawning and Reproduction, Freshwater Replenishment, and Commercial and Sport Fishing. Designated uses for the Hernandez Reservoir include those listed for the San Benito River and Navigation.

Because heavy metals and asbestos are concerns in this area, the BLM contracted a water quality study (Dynamac, 1998) to determine the magnitude of heavy metals being deposited into streams from 15 abandoned mines. Soil and water sampling was completed below, at, and above each of the mined areas. Results from this study produced important findings. The background concentration of metals detected in soils tended to be above stated standards, and is consistent with the natural geochemistry of the area. However, differences in the water samples taken from below and above mined sites indicated that disturbed areas are contributing to metal concentrations over and above the naturally high levels. Accessibility by vehicles was also found to potentially be a factor in increasing concentrations of metals transported in the water downstream. As a result of this study, five mine areas, the Alpine, the Aurora, Clear Creek, Larious Canyon, and the Molina were determined to not only pose the greatest ambient hazard in terms of inhalation of hazardous materials, but also pose the greatest water contamination risk.

To evaluate the potential threat to human health, BLM compared the results of surface water analyses (Dynamac, 1998) to Federal drinking water regulations. From six mine sites, down gradient surface water samples contained concentrations of antimony, cadmium, chromium, mercury, and nickel that exceeded the Maximum Contaminant Levels (MCLs). On Clear Creek and the San Benito River, where multiple sampling points were established, cumulative, increasing concentrations did not appear to occur. Mine sites in the San Carlos and Larious Creek watersheds were the only locations where metals were detected at concentrations three times the background levels. In general, the metal concentrations detected in the Clear Creek watershed were very low. Mercury compounds were the most prevalent metal compounds detected, occurring in all but one sample, over the five watersheds. Results from combined surface water sample data for the San Benito watershed indicated background and down gradient concentrations of nickel that exceeded the MCL. The San Carlos watershed exhibited means background and down gradient concentrations of mercury that exceed the MCL. The surface water exposure pathway would appear to present a minimal risk to recreation users of the CCMA, because of the limited number of days that a typical user visits, and the fact that the surface water is generally not used as a potable water source. The Alpine Mine and Larious Canyon would present the greatest exposure to users.

Existing conditions of riparian areas addressed in this document are listed below, in Table 3.9-1.

**Table 3.9-1 CCMA Existing Riparian Conditions**

| NAME OF RIPARIAN WETLAND | DATE OF SURVEY | SEGMENT/REACH IDENTIFICATION | MILES | ACRES | RATING | TREND |
|---|---|---|---|---|---|---|
| PICACHO CREEK | 9/20/1993 | COALINGA SM, T 18S., R12E., SEC 19, 30 T18S., R11E., SEC 25 | 2 | 6 | PFC | |
| WHITE CREEK | REVISED, 3/25/2005 | COALINGA SM, T19S., R13E., SEC 4, 8, 9, 17 | 2.75 | 9.3 | FAR | DOWN |
| LARIOUS CREEK | REVISED, 3/25/2005 | COALINGA SM, T17S., R11E., SEC 26, 35, 36 | 2.5 | 7.6 | FAR | DOWN |
| EAST FORK OF SAN CARLOS CREEK | REVISED, 3/25/2005 | COALINGA SM, T18S., R12E., SEC 2, T17S., R12E., SEC 22, 26, 35 | 1.4 | 4.2 | FAR | NA |
| SAN CARLOS CREEK | REVISED, 3/25/2005 | COALINGA SM, T18S., R12E., SEC 4, 5 | 1 | 3 | FAR | NA |
| SAN BENITO RIVER 1 ABOVE HERNANDEZ DAM | REVISED, 3/25/2005 | COALINGA SM, T18S., R12E., SEC 32, 5 | 0.75 | 7.25 | FAR | NA |
| SAN BENITO RIVER 2 ABOVE HERNANDEZ DAM | REVISED, 3/25/2005 | COALINGA SM, T18S., R12E. SEC 25, 26, | 0.5 | 4.5 | FAR | NA |
| SAN BENITO RIVER 3 ABOVE HERNANDEZ DAM | ADDED, 3/25/2005 | COALINGA SM., T17S., R10E. SEC 16, 17 | 0.25 | 2.25 | FAR | NA |
| CANE CANYON | 9/20/1993 | COALINGA SM, T17S., R11E., SEC 30, 31 | 1.25 | 3.8 | FAR | NA |
| CLEAR CREEK & TRIBUTARIES (SEE COMMENTS BELOW) | 9/20/1993 | COALINGA SM, T18S., R12E., SEC 8, 9, 17 T18S., R11E., SEC 1, 11, 12, 15, 16 | 7 | 42.4 | NON | |
| SAWMILL CREEK (REVISED CONDITION 9/12/ 2000) | 9/20/1993 (FAR/DOWN) | COALINGA SM, T18S., R12E., SEC 1, 4, 15, 22 | 1.5 | 4.5 | FAR | UP |

| | |
|---|---|
| MILES OF PROPER FUNCTIONING CONDITION (PFC)= | 2 |
| MILES OF FUNCTIONING AT RISK (FAR)= | 11.9 |
| MILES OF NONFUNCTIONAL (NON)= | 7 |
| MILES OF UNKNOWN (UNK)= | 0 |
| MILES OF FUNCTIONING AT RISK/UNKNOWN (FAR/UNK)= | 0 |
| TOTAL MILES = | 20.9 |

| | |
|---|---|
| ACRES PROPER FUNCTIONING CONDITION (PFC)= | 6 |
| ACRES FUNCTIONING AT RISK (FAR)= | 46.4 |
| ACRES NONFUNCTIONAL (NON)= | 42.4 |
| ACRES UNKNOWN (UNK)= | 0 |
| ACRES FUNCTIONING AT RISK/UNKNOWN (UNK)= | 0 |
| TOTAL ACRES= | 94.8 |

**Table 3.9-1 CCMA Existing Riparian Conditions (cont.)**

| RIPARIAN AREA CONDITIONS AND NUMBER | | MILES | ACRES |
|---|---|---|---|
| PFC | 1 | 2 | 6 |
| FAR WITH AN UPWARD TREND | 1 | 1.5 | 4.5 |
| FAR WITH A DOWNWARD TREND | 2 | 5.25 | 16.9 |
| FAR WITH A NON APPARENT TREND | 6 | 5.15 | 25 |
| FAR WITH AN UNK TREND | 0 | 0 | 0 |
| FAR WITH A DOWNWARD OR UNKNOWN TREND | 0 | 0 | 0 |
| NON FUNCTIONING | 1 | 7 | 42.4 |
| TOTAL NUMBER | 11 | 20.9 | 94.8 |

| | |
|---|---|
| PROPER FUNCTIONING CONDITION (PFC)= | 1 |
| FUNCTIONING AT RISK (FAR)= | 9 |
| NONFUNCTIONAL (NON)= | 1 |
| UNKNOWN (UNK)= | 0 |
| FUNCTIONING AT RISK/UNKNOWN (FAR/UNK)= | 0 |
| TOTAL NUMBER = | 11 |

| | |
|---|---|
| UPWARD TRENDS (UP)= | 1 |
| DOWNWARD TRENDS (DOWN)= | 2 |
| NOT APPARENT TRENDS (NA)= | 6 |
| UNKNOWN TRENDS (UNK)= | 0 |
| DOWNWARD/UNKNOWN TRENDS (DOWN/UNK)= | 0 |
| TOTAL NUMBER = | 9 |

| COMMENT ADDRESSING CLEAR CREEK & TRIBUTARIES: |
|---|
| Due to surface evidence it was rated as nonfunctional, downward trend. It may be functioning at risk near its capacity. MARCH 25, 2005, COMMENT --NEED TO DETERMINE REACHES AND FUNCTIONING CONDITIONS |

Reports or watershed assessments used in the preparation of this document are listed below, in Table 3.9-2.

**Table 3.9-2 Watershed Assessments or Reports within the Planning Area**

| Watershed Assessment (CCMA watershed in parentheses) | Date |
|---|---|
| Arroyo Pasajero Watershed Management Plan (White Creek and Diaz Creek) | Jul. 1999 |
| Panoche/Silver Creek Watershed Assessment (Larious Creek, E. & main fork of San Carlos Creek) | Sep. 1998 |
| Silver Creek/Panoche Alluvial Fan Assessment Draft Report (Larious & forks of San Carlos Creeks) | May 2005 |
| Assessment of the Little Panoche and Cantua Creek Watersheds (Cantua Creek) | May 2004 |
| Clear Creek TMDL (Clear Creek, San Benito River) | Mar 2004 |

A summary of surface water information provided within various watershed reports and assessments is included below. This summary provides an overview of surface water conditions in the Planning Area with focus on the coastal and eastern portions of the Planning Area.

Arroyo Pasajero Watershed

The Arroyo Pasajero Watershed has a contrast of between 22 and 8 inches of annual rainfall from the upper and lower portions of the watershed. Severe incision, stream bank cutting, stream bank meandering, and lateral erosion affect riparian function within the watershed area and occur primarily during high intensity runoff and are exacerbated by heavy grazing in the riparian area. Tamarisk trees, which are a problematic noxious plant species throughout the west, continue to influence channel flow by deflecting the flow toward channel banks and increasing channel meander but also impede lateral bank erosion.

Cantua Creek Watershed

Most streams within the Cantua Creek watershed are ephemeral with a few reaches of intermittent flows also occurring. Runoff from these drainages has historically resulted in transport of sediment and selenium, boron, salts, and other trace elements during large runoff events onto the alluvial fan area and into the California Aqueduct. Localized areas of incision, bank failures and gullying increase erosion within the watersheds.

Panoche/Silver Creek Watershed

Surface water quality is poor due to the underlying marine shales and sandstones. This water is very high in selenium and other salts which can be deposited into the downstream irrigated farmland. The primary water quality degradation issues caused by the large rainfall events include flooding, sediment deposition, and contamination.

San Benito River Watershed

In 2002, California Water Resources Control Board listed the following streams as Clean Water Act Section 303 (d) Water Quality Limited Segments for; Clear Creek (mercury), San Benito River (fecal coliform and sedimentation), and Hernandez Reservoir (mercury). Clear Creek was previously identified as impaired by mercury on the 1998 CWA 303(d) list of impaired waterbodies, and a Total Maximum Daily Load and Implementation Plan (TMDL) was proposed in 2004.

#### 3.9.4.2 Groundwater

The Planning Area is underlain by two major aquifers systems: the Central Valley Aquifer System comprised of unconsolidated sand and gravel aquifers, and the California Coastal Basin aquifers which are also comprised of unconsolidated sand and gravel aquifers (National Atlas 2005). Other bedrock aquifers are also described in the Planning Area (Carmel 2004). Groundwater depths vary from 12,000 feet below ground surface (bgs) within the San Joaquin Valley to 180 feet bgs along the Central Coast.

The following summary describes relevant groundwater information provided within the watershed reports and assessments identified in Table 3.9-2.

Arroyo Pasajero Watershed

In most of the Arroyo Pasajero Watershed, clay separates an upper aquifer from a lower aquifer; the upper aquifer has poorer water quality so most of the groundwater is extracted from the lower aquifer with wells

generally drawing their water from 500 to 2000 feet bgs. In some areas (Pleasant Valley), groundwater is withdrawn from a single unconfined aquifer and wells generally range from 200 to 800 feet bgs.

Primary aquifer recharge is from surface flow runoff primarily during flood events. A prolonging of surface base flows would increase the period of effective groundwater recharge and help reduce historic overdraft and water quality conditions in the Pleasant Valley area. Concentrations of salts, chlorides, sulfates, and boron in groundwater reduce crop yields and limit the types of crops that may be effectively grown in some Pleasant Valley areas.

Panoche Creek Watershed

According to the most recent summary of groundwater in the basin (DWR 2003), driller's logs for nine wells in the basin indicated that wells ranged in depth from 171 feet to 1,500 feet. Wells generally penetrate alluvial materials including gravels, sands, silts and clays. Additional descriptive units include shale, clay and rocks, and hard sand. From this information it seems likely that the water bearing units may include the alluvium, Quaternary nonmarine terrace deposits and Plio-Pleistocene nonmarine sediments. Water level measurements for 48 wells were found in the San Joaquin District water level data files. These measurements range in time from 1967 to 2000. Depth to water ranges from 30 to over 300 feet, with most of the measurements being in the 30 to 80 foot range. There is a general trend of rising water levels from the 1970's to 2000. Water levels have risen as much as 130 feet and typically over 40 feet throughout the basin. Field reconnaissance in August 2001determined that irrigated agriculture was limited to one vineyard of less than 20 acres and one walnut orchard of less than 20 acres. A 2002 interview with a 76-year-old life-long resident of Panoche Valley, revealed that in the 1940's extensive areas of alfalfa were in production and in the 50's and 60's cotton was extensively grown in the basin. It appears that groundwater levels are recovering from a past period of groundwater pumping.

San Benito River Watershed

A recent study of the San Benito River Valley (DWR 2003) groundwater basin found no specific published information on water bearing deposits. A review of San Joaquin District well completion report files found 33 well reports in the basin. Wells ranged from 36 to 600 feet bgs and encountered alluvial materials as well as consolidated rock formations. Well yields ranged from a dry hole to 2,000 gpm. The highest yielding wells, one at 2,000 gpm and one at 1,100 gpm, are in alluvial material near the San Benito River.

#### 3.9.4.3 National Wetland Inventory

The U.S. Fish and Wildlife Service's National Wetland Inventory lists 44 wetlands (excluding streams and rivers) within the boundaries of CCMA. Wetland types include Freshwater Emergent Wetlands, Freshwater Forested/Shrub Wetlands, Freshwater Ponds, Lakes, and miscellaneous water bodies categorized as 'Other.' Wetlands range in size from approximately 0.06 to 62 acres in size, excluding Hernandez Reservoir, an impoundment on the San Benito River, which borders the NW corner of CCMA and which is approximately 400 acres in size.

Table 3.9-3 Wetlands identified in Clear Creek Management Area

| Wetland Type | Number | Range in size (acres) | Total acreage |
|---|---|---|---|
| Freshwater Emergent Wetlands | 12 | 0.098224 - 61.733511 | 86.020615 |
| Freshwater Forested/Shrub Wetlands | 9 | 0.058224 - 8.204925 | 9.271925 |
| Freshwater Ponds | 12 | 0.098242 - 1.300237 | 5.308859 |
| Lakes | 4 | 2.479048 - 400.368716 | 437.456126 |
| Lakes (excluding Hernandez Reservoir) | 3 | 2.479048 - 32.007113 | |
| Other | 6 | 0.177423 - 0.805119 | 2.347328 |
| **Total** | **44** | **0.058224 - 400.368716** | **540.404853** |
| **Total (excluding Hernandez Reservoir)** | **43** | **0.058224 - 61.733511** | **140.036137** |

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# 3.10 Special Designations

## 3.10.1 Introduction

The FLPMA directs BLM to consider and evaluate lands for a number of special designations during the land use planning process. In general, lands are eligible for these types of designations based on the presence of particular values and qualities. These areas receive designation or special management through different processes and are managed under special considerations. The Planning Area includes existing Areas of Critical Environmental Concern (ACECs), Research Natural Areas (RNAs), and Wilderness Study Areas (WSAs), and potential Wild and Scenic Rivers (WSRs).

## 3.10.2 Regulatory Framework

### 3.10.2.1 Areas of Critical Environmental Concern

*BLM Manual 1613 – Areas of Critical Environmental Concern* (BLM 1988) outlines the procedures for nominating, evaluating, and determining whether special management attention is required for potential ACECs. This process begins with compiling a list of areas recommended for ACEC designation. The BLM staff, other agencies, or members of the public may nominate lands for potential ACEC status.

Land use plans are required to identify goals, standards, and objectives for each ACEC, as well as management practices and uses, and may include necessary constraints and mitigation measures. The BLM is directed to develop ACEC management prescriptions in enough detail and specificity to minimize the need for subsequent ACEC management plans (BLM 1988, 2005).

### 3.10.2.2 Research Natural Areas

Research Natural Areas (RNA) are areas that contain important ecological and scientific values, where natural processes are allowed to predominate, and which is preserved for the primary purposes of research and education (43 CFR 8223). RNA's are designated because the land has one or more of the following characteristics:

1. A typical representation of a common plant or animal association;
2. An unusual plant or animal association;
3. A threatened or endangered plant or animal species;
4. A typical representation of common geologic, soil, or water features; or
5. Outstanding or unusual geologic, soil, or water features.

Management and public use of the RNA are distinct from the ACEC because the management emphasis is on education and research. This allows management within the RNA to highlight the area's scientific importance, and still authorize appropriate public use.

### 3.10.2.3 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 (WSRA) established a National Wild and Scenic Rivers System (NWSRS) for the protection of rivers with important scenic, recreational, fish and wildlife, and other values. The act designated a number of river segments for immediate inclusion in the system and prescribed the methods and standards by which other rivers may be added to the system.

BLM's policy is to adhere to the requirements of the WSRA by identifying and evaluating "all rivers on BLM-administered lands to determine if they are appropriate for addition to the NWSRS" (BLM 1992). In this process, streams and rivers are first evaluated for their *eligibility* as potential additions to the NWSRS and then to determine the *suitability* of eligible streams – i.e., suitability being a higher standard than eligibility. Inclusion in the NWSRS requires action by Congress.

#### 3.10.2.4 Wilderness and Wilderness Study Areas

Section 2(c) of the Wilderness Act of 1964 states that wilderness is an area of undeveloped Federal land in a natural condition, without permanent improvements or human habitation, which has outstanding opportunities for solitude or a primitive and unconfined type of recreation. In addition, a wilderness must comprise at least 5,000 acres of land or is of sufficient size to make its preservation and use practical. Wilderness may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. The original wilderness inventory of BLM public lands was performed pursuant to Sections 201 and 603 of the FLPMA, beginning in 1978. This process involved evaluating public lands to determine and locate areas containing wilderness characteristics that meet the criteria established in the Wilderness Act.

Areas identified as WSAs are to be managed under the interim management policy until they are designated wilderness or released by Congress (BLM 1995). Land use plans are tasked with identifying management direction for WSAs should they be released from wilderness consideration by Congress (BLM 2005).

### 3.10.3 Regional Setting

For land use planning purposes, the following SMAs may be designated in the Planning Area: ACECs, RNAs, NHTs, WSRs, WAs, and WSAs. The Planning Area contains three ACECs, the Juan Bautista de Anza National Historic Trail (NHT), and five Wilderness or Wilderness Study Areas. There are currently no Wild and Scenic Rivers.

### 3.10.4 Current Conditions and Trends

#### 3.10.4.1 Areas of Critical Environmental Concern

##### Serpentine Area of Critical Environmental Concern

In 1984, the BLM designated approximately 30,000 acres of the New Idria Serpentine Formation within the CCMA as the Clear Creek Serpentine Area of Critical Environmental Concern (ACEC). This ACEC is sometimes referred to as the Hazardous Asbestos Area (HAA). Areas of Critical Environmental Concern are areas of concern where special management attention is required to protect and prevent irreparable damage to important historic, cultural or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards. This Serpentine ACEC was designated because of the health concerns associated with the naturally occurring asbestos within the serpentine soils and because of the unique vegetation and forest types associated with serpentine soil.

Human induced changes within this geologically unique area, and the presence of distinctive plant species associated with the serpentine formation, established the need for special management attention. Human disturbance to the soils and plants in the Serpentine ACEC is a special management concern, because throughout the ACEC, soil formation tends to be slow, and the topsoil shallow. Additionally, plant regeneration is slow, and accelerated erosion from human activities (such as mining, road building and

maintenance, and recreation) has negatively affected soil and vegetative resources. Minimizing soil erosion and damage to sensitive plant populations is a management priority. The Serpentine ACEC provides visitors with a variety of recreation experiences. However, due to the high concentrations of naturally occurring asbestos, public health concerns persist over the use of this popular recreation area.

The boundaries of the ACEC were defined by mapping of asbestos soils derived from the New Idria serpentine formation, and were delineated using identifiable landmarks, to the extent possible, and reflect the most current BLM policies for management of the public lands.

### Research Natural Areas

#### San Benito Mountain Research Natural Area

Within the Serpentine ACEC is the San Benito Mountain Research Natural Area (SBMRNA). An RNA is an area where natural processes are allowed to predominate and which is preserved for the primary purposes of research and education because the land has one or more of the following characteristics: (1) A typical representation of a common plant or animal association; (2) an unusual plant or animal association; (3) a threatened or endangered plant or animal species; (4) a typical representation of common geologic, soil, or water features; or (5) outstanding or unusual geologic, soil, or water features (43 CFR 8223 - Research Natural Areas).

The San Benito Mountain area was originally established as an Outstanding Natural Area (ONA) in 1972 because of the unique forest assemblage covering approximately 1,500 acres. In 1986, the BLM started fencing the boundaries of the ONA easily accessible to vehicle trespass (due to unauthorized OHV use). Continued unauthorized OHV use in the ONA, primarily on the sparsely vegetated or barren hillsides, adversely affects this unique environment and the values for which it was established.

The 1999 Record of Decision (ROD) for the CCMA Amendment to the Hollister RMP officially designated the 'Outstanding Natural Area' as the San Benito Mountain 'Research Natural Area' to encourage research and provide protection of the unique conifer forest on and around San Benito Mountain. The ROD (1999) also identified the need to expand the SBMRNA, which was completed in a 2006 ROD for CCMA RMP Amendment and Route Designation, and approved expansion of the boundary of the San Benito Mountain RNA to 4147 acres. Following the 2006 ROD, BLM completed additional fencing to protect the RNA values described below.

San Benito Mountain is the only place in the world that supports Jeffrey pine (*Pinus jeffreyi*), Coulter pine (*P. coulteri*), and foothill pine (*P. sabiniana*), and incense cedar (*Calocedrus decurrens*) at the same location. The San Benito Mountain population of Jeffrey pine is the only population of this species in the California Coast Range south of northern Lake County (Kuchler 1977, p. 151). As such, the Jeffrey x Coulter pine hybrids around San Benito Mountain are an important natural source of genetic combinations and have been used in the past for genetic research and breeding programs. The unique forest assemblage also contains groves of incense cedars, the only incense cedars in the inner central California Coast Range. The nearest stands of incense cedars found elsewhere, are in the coastal Santa Lucia Mountains 60 miles to the west and in Napa County 175 miles to the north. The rare talus fritillary (*Fritillaria falcata*) occurs at only nine locations in the world and two of those, including the largest population, occur in the understory of the San Benito Mountain Forest. These distinctions emphasize the importance of the San Benito Mountain and conservation of the biodiversity represented by the unusual genetic and species assemblages of this Research Natural Area.

The BLM created the San Benito Mountain Research Natural Area to provide special resource management protection for this unique area with three management goals: 1) to ensure survival of the

pine forests in the CCMA; 2) to maintain the vegetation and soil resources in as natural a condition as possible; and 3) to provide opportunities for scientific and academic research in this unique ecosystem.

Research and education conducted within the RNA includes programs and studies by the United States Forest Service, the United States Geological Service, the Natural Resource Conservation Service, the University of California Davis, University of California Merced, the California Native Plant Society, and The Audubon Society.

The SBMRNA contains sensitive resource values and riparian habitat, including populations of Federally threatened San Benito evening primrose (*Camissonia benitensis*) populations, serpentine barrens, and a unique forest assemblage of Jeffery pine, and other mixed-conifers. The boundaries are delineated using identifiable landmarks, to the extent possible, and reflect the most current BLM policies for management of the public lands.

**Table 3.10-1 Serpentine ACEC Subunit Acres**

| Subunit | Acres |
|---|---|
| San Benito Mountain Wilderness Study Area | 4,147 |
| San Benito Mountain Research Natural Area | 1,500 |
| **TOTAL** | **5,647** |

### 3.10.4.3 Wild and Scenic Rivers

A wild and scenic river inventory was prepared by the HFO during development of the CCMA Draft RMP/EIS to determine eligibility and suitability of rivers in CCMA to be included in the NWSRS. Though most river and stream segments on public lands in CCMA were found to be eligible, none were deemed to be suitable for addition to the NWSRS (see Appendix VI).

### 3.10.4.4 Wilderness and Wilderness Study Areas

#### San Benito Mountain WSA

Under the Federal Land Policy and Management Act (FLPMA) of 1976, the BLM was mandated to study all public lands for wilderness potential. Those not meeting certain wilderness criteria could be dropped from further wilderness study. However, all existing designated Natural Areas were automatically put in the wilderness study category, and could not be dropped from further wilderness review except by Congress. The 1500-acre San Benito Mountain Natural Area was in existence prior to 1976, and as such was automatically to be nominated and held for wilderness study. Therefore, the Wilderness Study Area will continue to be managed subject to the BLM's Interim Management Policy (IMP) for lands under wilderness review until Congress makes a determination as to the area's suitability for wilderness designation.

The results of the wilderness inventory in California and a general description of all WSAs in the state was published in BLM's *California Statewide Wilderness Study Report* (BLM 1990). The San Benito Mountain WSA (CA-040-309) is located in the CCMA. All WSAs are managed in accordance with the Interim Policy of Lands Under Wilderness Review. If the 1,500-acre area is released from WSA status by Congress, it would be managed consistent with the goals and objectives and the resource management actions for the Serpentine ACEC and the San Benito Mountain RNA described in this RMP/EIS.

The San Benito Wilderness Study Area designation covers 1,500 acres within the existing SBMRNA. On July 29, 1971, the Director of the Bureau of Land Management officially designated the San Benito Mountain Natural Area. It was designated an "Instant" Study Area with the passage of the Federal Land Policy and Management Act of 1976, due to the pre-existing status as a Natural Area. While Congress considers whether to designate a WSA as permanent wilderness, the BLM manages the WSA in a manner as to prevent impairment of the area's suitability for wilderness designation.

The HFO has acquired lands since the completion of the 1984 Hollister RMP and the initial wilderness review per FLPMA. These lands were acquired primarily for the conservation of special status species or to improve management efficiency. None of the acquired lands have wilderness characteristics because they do not include a roadless area of 5,000 or more acres or offer outstanding opportunities for solitude.

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# 3.11 Livestock Grazing

## 3.11.1 Introduction

The CCMA grazing lands have a Mediterranean-type climate, with cool, moist winters and hot, dry summers. Ninety percent of the precipitation (approximately 17 inches) comes during the late fall, winter, and early spring. The growth of forage grass begins with the first fall rains, and dormancy occurs in the late spring with soil water depletion.

Forage production for livestock consumption is a historic land use in the Planning Area. The Hollister RMP, as amended, authorizes 1,354 animal unit months (AUMs), which are leased for grazing on 22,140 acres of BLM-administered lands on 14 grazing allotments that are within portions of CCMA and the Serpentine ACEC. All of these lands consist of mixed chaparral and oak woodland vegetation types, as well as annual grasslands and half-shrub vegetation. Forage production, currently for cattle only, consists primarily of annual grasses and forbs that grow during the winter and spring, when the weather is cool and wet. Yearlong grazing is common on many allotments. Key aspects of managing annual grasslands for livestock production are maintenance of residual dry matter and appropriate season of use.

Map 9 in Appendix I identifies existing grazing allotments in the Planning Area.

## 3.11.2 Regulatory Framework

Vegetation consists mainly of annual grasslands, chaparral, chamise, and oak savannah. Annual grasses are the important livestock forage. The HFO Planning Area currently consists of four management areas (MAs) categorized according to common features, resource issues, or management needs.

The BLM administers it grazing program in California and in the other western States under 43 CFR 4100. These regulations implement the laws that govern public land grazing, including the Taylor Grazing, Federal Land Policy and Management Act, and Public Rangelands Improvement Act.

The Taylor Grazing Act of 1934 authorizes BLM administration of livestock grazing on public lands. Currently, the 1984 Hollister RMP provides specific guidance for livestock grazing within the Planning Area. In accordance with 43 CFR 4180.2, the Central California Rangeland Health Standards and Guidelines for Livestock Grazing Management was approved on July 13, 2000. The standards establish four fundamentals for managing rangelands including soils, species, riparian, and water quality (see subsection 3.11.4**).** Specific indicators of rangeland health determine whether these standards are being met within a grazing allotment, and appropriate management corrective action is required if one or more of the standards are not being met. The grazing guidelines consist of 18 specific items that provide direction for grazing management. The standards describe the conditions needed to promote and sustain rangeland heath and apply to all land uses in addition to grazing.

The 1978 Public Range Improvements Act established a national policy and commitment to improve conditions on public rangelands. The Act requires a national rangeland inventory, consistent federal management policies, and provides funds for range improvement projects. It also amends the Wild Free-Roaming Horses and Burros Act and the Federal Land Policy and Management Act of 1976.

The 1984 Hollister RMP, as amended provides current direction for livestock grazing management. The RMP calls for management action to improve forage production and animal distribution throughout the allotments. Livestock forage is allocated for grazing only in suitable areas. These acres are managed to maintain between 500 and 1,000 pounds of mulch per acre at the end of the grazing season. The grazing

season is determined based on impacts on other resources. All livestock watering developments are available and safe for wildlife use. Prescribed fire to improve forage production is considered on a case-by-case basis. Livestock use of burned areas is determined by monitoring.

### 3.11.3 Regional Setting

The 1984 Hollister RMP stated "resource production on public lands is not significant in relation to the overall economy" (BLM 1984). However, a few industries and individuals are economically dependent on public lands. For example, 11 livestock operations, or 91 percent of the lessees in the Planning Area, are dependent on public lands for more than 10 percent of their forage needs.

The overall pattern of livestock production in California is similar to the pattern on HFO public lands. In 1992 California supported 22,700 livestock operations, which had a total inventory of over 5.5 million cattle and sheep. During the preceding years from 1987–1992, the number of beef cattle and sheep operations decreased 14 percent and 20 percent, respectively. While the numbers of sheep have decreased on sheep operations, the opposite is true for numbers of cattle, which have increased on cattle operations. The decrease in the number of cattle ranches coupled with an increase in the number of cattle has been a consistent trend for the past 30 years.

### 3.11.4 Current Conditions and Trends

Livestock grazing occurs on 14 grazing allotments with boundaries in and around CCMA, comprising a total of 57,633 acres of BLM-administered lands located in southern San Benito and western Fresno counties. These allotments are identified in Table 3.11-1 and on Map 9 in Appendix I.

Currently, 7,547 AUMs are leased on these fourteen grazing allotments, which include portions of CCMA and the Serpentine ACEC. Table 2.4-7 in Chapter 2 identifies the number of acres and AUMs for each grazing allotment. Based on management status, most of the grazing allotments need improvement and the balance require custodial or maintenance. These grazing allotments have been assessed for compliance with the Central California for Rangeland Health Standards and Guidelines for Livestock Grazing Management (see Table 3.11-1). The standards for rangeland health and guidelines for livestock management on BLM lands are written to accomplish the four fundamentals of rangeland health, insofar as the standards are affected by livestock grazing practices. The fundamentals are:

- Watersheds are properly functioning;
- Ecological processes are in order;
- Water Quality complies with State standards; and,
- Habitats of protected species are in order.

A "standard" is the criterion to determine whether management actions are resulting in the maintenance or attainment of rangeland health. The standards are expressions of physical and biological conditions or degree of function required for healthy, sustainable rangelands. The allotments are classified into one of four categories depending on the results of the rangeland health surveys: Category 1 allotments are those that do not meet one or more of the standards and livestock grazing is the cause; Category 2 allotments are those that do meet all of the standards; Category 3 allotments do not meet one or more of the standards and the cause is unknown; and Category 4 allotments do not meet one or more of the standards and livestock is not the cause.

Twenty-nine percent of the grazing allotments (or 4 allotments) meet all four rangeland health standards (see Table 3.11-1). Seventy-one percent (or 10 allotments) are not in compliance with one or more of the standards, and the cause is attributed to water quality or species diversity, where it has been determined that livestock grazing is not the cause. The water quality issues result from high levels of trace metals, and mercury, which are transported into surface water and groundwater after road cuts and flood events. Allotments with species diversity issues are dominated by decaying chamise and chaparral vegetation. Fire exclusion has prevented mixed age-class stands, which would provide plant diversity. No allotments fail to meet the standards with the cause not known.

Table 3.11-1 Grazing Allotment Evaluations with Regards to the Central California Rangeland Health Standards and Guidelines

| Allotment Name | Rangeland Health Standards Category[1] | Causes For Not Meeting Standards |
|---|---|---|
| **Adobe** | 4 | Water Quality |
| **Akers** | 4 | Water Quality, Species Diversity |
| **Ashurst Ranch** | 4 | Water Quality |
| **Bar B Ranch** | 4 | Species Diversity |
| **Birdwell** | 2 | |
| **Diamond A** | 4 | Water Quality |
| **Goat Mountain** | 4 | Water Quality, Species Diversity |
| **Hernandez** | 4 | Species Diversity |
| **Joaquin Rocks** | 2 | |
| **Lewis Flat** | 2 | |
| **Quarter Circle** | 4 | Species Diversity |
| **Upper Los Gatos Creek** | 4 | Water Quality, Species Diversity |
| **Williamson** | 4 | Water Quality, Species Diversity |
| **Willow Spring** | 2 | |

*Notes:* [1] Standard Class: 1 = Not meeting standards and livestock is the cause; 2 = Meeting standards; 3 = Not meeting standards and cause unknown; 4 = Not meeting standards and livestock is not the cause.

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# 3.12 Energy and Minerals

## 3.12.1 Introduction

This section addresses mineral resource exploration, development, and production.

Based on the Hollister Oil and Gas RMP Amendment (1993), the hydrocarbon mineral potential for oil and gas in the Serpentine ACEC is classified as 'none' due to the serpentine rocks present. Although, the other management zones within the CCMA boundary do contain sedimentary formations that could be suitable for hydrocarbon production and are classified as 'moderate' in the BLM's Reasonably Foreseeable Development (RFD) Scenario prepared in 2005 (refer to Appendix VIII).

Historically, exploratory oil wells have been drilled on less than 5 percent of the leases issued on BLM public lands, and only one of every 15 to 20 exploratory wells actually results in the discovery of oil. As a result, there is currently no oil and gas production within the Planning Area. The nearest production comes from oil fields near Coalinga and the Vallecitos Valley.

The only active mining on or immediately adjacent to BLM-administered land in the CCMA is for unique minerals and gemstones (benitoite). Since the 1984 Hollister RMP was prepared, mining claims in the CCMA have been limited to approximately 12 small claims for casual use mineral collection. Casual use means that no mechanized equipment is used and the disturbance in limited in size to less than 1 acre.

In the past 100 years, mining activity in the CCMA has been extensive, starting with the mercury exploration associated with the gold rush in the mid-1800's. Many of these abandoned mercury mines were left to erode and degrade surface waters. BLM started an active Abandoned Mine Land program in the late 1990's. A summary of BLM's efforts to restore water quality by restoration of abandoned mercury mines is included in Section 3.2.3.3. In 2004, the Regional Water Quality Control Board issued a Total Maximum Daily Load (TMDL) of mercury in the CCMA.

## 3.12.2 Regulatory Framework

The 1920 Mineral Leasing Act governs the leasing of oil and gas lands and applies to all federally owned minerals. The Mineral Leasing Act provides that all of these lands are open to oil and gas leasing unless a specific order has been issued to close the area to leasing.

BLM holds lease sales of the oil and gas resources in accordance with the Federal Onshore Oil and Gas Leasing Reform Act (FOOGLRA). Subject to the stipulations outlined in this Plan and standard terms and conditions, an oil and gas lease gives the lessee the right to extract the resource and to occupy the appropriate size area necessary for extraction. The lessee may conduct any activities necessary to develop and produce natural gas from the lease area, including drilling wells, building roads, and constructing pipelines and related facilities. Although the initial lease term is 10 years, it may be extended indefinitely as long as the lessee demonstrates that the lease is capable of producing oil or gas in paying quantities. Extended leases are considered "held by production." Unleased parcels, or parcels for which the term has expired without development, may be requested by industry for inclusion in a new lease sale.

The California Division of Oil, Gas and Geothermal Resources oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells. Applicable regulations include California Public Resources Code, Division 3, which governs the regulation of oil and gas operations; and California Code of Regulations Title 14, Division 2, Chapter 4: Development, Regulation, and Conservation of Oil and Gas Resources.

### 3.12.3 Regional Setting

Historically, the region was known as the New Idria Mining district. The New Idria Quicksilver Mining Company began mining cinnabar and mercury from the region in 1854. Other materials such as asbestos, magnesite, nickel, and chromium were also extracted (USDI 2005). Mining of asbestos began in the 1950's and the last active asbestos mine in the U.S. was the KCAC asbestos mine. In general, the region was an active mining and ore processing area for over a century. Refer to Cultural Resources, Section 3.13.3.3, for more information on historic era energy and minerals development.

### 3.12.4 Current Conditions and Trends

There are two active oil and gas fields in southern San Benito and western Fresno counties. However, no new exploration wells have been drilled on BLM lands in the region in over 20 years. New geophysical exploration activity in the Vallecitos Valley was conducted in 2008, suggesting more wells could be drilled in this area as demand for these resources increases. New exploration drilling activity would include the construction of some associated roads and facilities, and pipelines installed to existing infrastructure. Refer to BLM's Reasonably Foreseeable Development Scenario in Appendix VIII for more information on potential oil and gas developments on CCMA public lands.

Remediation efforts at the KCAC mine are still underway, and are being monitored by BLM, San Benito County, and the State of California under the 1976 SMARA regulations. There are many other abandoned mines and prospects for mercury, of which BLM has undertaken remediation to reduce the transport of contaminated sediment from impacting CCMA watershed values. Abandoned mine lands that have been remediated include the Atlas Superfund Site, Aurora, Jade Mill, Alpine, Xanadu, Larious Canyon, Archer, and multiple unnamed retort piles adjacent to Clear Creek.

Refer to Hazardous Materials and Public Health and Safety, Section 3.2 for more information on abandoned mine lands in CCMA.

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# 3.13 Cultural Resources

## 3.13.1 Introduction

Cultural resources are the dynamic interplay between people and their environment expressed on the landscape. The term "cultural resources" can apply to a wide array of different "things," from historic archeological sites to contemporary plant collection areas. Other examples of cultural resources include sacred places, monuments, Native American cultural items, historic objects or buildings, religious or traditional practices, and historical documents (King 1998:7-9). Nevertheless, archeological sites are the most common type of cultural resource encountered on BM public lands.

Most archeological sites are complex, containing diverse components, each of which may represent a different activity, time period, or even both. Artifacts are objects manufactured by hand or machine, such as: pottery bowls, porcelain plates, metal hinges, glass bottles, shell beads, stone projectile points, and groundstone bowls. Features are immovable manufactured objects, larger than artifacts (such as buildings). Features often contain artifacts or have artifacts associated with them. One of the values of archeological sites lies in the information that sites contain and the knowledge that can be gained from their study - the ability of a site's information to be used in answering important questions about the past.

Archeological sites may also possess traditional cultural values, ascribed by a community, ethnic group, or Indian tribe to archeological sites and other places associated with its cultural practices or beliefs that are rooted in the community's history and are important in maintaining the continuing cultural identity of the community. These kinds of sites are important for economic, artistic, or other cultural practices in maintaining a group's cultural/historical identity. Traditional cultural values are often central to the way a community or group defines itself, and maintaining such values are often vital to maintaining the group's sense of identity and self respect. Archeological sites to which traditional cultural values are ascribed can take on vital significance, so any damage to or infringement upon them is deeply offensive to the group that values them.

BLM management of cultural resources utilizes an integrated system of identifying and evaluating cultural resources, deciding on their appropriate uses, and administering them accordingly, both on public lands and in areas of BLM decision-making responsibility. An important goal for the BLM is to address the needs of Native Americans' access to and unhampered use of places of traditional cultural or religious importance, including non-commercial collection of natural resources for traditional purposes. Public demand for places to visit and learn from cultural properties, such as interpretive development, should also be considered.

## 3.13.2 Regulatory Framework

The California Bureau of Land Management (BLM) utilizes a Programmatic Agreement (PA) approved in 1998 for cultural resources management. This PA was revised in 2004 and recently renewed in 2007. The PA is tiered to a national Programmatic Agreement (nPA) approved 1997 between the Advisory Council on Historic Preservation (ACHP), the Bureau of Land Management (BLM) and the National Council of State Historic Preservation Officers.

Signatories to the Statewide Protocol Agreement in California are the California BLM, the California State Historic Preservation Officer and the Nevada State Historic Preservation Officer. It is designed for the California BLM to "integrate its historic preservation planning and management decisions with other policy and program requirements to the maximum feasible extent in the public interest."

The Statewide Protocol Agreement meets Section 106 requirements of the National Historic Preservation Act (NHPA) to "take into account the effects of the agency's undertaking on properties included in or eligible for the National Register of Historic Places" as cited in 36 CFR 800.1(a). The PA also provides for an enhanced level of consultation between BLM, Federally recognized tribal governments, and non-federally recognized Native American groups as well.

## 3.13.3 Regional Setting

Some of the following background material is revisited from the Proposed Resource Management Plan / Final Environmental Impact Statement for the Southern Diablo Mountain Range and Central Coast of California for the Hollister Field Office (2007). The text has been condensed, edited, and significantly augmented in certain sections to reflect specific information about the Planning Area for this RMP/EIS.

### 3.13.3.1 Prehistoric Record

Coastal Influences

To begin, there are gaps in our knowledge of how Native American tribes that lived along the immediate coast articulated with those that lived in the interior portions on central California. Most culture-historical reconstructions for this region are predicated mainly on archeological data from the coastal strip, and the extent to which these trends or patterns parallel developments further inland remains largely undetermined. Archeologists surely recognize many of these shortcomings, but limited project development in the rugged interior of the South Coast Ranges has contributed little actual research. More focused research in the interior valleys will be necessary to flesh out the changing character of coastal-interior interaction over the last 10,000 or so years of human prehistory.

Archeological patterns in the Monterey Bay area have emerged mainly in the last two decades based on work by, among others, Dietz and Jackson (1981), Dietz et al. (1988), Cartier (1993a, 1993b), and Breschini and Haversat (1989). The earliest cultural remains in this area derive from the Scotts Valley site (CA-SCr-177), where occupation may have initiated as early as 13,500 BP. Cartier (1993a) has proposed three phases for the pre-8,500 BP interval (Aruama (13,500 to 11,500 BP), San Lorenzo (11,000 to 10,000 BP), and Umunhum (9,600 to 8,500 BP) based on superpositioning and slight shifts in assemblage composition. The two earliest phases are marked by numerous flake tools, small leaf-shaped and medium lanceolate projectile points or bifaces, battered cobbles, and ochre; limited core tools first appear during the San Lorenzo Phase. Artifacts attributed to the Umunhum Phase show apparent linkages to the San Dieguito Complex of southern California, including an eccentric crescent, bipointed points/bifaces, refined flake tools, cobble-core implements, and heavy use of coarse-grained toolstone materials; small numbers of milling tools are also associated with this component, traits absent from the conventional San Dieguito definition. Similar materials have been reported from CA-Mnt-229 (Jones and Jones 1992), but the nature of these early occupations is still open to serious debate. Sites dated to the Millingstone Period are more common in the Monterey area, though only CA-SCl-178 in the interior contained large numbers of plant processing implements. That assemblages consonant with Encinitas Tradition (Warren 1968) complexes in southern California exist in this region is no longer open to question, but it remains unclear whether they reflect a consistently old cultural pattern.

The Early Period, exemplified in materials from CA-Mnt-391 (Cartier 1993b), is characterized by thick rectangular (Class L), end-ground (B), and split (C) *Olivella* beads, *Haliotis* square beads, contracting-stem and side-notched points, and both mortar/pestle and millingstone/handstone grinding technologies. Similar artifact assemblages are known from other Early Period components in the region (CA-SCr-239 (Cartier 1992), CA-Mnt-108 (Breschini and Haversat 1989), and CA-SCr-7 (Jones and Hildebrandt 1990)), but stratigraphic relationships are not so clear. The most important Middle Period sites in this

area is CA-Mnt-229 (Dietz et al. 1988), where contracting-stem and side-notched points were recovered in association with *Olivella* saucer beads (G2 and G6 forms) and mortars and pestles; handstones and millingstones have been reported from Middle Period contexts at CA-SCr-9. Jones (1993) has observed that Late Period occupations in the Monterey area consist mainly of short term specialized processing stations that tend to be artifact-poor (Cf. Dietz and Jackson 1981). Excavations at CA-Mnt-1486/H (Breschini and Haversat 1992) led to identification of a Late Period component containing Desert Side-notched points, end-ground (B2 and B5), cupped (K1), and sequin (M1) *Olivella* beads, and *Haliotis* disks, together with mortars and pestles, handstones, earspools, and an imperforate plummet-shaped charmstone.

The many competing cultural sequences proposed for this region have confused attempts to bring order to the record, some researchers developing entire chronologies based on stratigraphic relationships at a single site and others drawing phase breaks on the basis of shifts in one or another artifact class. Attempting to bring some order to this issue, Jones (1993) has recently offered a general sequence of periods that might conceivably apply to a whole range of geographic situations; these periods can be further segregated into phase units where archaeological and temporal controls permit. Beginning with the Paleoindian period (ca. 11,000 to 8,500 BP), this sequence progresses through Millingstone (ca. 8,500 to 5,500 BP), Early (ca. 5,500 to 2,600 BP), Middle (ca. 2,600 to 1,000 BP), Late (ca. 1,000 to 500 BP), Protohistoric (ca. 500 BP to A.D. 1769), and Historic (post-A.D. 1769) periods. These general periods can be used to discuss cultural patterns in various sectors of the central coast region. Much of this information is drawn from Bouey and Basgall (1991) and Jones (1993).

Valley Influences and the Establishment of a Local Chronological Sequence

Over the last 60 years, the progress of archeological research along the western foothills of the San Joaquin Valley has fluctuated a great deal. Following the pioneering efforts of Schenck and Dawson (1929) and Hewes (1941), investigations slowed until the late 1960s and early 1970s when archeological activity reached a peak due to the construction of several large-scale water projects. Important contributions to regional prehistory came from the excavation of sites like CA-Fre-128 and CA-Fre-129 (Olsen and Payen 1968, 1969). Based on the results of these excavations, Olsen and Payen (1969) developed a local chronological sequence consisting of four cultural complexes known as the "San Luis – Little Panoche Chronology." Work by Bennyhoff and Hughes (1987) resulted in revisions of the typological system and the absolute ages assigned to important chronological indicators originally used by Olsen and Payen (1968, 1969). The revised Pacheco Pass sequence, as proposed by Mikkelsen and Hildebrandt (1990), is included in Table 3.13.3.1.A.

**Table 3.13.3.1.A - Concordance of Regional Chronological Sequences**

| Years Before Present (BP) | Santa Clara County[1] | Central Coast[2] | Pacheco Pass[3] |
|---|---|---|---|
| **0** | Historic<br>Late 2<br>Late 1 | Historic<br>Protohistoric<br>Late<br>Middle-Late Transition | <br><br>Panoche<br>Gonzaga |
| **1,000** | Middle-Late Transition | | |
| **2,000** | Middle | Middle | Pacheco A |
| **3,000** | Early | | Pacheco B |
| **4,000** | | Early | |
| **5,000** | Millingstone | | Positas |
| **6,000** | | Millingstone | |

Notes: [1] Milliken and Bennyhoff (1993), [2] Jones (1993), [3] Mikkelsen and Hildebrandt (1990, 1993).

Earliest evidence of occupation is termed the Positas Complex (approximately 4,500 to 5,200 BP). Lacking burials and structures, it is represented by a component at the base of CA-Mer-94 and appears to include perforated flat cobbles or "doughnut stones," flake scrapers, shaped mortars, short cylindrical pestles, millingslabs and handstones, small scraper planes, spire-lopped *Olivella* beads, and perforated pebble pendants. Rather, it was thought that the presence of "doughnut stones" or "cog-stones" may indicate a tentative connection to the south coast.

The succeeding Pacheco Complex has been tentatively divided into two phases. The earliest, Pacheco Complex B (2,500 to 4,500 BP), is poorly documented and only marginally represented at one site – CA-Mer-94. Material culture includes thick, rectangular *Olivella* beads, rectangular *Haliotis* or freshwater mussel beads, large leaf-shaped projectile points, a minor amount of milling equipment, and the questionable presence of two or three flexed burials. This artifact assemblage is indicative of an Early Period presence.

The Pacheco A Complex (approximately 1,000 to 2,500 BP) is better represented at archeological site CA-Mer-94 and less so at CA-Mer-27 (Nissley 1975; Jensen 1976). It is characterized by flexed burials associated with spire-ground modified saddle, saucer, split-drilled *Olivella* beads, and *Macoma* clam disc beads. These artifacts indicate a Middle Period occupation. Other artifacts include perforated canine teeth, bird bone whistles, bone awls, spatula grass cutters, spatulate bone tools, rings of slate and jade-slate, flat pebble pendants, mortars and pestles, millingslabs and handstones, and a variety of projectile points. Architectural remains include four fragmentary floor surfaces, all suggesting the presence of small circular houses about 10 to 12 feet in diameter. The presence of marine shellfish refuse in the midden and large notched and stemmed projectile points similar to those found on Monterey Bay, in conjunction with the lack of extended burials (a Central Valley trait), led Olsen and Payen (1969) to conclude the complex might represent an intrusion of coastal people into the area possibly in association with southern Santa Clara Valley populations.

The late prehistoric period, termed Gonzaga Complex (450 to 1,000 BP) is characterized by the dominance of extended burials associated with a wide variety of artifacts. *Olivella* bead types include whole spire-ground, thin centrally perforated rectangular, split-punched, oval, and several variant types of the thin rectangular form. Freshwater mussel disc beads, whole limpet shells, and *Haliotis* shell ornaments (circular, oval, and tear drop being the most frequent) are also present. Projectile points are rare, restricted to silicate specimens with square and tapered stems, as well as a few fragments of obsidian serrated forms. Bone artifacts include awls, pins, incised mammal bone tubes, bird bone whistles, and scapulae grass cutters. Large spool-shaped ear ornaments and small cylindrical plugs comprise the polished stone assemblage. Milling equipment includes large bowl mortars, shaped pestles, slab mortars (rare), and slab millingstones and handstones. Architectural structures increase in size, ranging from 20 to 30 feet in diameter and in some cases includes center posts. Extended burials associated with large quantities of shell beads and ornaments contrasts significantly with both earlier and later periods of occupation.

The protohistoric period called the Panoche Complex (200 to 450 BP) is known from several sites and first defined by Olsen and Payen (1968) at CA-Fre-128 and CA-Fre-129. Diagnostic artifacts include clamshell disc beads, *Tivella* tubular clam beads, steatite disc beads, *Haliotis* epidermis disc beads, *Olivella* beads (lipped, side-ground, and rough disc), small side-notched projectile points, a variety of bone objects (awls, scapulae grass cutters, incised bird bone whistles, short bone beads, and dagger-like pieces), steatite ear spools, simple conical pipes, slate pins, a variety of mortar and pestle forms, and only a few millingslabs and handstones. The complex is also recognizable by the Panoche Side Notched projectile point, a unique projectile point form based on the desert side-notched form common to the western United States (Figure 3.13-1). Structures include large circular assembly/ceremonial houses

(approximately 75 feet in diameter) and smaller circular dwellings, usually 30 to 50 feet in diameter. In addition to flexed burials, primary and secondary cremations are present.

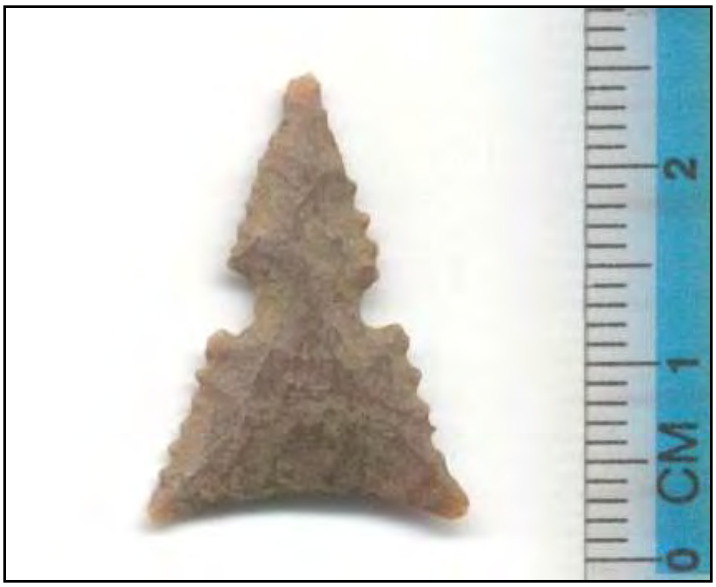


**Figure 3.13-1**: Panoche Side Notched Projectile Point
found in the CCMA (E. Zaborsky, USDI BLM).

Based on regional comparisons of numerous traits, it was noted that each major temporal period seemed to reflect occupations by different populations, or at least populations with divergent cultural/geographic affinities. The Positas Complex, although poorly represented, showed relationships to the south coast, while the Pacheco Complex was thought to possibly represent intrusion of peoples from the Monterey Bay area. Most conspicuous of all was the Gonzaga Complex with its extended burials similar to the Delta, followed by the protohistoric Panoche Complex, probably representing the ethnographically recorded Yokuts.

### 3.13.3.2 Ethnographic Present

The CCMA was a region used by different Native American populations in prehistory well into the European Contact period with Spanish settlers, followed by Mexican and then American settlers. By the beginning of the 20th century, California Indian peoples had experienced a dramatic shift in demographic distribution across their ancestral territories and extreme changes to their socio-cultural traditions and economic systems. As Anthropologists set out in the early 1900s to characterize and record the cultural behaviors, practices, and physical traits of the California Indians – much as military and religious expeditions had done a century before – the documentation of these extant tribal groups during that era has become a standard point of reference when talking about modern Native American tribes and cultural groups.

The CCMA may lie within the Chalon Costanoan/Ohlone region. The Chalon were known to have occupied the area around Chalone Creek - bounded to the west towards the Salinas River (Salinan country) and east to headwaters of the San Benito River in the Diablo Mountains that flanks the San Joaquin Valley (towards Tachi Yokuts country). The northern and southern extent of their occupation is less well defined, bounded by the Mutsun Costanoan to the north and the Salinan Indians to the south. However, it can also be argued that the region lies in an area where exact Native Californian tribal affiliation is unclear. The classic ethnographic literature also ascribes the region to the Tachi band of

Yokuts Indians, largely on the basis of hydrographic provenance. In the past, watersheds were typically used in Native Californian ethnographic research, as a defining boundary line for much tribal territorial delineation.

More current archeological research in the region has yielded a different interpretation. It is possible that the Chalon band of Costanoan (or Ohlone) Indians may have inhabited the area, based upon material culture identification and mortuary practices observed at CA-Fre-1333. A less investigated hypothesis relies on ethnohistoric data obtained from the baptismal records at Missions of San Antonio de Padua, Mission San Miguel, Mission San Juan Bautista, and Mission Soledad. Based upon general village location information supplied to the padres by the neophytes, the district may belong to the Chene band of the Salinan Indians. Ethnographically the Chene are not recognized as a distinct group, but this may only be a function of limited ethnographic details. The Salinans could only be loosely identified to either a Migueleno dialect (southern Salinan) or an Antoniano dialect (northern Salinan) (USDI 2005:3-37). Excavations at CA-Fre-1331 indicated a Yokutsian presence during the Late Period, prior to or coeval to the time of European exploration in California. There was also evidence of a much earlier occupation and interment, perhaps indicating the presence of another ethnic group (Zaborsky 2006).

Costanoan/Ohlone

The Costanoan were speakers of languages in the Penutian language family. The Costanoan (now commonly referred to as Ohlone) consisted of over 50 tribelets, speaking eight different but related languages that included: Karkin (southern edge of Carquinez Strait); Chochenyo (east shore of San Francisco between Richmond and Mission San Jose and probably Livermore Valley); Tanyen (southern San Francisco Bay and lower Santa Clara Valley); Ranaytush (San Mateo and San Francisco Counties); Awaswas (Santa Cruz Costanoan between Davenport and Aptos); Mutsun (Pajaro River drainage); Rumsen (lower Carmel, Sur, and lower Salinas Rivers); and Chalon (Salinas River) (Levy 1978:485-486). This territory encompasses a lengthy coastline as well as several inland valleys (Breschini et al. 1983:34).

The Ohlone relied on gathering, hunting, and fishing to procure a wide variety of flora and fauna for subsistence and material needs. The Ohlone had both permanent village locations and seasonal camps to take advantage of the diverse terrain along the central coast. The first Spanish encounters with the Ohlone occurred as early as 1602 with the Sebastián Vizcaíno navigational expedition, followed by the inland exploratory expedition of Gaspar de Portola in 1769. Seven missions were established in Ohlone territory between 1770 and 1797 (Levy 1978:486). Ohlone were both forcibly and voluntarily brought to the missions along with other tribes, including Yokuts, Miwoks, Esselen, and Patwin. Once part of the mission system, the Ohlone were discouraged or forced from practicing their traditional rituals and social activities (Levy 1978:486). Contact with Euroamericans resulted in a drastic reduction of population due to disease, violence, and a declining birth rate. Ohlone population fell from an estimated 10,000 in 1770 to less than 2,000 in 1832 (Cook 1943a, 1943b). Following the secularization of the missions in 1834, most of the remaining Ohlone moved into growing towns to work as laborers or domestic servants (Bean 1991:xxii). By the mid-twentieth century, the Ohlone population was reduced to a few hundred people in the San Francisco Bay area (Galvan 1968; Levy 1978).

In the 1960s the Ohlone Indian tribe was incorporated as a formal organization now holding title to the Ohlone Indian cemetery in Fremont, California (Bean 1991:xxiv). In the 1970s the Pajaro Valley Ohlone Indian Council was created and actively preserves sites of traditional importance. Four groups of Ohlone are now seeking recognition: the Amah-Mutsun Band (Gilroy / San Juan Bautista area), the Carmel Mission Band (Monterey region), the Indian Canyon Band, and the Muwekma/Ohlone tribe (south San Francisco Bay Area) (Bean 1991:xxvi). The Ohlone have not been recognized by the Federal government and therefore have not received recognition, compensation, or assistance to preserve and protect their heritage. There have been continued efforts to document genealogies by using mission records to piece

together family and tribal history. The groups mentioned above, as well as other individuals, have been actively involved in the management and preservation of their heritage and are frequently involved in the management of cultural resources. Ohlone descendants continue to conduct ceremonies and traditional practices such as the gathering of plant materials for basket making.

Salinan

The Salinan language speakers occupied a rugged and mountainous area in the south central coast of California. Salinan territory spanned from the later location of Mission Soledad on the north, southwest past Junipero Serra Peak to the town of Lucia along the Pacific Coast, and south to the north end of San Luis Obispo County (Hester 1978:500). The Salinans lived in both permanent and seasonal villages along the coast and relied upon a subsistence strategy that consisted of hunting, gathering, and fishing. Very little is known regarding their prehistory. During the late eighteenth century two missions were founded within Salinan territory, which ultimately led to the decline of Salinan population to fewer than 700 by 1831 (Hester 1978:503). Disease, lowered birth rate, and violence were a few of the factors that reduced Salinan population. Following the secularization of the missions, Salinan survivors remained in the vicinity of the missions, but their populations continued to decline rapidly. By the 1880s Henshaw (in Powell 1891:101) estimated Salinan population to be only 12 persons (Hester 1978:503). In 1928 the California Roll enumerated 36 Salinans (Kroeber and Heizer 1970:13). Two Salinan groups petitioned the Federal government for tribal recognition – the Salinan Nation in 1989 and the Salinan Tribe of Monterey County in 1993. Members of those groups and other individuals have been active in cultural resource management projects in the Central Coast region to help manage and preserve what remains of their heritage.

Yokuts

In ethnographic research, the Yokuts were distinguished geographically between the Northern Valley Yokuts, Southern Valley Yokuts, and Foothills Yokuts. The western-half of the ancestral territory of the Northern and Southern Valley Yokuts is located within Hollister BLM San Joaquin and San Benito Management Areas.

The Southern Valley Yokuts occupied territory in the southern portion of the San Joaquin Valley from the lower Kings River to the Tehachapi Mountains. Their territory was largely a slough-marsh environment consisting of the Tulare, Buena Vista, and Kern Lakes, their connecting sloughs, and the lower portions of the Kings, Kaweah, Tule, and Kern Rivers (Wallace 1978:448). At the beginning of the historic period at least 15 Yokuts groups inhabited the area, each with a separate language (Kroeber 1925:478-483). Each of the groups averaged 350 persons for a total population of 5,250.

In 1772 Pedro Fages led an expedition through Southern Valley Yokuts territory. Additional expeditions did not occur until around 1802, when the Franciscans were looking for potential mission locations. The tribes along the lakes surprisingly did not come under the control of the Franciscan missionaries, though some of the Tachi, Telamni, and others ended up relocating to the missions. In 1833 a malaria epidemic swept the valley with an estimated mortality rate of 75 percent (Wallace 1978:460). With the U.S. annexation of California in 1848 came the near total disappearance of native people from the San Joaquin Valley. While thousands of gold seekers poured over the Sierra Nevada, American settlers began to invade the Valley, ruthlessly displacing the remaining Yokuts populations. The Yokuts open-valley habitat made them extremely vulnerable, and there was no way for them to escape the full force of Euroamerican settlement (Wallace 1978:460).

In 1851 the tribes relinquished their lands for reservations and goods but the treaties were never ratified by the United States Senate (Heizer 1972:26-37). A series of unsuccessful reservations was created, and

it was not until 1873 that the Tule River Reservation was created in Tulare Country (outside the Planning Area), which is now home to the majority of Southern Valley Yokuts. In 1934, the Santa Rosa Rancheria was established on about 40 acres in Lemoore, California (outside the Decision and Planning Areas) with about forty Yokuts. For many years, those on the reservations lived in impoverished conditions. In 1983, the tribe established a gaming casino that has helped provide jobs and economic stability to the reservation. The Tachi Yokuts of the Santa Rosa Rancheria are currently the only federally recognized tribe affected by the CCMA planning effort.

#### 3.13.3.3 Historic Era

Exploration and Settlement

Historically this region of California was isolated from major population and transportation centers and therefore remained largely unsettled until the mid-nineteenth century. The first Europeans in the region were Spanish explorers, reaching the southern San Joaquin Valley under the leadership of Pedro Fages in 1772. The early 1800s were the most active period of Spanish exploration in the San Joaquin Valley, followed by limited trapping expeditions.

The earliest permanent settlers in the foothills of the South Coast Ranges were Mexican citizens and Californios. Mexican Governor Manuel Micheltorena granted a tract of land in this region in 1844; eleven square leagues to Julian Ursua and Pedro Romero, called Panoche de San Juan y los Carrisalitos. The 8,903-hectare (22,000-acre) rancho passed through a number of hands until the late 1870s at which time Daniel Hernandez acquired the land and ran a sheep ranch

According to Peter Frusetta (former California State Assemblyman from San Benito County), Hernandez Valley was named for Augustine and Jesus Hernández who were farmers in the region in the 1870s (Iddings 2005a:1). Hernandez Valley provided access into the southwestern portion of the CCMA. The United States Postal Service established the Erie post office in Hernandez Valley in 1874. The name "Erie" is associated with the Erie school district which opened in 1871. According to Jack James and Henry Carrillo, the Erie school building was located near the junction of Coalinga Road and Clear Creek Road (Iddings 2005d:1). The school was named "Erie" by Adherbal Button because Erie, Pennsylvania was he and his wife's American hometown. It was Button who purchased Augustine Hernández's ranch in the early 1870s (Iddings 2005a:1). The Post Office name was changed to "Hernandez" in 1892, moved to different locations in the Valley, and finally closed in 1936 (Iddings 2005d:1). Hernandez Valley is now partially covered by the Hernandez Reservoir, which was completed in 1962.

Located in eastern Hernandez Valley near the entrance of the CCMA is Byles Canyon, named after Joseph "Joe" Byles. Byles arrived in San Francisco as a sailor aboard a British ship in 1861 and later joined the U.S. Navy in 1872. He was stationed aboard the USS Benicia for three years; the same vessel that carried King Kalakana of Hawaii to San Francisco (Iddings 2005c:3). Byles moved to the town of San Benito around 1880 and married Emily Jane Prater in 1882. Their first child, James "Jim," was born on the Rosetti Ranch near San Benito in 1884 and they moved to Hernandez Valley a short time later where he became a prospector, miner and rancher. Their other five sons were all born in Hernandez Valley (Iddings 2005c:3). Byles' wife died on Thanksgiving day in 1901, six weeks after giving birth to their son Archie. It is believed that she is buried in Hernandez Valley somewhere near their homestead in Byles Canyon (Iddings 2005c:3).

East of Hernandez Valley, the San Joaquin Valley has many important landmarks related to the region's Californio heritage, and just east of the CCMA is one of the more famous locations: Joaquin Rocks. Joaquin Rocks and nearby Cantua Canyon area were reportedly used at different times as a horse holding area and hideout by the notorious bandits Joaquin Murieta (1850s) and Tiburcio Vasquez (1870s).

Historically the name Joaquin Murieta was associated with a gang of approximately 80 Californio men (and several women) that in the late 1840s and early 1850s captured and drove wild and stolen horses from all over central California south to Sonora, Mexico. During the Gold Rush-era this gang became known among American settlers (mostly of European descent) for their daring horse raids, robberies, and occasionally murder. From the stories of these crimes rose the legend of Joaquin Murieta, a Mexican-American "Robin Hood" figure who reputedly robbed and murdered in retaliation for injustices suffered by he and his family at the hands of violent rogue gold miners in the Sierra Nevada. In 1853 the California Rangers under the direction of Captain Harry Love claimed to have tracked the outlaw horse gang to their stronghold at Cantua Creek and took credit for having killed Joaquin Murieta himself.

Wright Mountain located west of Joaquin Rocks was named after the early 20th century pioneer Dick Wright who lived most of his life in the CCMA. Wright was the son of a family who settled the Lemoore area of Kings County in the 1800s. He lived a solitary lifestyle in a "very simple brush cabin" and prospected for ores. According to oral history, Wright never rode a horse or in a vehicle but instead always walked to his destination. Wright would collect a monthly pension check at the home of local rancher in Los Gatos Creek Canyon, but after he failed to show up for two months at the rancher's house in 1945, the rancher went to check on Wright and found him dead in his modest cabin. He was buried near his cabin and Dick Wright Spring is named in his memory.

In 1907 a relatively new government agency chartered under the United States Department of Agriculture took ownership of a large portion of the CCMA from the United States General Land Office. This agency was later known as the United States Forest Service (USFS), and created the San Benito Division of the Monterey National Forest. Approximately 150,000 acres were set aside for the new Forest, including all of Sections in T18S, R12E and T19S, R12E and portions Sections in T17S, R11/12E; T18S, R10/11/13; T19S, R10/11/13 MDBM. The San Benito Division of the forest was "located principally in Clear Creek, Saw Mill and Eagle Creeks" (Sloane 1914:III,26). Part of the responsibility in managing this new forest reserve was to create a Plan of Operations, approved in October 1914. The Plan provided basic regional information and characterized the natural resources available or being currently utilized.

Within the historical context of the Plan, it is interesting to observe how the attitude of government officials in their descriptions of citizenry has changed over time. In "Section I, General Description, Settlements" of the Plan, three "distinct classes" of people were identified as living in the region: "Mexican (includes Spanish Land Grantees), mostly easy-going, careless, ignorant and unprogressive Mexican type…Americans, coming in the early days to California in search of gold and locating a homestead…the descendents of the above two classes" and "the 41 survivors of the vanishing race of Salinan Indians live for the most part in the neighborhood of Jolon" (Sloane 1914:I,6).

Subsequent descriptions and accounts of natural resource utilization by those area residents are more revealing, especially in "Section III, Timber" of the Plan. The timber utilization policy in the San Benito Division in the early 20th century was to "cut as much timber as there is demand for, regardless of annual increment or growing stock" (Sloane 1914:III,25). The Plan further stated:

> …the demand for timber has been greater than the supply. The New Idria Mining Company has utilized closely all of the timber that we would mark for cutting. Here there has also been considerable demand for cordwood. In addition to the usual material, chaparral has also been used extensively as fuel for quicksilver reduction purposes. The future demand on this Division will depend largely on the mines. Otherwise the market will be in the local valley region. All material cut in the past has been closely utilized (Sloane 1914:III,23).

Also of note there was a "good system of roads throughout this Division" and as maintained would sustain a permanent means for transportation (Sloane 1914:III,23). The Coulter pine tree species - an

integral part of the San Benito Mountain Research Natural Area forest - was described as a "very inferior lumber species" and only "used for mining timber and cordwood" (Sloane 1914:III,5). There was also a significant distribution of barren, treeless areas estimated to be 4,000 acres within the San Benito Division, described as "barren slopes of serpentine without any trace of vegetation" (Sloane 1914:III,7).

Almost immediately, the conflicting mining claims within the forest and "political pressure from grazing and homesteading interests apparently made management of the rather small National Forest unit difficult" (Griffen and Yadon 1989:17). Eventually the land reverted back to the public domain in 1916, portions of which eventually became the CCMA.

Ranching

Settlers in the area relied on an economy of cattle, sheep, and grain production in the late 1860s and early 1870s. During this period increasing numbers of European-American settlers moved to the western San Joaquin Valley. Large ranching enterprises such as the Domengine Ranch spread from the Coast Range east to Fresno and covered more than 10,000 acres throughout the western part of the San Joaquin Valley during this period. Cattle baron Henry Miller (i.e., Miller & Lux) also used thousands of acres of land in this region as part of his cattle-ranching empire. These foothills were well-suited to grazing sheep and cattle, although improved irrigation, other agronomic advances, and the inception of rail and truck transport in twentieth-century San Joaquin Valley made row crops a viable pursuit during this time.

The operation of sheep and cattle ranches varied during the nineteenth century. Most ranches consisted of some acreage occupied by a ranch house with widely distributed ancillary features; many sheep ranches consisted solely of corrals and watering locations with an occasional cabin, although shepherds often slept near their herds in the pastures.

Smaller ranching operation were able to co-exist with the larger operations by utilizing areas that were adjacent to the productive grasslands in the San Joaquin Valley. For example, a goat ranch operated in the CCMA area during the late 1800s. Today the peak Goat Mountain was once known as Great Mammoth Peak because it resembled the head of a mammoth when viewed from Clear Creek Road. However, by the 1920s it was renamed because local rancher and miner Joe Tirado ran his goats on the mountain (Iddings 2005b:2).

Oil

While ranching and farming remained a significant enterprise in areas surrounding the CCMA, petroleum production represented the second lucrative local industry in these areas. The town of Coalinga and the Pleasant Valley area was the site of one of California's biggest early oil booms. The Coast Range Oil Company of Los Angeles sank one of the first wells in 1890 in the Oil City field, a few miles northeast of present-day Coalinga. In the late 1890s, a pipeline was built from Oil City south to a Southern Pacific railroad station near Coalinga, where the oil was loaded into tank cars for export. As new oil fields were discovered, large oil companies became more commonplace, and large pipelines were constructed to move oil across the South Coast Ranges to ports on the Pacific Ocean. In September 1904, the Coalinga Oil and Transportation Company began construction of the 104 mile six-inch diameter pipeline from Coalinga to Monterey; completed in 90 days. The oil was used to fuel steamers at the Monterey wharf and also was transported to San Francisco (Cohan 1997).

Concurrent with early oil speculation, coal mining established and funded an infrastructure that would facilitate the oil boom. Robinson & Rollins, a British firm, opened a mine on the western side of Pleasant Valley. The coal was hauled to the Southern Pacific railroad station in Huron until the Southern Pacific extended its line to Alcalde. Narrow-gauge spurs were built from the mine to three loading sites called

Coaling Stations A, B, and C. When the oil boom took off, Coaling Station A became known as the town of Coalinga.

Oil was discovered early in the Vallecitos Valley in 1886, just north of the CCMA Planning Area. The California Central Oil Company spent a reported $20,000 to sink a well that only produced a "small quantity" of oil and operated for less than two years (Irelan 1888:488). Shell Oil Company began production in the Vallecitos in 1951. Even though Shell Oil had apparently made contracts with some local landowners to sink wells, several parties filed suit in 1957 claiming partial ownership of the property and rights to part of the revenue from the oil. These ownership challenges were eventually settled in the 1960s (Jackson and Armstrong 2008:12).

An oral history provided the San Benito County Historical Society in 1979 by Julius Nunez, a former long-time resident in the CCMA, recounted the discovery of oil in Vallecitos Valley:

> This was this side of the New Idria mines, what they call "the Vallecitos," and that man John Ashurst (who was a family man) passed on, and it was his sons who struck oil there. There were many oil wells up there, and they became very rich. In fact, one of the sons had his own plane, and they raised a lot of cattle over there. They were just millionaires — all, from this little trade that my dad made for a horse" (Kier 1979:2).

Mining

Historically, the region was known as the New Idria Mining district. Discovered in the late 1840s – early 1850s by Mexican prospectors, large portions of the CCMA were mined for mercury to produce quicksilver during the California Gold Rush era. The New Idria Quicksilver Mining Company began mining in 1854, working a "huge deposit of naturally occurring cinnabar and native mercury found in the mountains and in the canyon followed by San Carlos Creek" (Iddings 2007a:2). Mercury from the CCMA was vital to gold production in the Sierra Nevada of California as well as silver mining at the Nevada Comstock Lode (Gilbert 1984:10). Later in time, the district's mercury was used in medical products, paint, and even munitions for World War I. Other materials such as asbestos, magnesite, nickel, and chromium were also extracted (USDI 2005). The region in general was a historically active mining and ore processing area between about 1855 and 1970, and as such, supported a" diverse community of social, civic and industrial activity" represented by at least two dozen historic mine and mill sites (Fowkes and Iddings 2008:13).

The New Idria Quicksilver Mines and Idria townsite are located north of the CCMA on the slope below San Carlos Peak. Dozens of freight wagons loaded with flasks of quicksilver or provisions and mail passed daily for nearly a century along the road through Panoche Valley between New Idria (the town was also referred to as simply "Idria") and San Juan (San Juan Bautista), approximately 68 miles away. The route was lined with small settlements, including the station of Tres Pinos, now called Paicines. The quicksilver mines operated by the New Idria Mining and Chemical Company extended into the CCMA and were open until the company terminated in 1972-1974 (USDI 2007). During the 1880s this region was home to about 4,000 people who lived in various small communities and outlying cabins (Fowkes and Iddings 2008:5).

Since the 1850s at Idria there were professional miners from Chile, along with miners and other workers of Mexican, Irish, or Cornish descent. These miners were typically young single men. According to the1880 United States Census, other documented laborers included those of German, Scotch, French, Chinese, and Portuguese nationalities. Asian workers were commonly employed as furnace tenders – one of the most dangerous jobs because of the risk of inhaling mercury fumes. Non-mining occupations included brick-makers, sawyers, blacksmiths, carpenters, butchers, washers, house-keepers, and

shepherds (Gilbert 1984:18). Separate camps for specific nationalities and/or ethnicities existed at Idria; Chilean Camp (also referred to as Mexican Flat) was located near Idria as early as 1867 and was occupied at least until 1879 (Gilbert 1984:18). There were also separate economic ventures by individual ethnic communities: in 1868 a group of Mexican miners formed the "Union Mexicana" corporation in order to raise enough money to work a nearby quicksilver site which they had discovered (Gilbert 1984:18).

Early mining at New Idria had to contend with poor transportation networks to market the refined cinnabar. The distance from San Juan to the mine, about seventy-five miles over trails and mountain roads which were not always accessible, "required from two to five days" (Hillhouse 1931:3). In September 1858 at Idria there were eighty-eight miners. At that time it was estimated that 75,000 pounds of freight supplies had to be transported to the mines to sustain them for a two month period (Hillhouse 1931:15).

By 1867, the New Idria Mine had five working tunnels and the San Carlos Mine had seven. The large work area for the mines was called the Hacienda, where cinnabar was sorted and roasted. A brickyard, blacksmith shop, and boarding house were also located at the Hacienda site (Gilbert 1984:8).

There were no railroads or telegraph services to New Idria. Fuel and equipment had to be "produced on the spot at high cost, or shipped in under crude and slow methods, which were also costly" (Hillhouse 1931:18). By 1900 Idria began substituting oil for wood as fuel. Oil was procured from shipping points in Coalinga and Mendota to the east. Trucks hauled the oil from the San Joaquin Valley to Jackass Grade in Fresno County, approximately thirty-five miles from Idria. From that point horse-drawn carriages delivered the oil in tank wagons to the mines (Gilbert 1984:24).

In 1906 the San Benito County Board of Supervisors allowed telephone lines for thirty miles along the route from the Idria mines north into Panoche Valley. This allowed the officials at Idria to make direct contact with the New Idria Mining Company headquarters in Boston, Massachusetts (Gilbert 1984:24). By the 1910s, New Idria had a good road network for large trucks and "a gigantic plant, operated by electricity with the latest equipment; gasoline locomotives for hauling; fuel oil ovens melting over 700 tons of ore per day and producing upwards of 450 flasks of quicksilver" (Hillhouse 1931:18).

One of the more important cinnabar ore-processing methods invented at New Idria was the creation and installation of four Gould Rotary furnaces in 1918. Henry Gould was a mining engineer who arrived at Idria in 1908 to oversee cinnabar ore extraction, and while there he created an improved technique for the heating and collection of liquid mercury from cinnabar. Refined elemental mercury is extracted from cinnabar by roasting the material in a furnace to vaporize the mercury. The vaporized mercury is then sent through a series of condensers to cool, which forms into droplets and settles at the bottom of the condensing chamber where it is collected and bottled into steel flasks. The Gould Rotary furnace allowed for a very efficient (95%) processing of quicksilver opposed to earlier furnace designs (Iddings 2007:2).

Although the mining and processing of cinnabar was a difficult and dangerous job, even the journey to reach Idria could be a challenge…but had its own rewards:

> After a day or two of rest, we continued to Tres Pinos a very small village some distance south of San Jose, to catch a wagon to Idria. It was a big haywagon with benches on both sides, hitched to four large horses, which took us up the mountains. It took half a day to reach the place. We crossed several creeks and stopped to move big rocks that had rolled down the road from the mountain. The scenery was beautiful - tall pine trees and hilly country - with very few houses along the way. Every time we moved, we came to a different kind of world. This was the best so far. The pine trees smelled good, and the cool air made us feel refreshed (Lee 1990).

The above passage is a recollection of a trip to New Idria in February 1914 by a young Korean immigrant girl, Mary Lee, who came with her family to the United States to escape the ethnic cleansing occurring as a result of the Russo-Japanese War and the invasion of the Korean Peninsula in 1905. Once they arrived at Idria, her description of the town and mines reflects many other recollections about the place from other residents:

> The mines, the company buildings, the hotel, the store, the houses of a few Caucasian families, and the boardinghouse for Caucasian workers all had electricity, but there was no electricity in the shacks for the rest of the workers - mainly Mexicans, with a few Koreans (Lee 1990).
>
> Father worked in the furnace area of the mining company, stirring the rocks so they would burn evenly. He had to wear a piece of cloth over his nose so he would not breathe the poisonous fumes whenever the lid was opened. It was a hard, nasty job that few men wanted to do, even though the pay was five dollars a day, an unheard of amount in those times (Lee 1990).

Despite the hazardous activity at the mines and mill sites, and the working landscape that seventy years of intensive mercury processing had created, it is interesting to note that even one-hundred years ago people came to visit the CCMA to get away from their perceived rigors of urban life in order to refresh themselves:

> In the spring, after the snow had melted away, the sun brought all the beautiful flowers to life…Every weekend people from San Francisco, Berkeley, and San Jose drove up to enjoy the scenery and to get some flowers. All the children came out to pick flowers, which we sold for twentyfive cents a bunch (Lee 1990).

Life-long San Benito County resident Julius Nunez, who lived and worked in Idria from 1902-1923, provided a wonderful amount of oral history information to the San Benito Historical Society in 1979 before his passing. Born at the mining community in 1902, there were nearly five-hundred families living in the area. There was no residential indoor plumbing or electricity, and home goods were obtained through a company store:

> Money didn't really mean anything to us, because my mother had the General Store. So, we didn't have to have money to buy anything. Later we drew on company checks and could buy everything from meat to vegetables and clothing. Why, if we even found pennies and nickels on the ground, we wouldn't even pick them up, because we didn't need them to buy things (Kier 1979:1).

Between the residents of the Idria mining community and the surrounding area there were social and economic relationships that proved advantageous to both parties. Nunez recounted a regular occurrence between local ranchers and miners:

> In the early days there was a family up there [at New Idria] we used to call "The Lilies" [Lillis]. They used to raise a lot of cattle up in the hills around New Idria, and used to hire a lot of cowboys for a roundup that they had once a year. They'd come in and brand cattle while the families would all get together. We'd come by buggies - families and the children. They played games, the mothers used to bring in salads and cakes, and the men, of course, would have beer. Altogether, they had barbecue and the roundup. They'd kill a beef and consumed it mostly in one day. I wonder now how we ate that meat; it was so fresh. What was left they divided for the families. We used to have some good times in those days (Kier 1979:5).

Mining itself was a dangerous occupation, no less so at Idria. However, in remote mining communities when a communicable disease affected the population, that community was left to rely upon itself until

more effective medical treatments could arrive (immunizations, etc.). Nunez reluctantly described an Influenza outbreak that impacted the Idria district from 1917-1919:

> People were dying like - well, every minute you were seeing bodies dropping on the streets, like dead rats. A cousin of mine and I were able to get around while pretty near everybody was dying or sick. It was a mess. There were a lot of single men in those days up there, and we didn't know whether their families had come from Mexico, or Spain, or wherever. They wrapped their bodies up with a sheet and we'd hook up some horses and take them out and dig ditches - with the four horses and mud up to our knees - and bury them by throwing dirt over them and letting them rest. Isn't that terrible? (Kier 1979:3)

Individual burial sites and cemeteries for miners and their families have been created over the decades throughout the CCMA. It is a distinct possibility that many of these locations are not well-documented or might have never been known to the general community. This aspect of the historical landscape should be considered in any historical reconstruction of the CCMA landscape:

> An uncle of mine passed away, and in those days they didn't have any Hearst or undertakers, so they put the body in a blanket. We walked about ten miles, behind the funeral wagon, to the place where they buried him. There was a place [where he was buried] called Larios Peak - there's also a Saxon's [Sampson?] Peak - I'll never forget that funeral procession; it takes you back a long time (Kier 1979:5).

In addition to mining for cinnabar and mercury, there were efforts to recover other minerals of commercial value. Many of these mines were worked by employees or families of New Idria:

> Yes, of course, up at the mines there are other minerals besides quicksilver. There's magnesite - I worked with magnesite as a youngster - you know what magnesite is: it's a big, white mineral, used to make sinks - it's a white ore that's very hard. Also, there was asbestos up there; of course, they say asbestos is bad for you - you get cancer working around it (Kier 1979:7).

During World War II, the Idria mines were one of the most important mercury extraction sites in the world for munitions and batteries manufacturing (Gilbert 1984:37). However, a very large wildfire in July 1942 put a strain on quicksilver production at Idria. As the mines were important to the war effort, two hundred soldiers from Fort Ord were deployed to help get control of the wildfire (Gilbert 1984:38).

On large linear feature related to the mercury mining operations at Idria still exists today on public and private lands in the CCMA (Figures 3.13-2 and 3.13-3). It is the remains of two aerial trams that serviced the Aurora and San Carlos mines:

> …the road from the San Carlos Mine to the furnaces was a circuitous one, and the hauling of the ore to the furnaces proved too costly. For this reason, the company constructed a two-mile tramway from the San Carlos Mine to the reduction works. The tram began operating in September 1915, marking the first time since 1864 that workers roasted ore from the San Carlos Mine in the furnaces. The tramway had thirty buckets, capable of holding 1,000 pounds of ore per bucket. The tram descended 2,130 feet in elevation between terminals and could carry twenty tons of ore hourly (Gilbert 1984:25).

**Figure 3.13-2**: Aerial Tram in service from New Idria to San Carlos Mines 1942 (A. Feininger, Office of War Information, National Archives).

**Figure 3.13-3**: Historic Aerial Tram Structure near San Carlos Peak 2007
(R. Tiffen, California Archaeological Site Stewardship Program).

The Aurora mine site, also known as the Morning Star mine (CA-SBn-192H ), was discovered by Mexican prospectors in 1853 looking for silver but who instead found mercury. Part of the New Idria complex, Aurora was mined throughout its history primarily for mercury and later for chromium. It was worked intermittently until 1911 with other concentrated mining efforts occurring between 1915-1917 and 1930-1943. Smaller scale production continued into the mid-1950s. In 1911 a rotary furnace was installed, but due to technical and logistic supply problems the furnace only ran for one day. Several structures that related to the mining industry at Aurora have been destroyed by other miners seeking material to reuse, dismantled by the BLM for safety reasons, or vandalized by visiting users to the CCMA. The Aurora Mine was in part the inspiration for Bret Harte's 1878 literary work *The Story of a Mine* (USDI 2005).

Another example of historic mercury production in the CCMA was the Alpine Mine, once known as the Esmeralda mine. Regular mercury production began here in 1912 with concentrated output generated sporadically from 1912-1914, 1916-1917, 1928, 1932-1936, and finally in 1945-1950. In 1915 a twenty-ton capacity Scott furnace and four brick condensers were installed to process the mercury, in addition to two pipe retorts already being used, but the furnace only operated until 1917 (USDI 2005).

The townsite of Picacho was a small mercury mining community located on Picacho Creek south of San Benito Mountain. After the Picacho Mine was discovered in 1858 by Edward C. Tully and Wiley Williams, the town grew to three hundred residents in size. A U.S. Post Office opened in 1869 to serve

Picacho but closed in 1880 when postal services were redirected to the Erie Post Office in Hernandez Valley. Adherble Button, a resident of Hernandez Valley, managed the mine from 1871 until 1881. During this period the mine remained inactive until a new road was constructed to the mine in 1878 (Iddings 2005d). A visit by the United States Geological Society (USGS) in 1884 described the Picacho area:

> Within a few miles of the area mapped and to the southwest, several mines have been opened and again abandoned. The Picacho is in the usual contorted, highly indurated rocks, partly silicifled and partly converted into carbonates. The ore appeared to have occurred in cracks across the strata and along the partings. It is said that the first continuous quicksilver furnace ever built in the State was erected here by Mr. John Roach. This structure was still in place at the time of my visit, in 1884, and substantially in the same condition as when it was examined by Mr. Goodyear thirteen years earlier. Several pounds of quicksilver still remained in the wooden condenser, showing how slowly quicksilver must volatilize, even at the high temperatures which prevail in this region during the summer. Near Clear Creek also are two mines, or prospects, at which ore associated with rocks of the same type as at the Picacho was extracted (Becker 1888:309).

The mine was originally referred to as Picachos or Los Picachos. In 1902 it became known as the Ramirez Mine, later renamed the Hernandez Mine after 1913. The last known mining work occurred in 1939 (Iddings 2005d).

By far, cinnabar and mercury was the predominant mineral material historically extracted from the CCMA region. However, several other important minerals were also mined including magnesite, chromite, and asbestos. A large magnesite deposit near Sampson Peak was worked extensively during the early to mid 20$^{th}$ century (Figure 3.13-4). Magnesite was used in flooring and for electrical insulation applications. The Butler Estate Chromite Mine which opened in 1954 was the largest commercial chromite mine in the CCMA. A small "chromite boom" occurred in the CCMA during the 1950s-1960s as a reaction to the need for metals in post- World War II domestic automobile production. There have been at least three significant asbestos mines in the CCMA since the 1950s, namely the Railroad Mine (a.k.a. Johns-Manville Union Carbide Mine), the Atlas Mine, and the KCAC Mine (King City Asbestos Company). The Railroad Mine and Atlas Mine are located on private land but are surrounded by BLM public land, and both mines were designated as EPA Superfund sites under CERCLA. The KCAC Mine is also on private land and was the last active asbestos mine in the United States; the mine closed in 2002. Asbestos was traditionally used as an insulator material because of its durable "fireproof" nature.

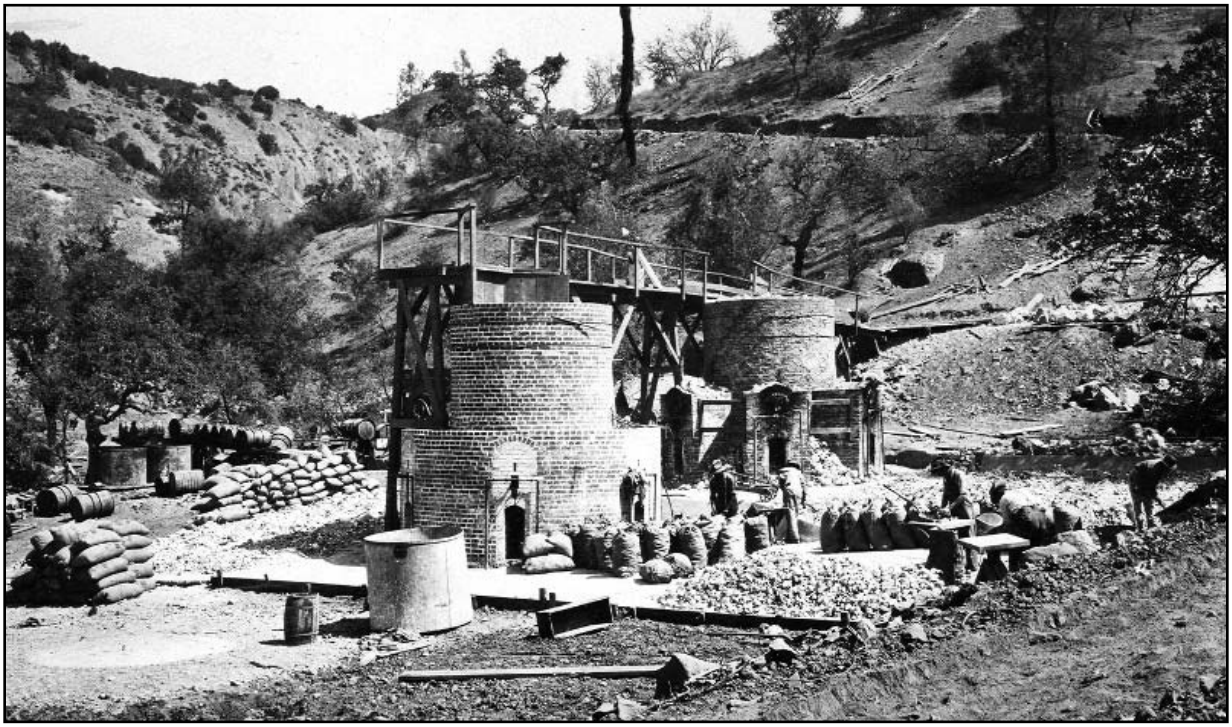

**Figure 3.13-4**: Hoffman-Price Magnesite Kilns near Sampson Peak 1917 (R. Stone, USGS).

## 3.13.4 Current Conditions and Trends

### 3.13.4.1 Current Conditions

Archeological sites and other cultural resources are classified by the BLM into specific use allocation categories, each with a desired outcome. Refer to Table 3.13.4.1.A below:

**Table 3.13.4.1.A: Cultural Resource Use Allocations and Desired Outcomes**

| Use Allocation | Management Actions |
|---|---|
| Scientific Use | Permit appropriate research, including data recovery |
| Conservation for Future Use | Propose protection measures/ designations* |
| Traditional Use | Consult with tribes; determine limitations |
| Public Use | Determine limitations, permitted uses* |
| Experimental Use | Determine nature of experiment(s) |
| Discharged from Management | Remove protective measures |
| * Managers may impose safeguards against incompatible land and resource uses through withdrawals, stipulations on leases and permits, design requirements, and similar measures which are developed and recommended by an appropriately staffed interdisciplinary team. | |

In resolving conflicts between competing land use allocations with the potential to adversely affect cultural resources, the BLM shall consider all prudent and feasible alternatives to avoid adverse effects on historic resources. Where such alternatives require undue cost or are incompatible with undertaking goals, the BLM shall balance goals, considering the magnitude of the harm to the resource, the significance of the resource, the effect of mitigation activities on the competing use allocation, and public sensitivities.

Benefits from the use of cultural resources may derive directly from the actual places on public lands, but also indirectly from the information - documents, records, or museum collections - that result when these places are recorded or scientifically investigated. These "information benefits" include an increased knowledge about past and contemporary cultures through formal archeological, anthropological, or historical study. Socio-cultural benefits may accrue to the general public or to a specific cultural group as a result of studying or interpreting resources that are representative of a group's culture and history. Economic benefits may come about as a result of Heritage Tourism efforts that incorporate these cultural resources.

There are also recreational and/or inspirational benefits; outdoor enthusiasts such as horseback riders, mountain bikers, hikers, and photographers use cultural resources as a focus for their personal recreation. For many of these recreationists, the benefits they derive are an increased sense of place and an increased connectedness to, and appreciation for, their historical roots or other sense of place. Heritage education programs serve to inspire and stimulate the public across a broad spectrum of subject areas while improving knowledge and respect for other cultures. Increasingly, cultural resource materials are being used to improve student reading, writing, mathematics, reasoning, and higher order thinking skills through the development of lesson plans, hands-on activities and multi-media products.

Previous Studies and Planning Decisions

In the "Affected Environment" section from a previous off-highway vehicle (OHV) impacts study for the Laguna Mountain Area in 1981, a discussion of the physical effects to cultural resources - specifically archeological sites - is still largely applicable today:

> Those archeological site types which are least susceptible to [OHV] impacts are bedrock mortars. Midden soil deposits and their constituents' surface and subsurface artifact assemblages, and housepit features are all quite fragile and highly susceptible to direct impact from [OHV] activities. These activities cut into such cultural resources, alter constituent relationships both vertically and horizontally, cause artifact breakage and fragmentation, and can initiate and/or accelerate erosional displacement of site components. Indirect impacts in the form of casual surface collection and purposeful vandalism can occur as well. Although hill-climbing activities are usually the most surface-disturbing, most archeological sites do not occur on steeper slopes. Gentler slopes, flats, and hydrologic features do contain the majority of sites and would probably focus vehicular presence and activity both atop and around archeological sites, thus, potentially causing the direct and indirect impacts mentioned above. In short, if an area or route is to remain "open," this generally results in higher maintenance costs; involving site monitoring, perhaps stabilization, etc. By contrast, when a route or area is designated "closed," there are lower costs associated with maintenance and protection (USDI 1981:21-22).

In 1968 BLM withdrew the Clear Creek Canyon bottom from further mineral entry and development previous allowable under the 1872 Mining Law (USDI 1978:12). The first BLM cultural resources survey in the CCMA was in 1975, completed by California State University Stanislaus. The inventory completed a general reconnaissance in three main canyons of the CCMA: Clear Creek, Picacho Creek, and Byles Canyon. It was determined that Clear Creek Canyon received "the brunt of human impact"

attributed to mining, road construction, and OHV use (Napton 1975:3). As observed in Clear Creek Canyon:

> ORV [OHV] activity has effected [sic] archeological sites on the flatlands near the creek, for example ORV-Four [CA-SBn-59] and South Fork site [CA-SBn-67], and on the uplands, for example ORV-Three [CA-SBn-58]. A secondary effect of ORV [OHV] utilization has been a large influx of campers. Site ORV-Two [CA-SBn-57] and Site ORV-Fifteen [CA-SBn-64] are located in areas utilized for camping (Napton 1975:2).

In Picacho Creek canyon, observed impacts were less severe and "restricted to mining activities at the head of Picacho Creek, the Picacho Mine, and the Saint Thomas Mine at the lower end" of the canyon (Napton 1975:3). In 1975 the mouth of the canyon had been cut off from vehicle traffic because there was a private residence (Kennedy Ranch); observed OHV impacts were seen on "hills north of the creek" (Napton 1975:3). In the 1980s this private residence was sold to a private motorcycle club (Salinas Ramblers) that has participated in OHV events and free riding throughout the CCMA since the 1960s. In Byles Canyon which opens up into the Hernandez Valley, only three OHV single-tracks were observed.

The inventory study concluded that impacts to cultural resources resulted from "three agencies" – natural erosion, mining and prospecting, and recreational vehicles (Napton 1975:16). At the time, the study recommended that "controlled collection of archeological materials is probably the only effective form of mitigation applicable in the Clear Creek area in view of the existing circumstances" (Napton 1975:17).

In 1981 the first formal attempt at OHV designations for the CCMA (at that time the "Clear Creek Recreation Area") was created using data from the 1975 California State University Stanislaus inventory and an informal BLM inventory in 1980. The two studies located a total of 23 sites on public land, twelve of which were regarded as significant enough to be considered eligible for listing in the National Register of Historic Places (NRHP). These archeological sites were prehistoric habitations and camps with bedrock mortars, rockshelters, caves, isolated artifacts, midden soils, and petroglyphs. All of the sites had received some degree of human disturbance, and many were "in danger of complete destruction as a direct or indirect result of ORV [OHV] activity" (USDI 1981:28).

The OHV designation for CCMA was allowed, but not without some impacts to cultural resources. Two categories of impacts were identified: direct and indirect. It was determined that uncontrolled OHV use "in the past" and at present was "causing adverse impacts to the cultural resources within the Clear Creek ORV [OHV] area…Impacts range from complete destruction of these resources to localized pot hunting of certain sites" (USDI 1981:35). Direct impacts included activities such as OHV trails through archeological sites and camping on top of them. Indirect impacts were brought about by "access being created to potential and known cultural resource sites and areas," primarily resulting in the looting and vandalization of those sites and resources (USDI 1981:36). The decision under all OHV designation alternatives was that significant archeological sites would be protected, and site-specific protection would be most expensive under the "open" and "partial closure" alternatives and least expensive under the "closed" alternative. Furthermore, increased visitor use and access into areas designated as "open" would require more extensive protection of sites (USDI 1981:26).

The CCMA was historically bounded by smaller Planning Area units which the BLM used to characterize and manage the region. In addition to the 1975 cultural resources inventory within the CCMA, these other Planning Area units were also surveyed. Lands in the Laguna Mountain Area were cursorily examined in 1980 for cultural resources by inspecting existing vehicle routes and adjacent areas. The results included the discovery of one "occupation site with midden" on BLM land (postulated to be associated with the Chalon Costanoan) and three additional occupation sites containing "midden, lithics, BRMs, housepits and groundstone," presumably not located on BLM land (USDI 1981:16). In the former

Call Mountain-Hernandez Valley Management Area, the known sites at the time were in poor to good condition; road construction, uncontrolled OHV use, and unauthorized artifact collection were the main threats to cultural resources (USDI 1984:32). Impacts to archeological sites in the former Ciervo Hills-Joaquin Rocks Management Area were primarily a result of cattle grazing, road construction, natural weathering and erosion, unauthorized artifact collection, and uncontrolled OHV use (USDI 1984).

Management Issues and Goals for cultural resources identified in the first Hollister Resource Management Plan (RMP) in 1984 were brief but clear. The Issue: direction for inventory, management, and interpretation of cultural resources. The Goal: "Ensure that cultural resources of high scientific, interpretive, or sociocultural significance are not destroyed by other land uses" (USDI 1984:12). Native American values identified in the 1984 RMP were defined to "revolve around the protection of Indian burials and access to cemeteries" (USDI 1984:8). In essence these issues, goals, and values have not fundamentally changed in 25 years.

General mitigation and monitoring protocols for all resources within the CCMA were established in Appendix I of the 1984 Hollister RMP. Cultural Resources (Item #5) prescriptions called for photo monitoring (USDI 1984:99). The RMP provided little specific guidance for cultural resources management in the CCMA other than existing legislation. Within the CCMA Planning boundary in 1984 there were approximately twenty-five known archeological sites on public land in a "very good" to "destroyed" condition. Impacts from historic mining, road construction, uncontrolled OHV use, soil erosion, and unauthorized artifact collection were identified as the main threats to cultural resources (USDI 1984:52).

Three decisions to be implemented specific to cultural resources management in the Clear Creek - Condon Peak Management Area were outlined in the 1984 Hollister RMP: (1) determine the National Register eligibility for the White Creek Archeological District; (2) develop a Cultural Resource Management Plan for White Creek, focusing on the effects of wildfires and OHVs; and (3) implement the "Clear Creek ORV Designation and Implementation Plan," which directed fencing and barrier protection for NRHP-eligible archeological sites (USDI 1984:57-58). To successfully implement these Decisions, the RMP also called for data retrieval (e.g., excavation) on "approximately 3 sites" (USDI 1984:59).

As part of the 1984 Hollister RMP recommendations, a Clear Creek Management Plan was developed and approved in 1986 with a Record of Decision (ROD). All of the cultural resources management decisions from the Clear Creek - Condon Peak Management Area in the 1984 Plan were restated in the 1986 Plan and ROD. Subsequent amendments to CCMA plans do not address cultural resources as a separate planning issue (including a 1995 FEIS with 1999 ROD, and a 2005 FEIS with 2006 ROD), as the 1986 Management Plan adequately covered the basic treatments for cultural resource identification and protection.

Within the 1986 Clear Creek Management Plan and ROD, "Protective Measures #4" mandated the installation of vehicle barriers where necessary (USDI 1986a:iv). The Plan also addressed "on-the-ground management and needs and actions for the Clear Creek Serpentine Area of Critical Environmental Concern," specifically for (in original order):

(1) cultural resources
(2) wildlife habitat
(3) recreation
(4) asbestos hazard
(5) watershed issues
(6) endangered plant habitat
(7) hobby gem and mineral collection, and

(8) unique soils (USDI 1986a:1).

The overall management goal for the 1986 Clear Creek Management Plan and ROD was to "Protect significant cultural, historical and visual resource values as well as the unique soil and vegetation of the area" principally based on the belief that the cultural resources of the region were regarded as "irreplaceable aspect" of the area (USDI 1986a:2-3). "Objective #1" for area-wide (non-ACEC) management was to ensure appropriate measures for protection, data retrieval, and interpretation of cultural resources and to provide for opportunities for academic research (USDI 1986a:4). These planned actions for lands outside the ACEC were threefold: continued protection of White Creek (maintaining road closure until evaluated), data retrieval at three sites (chosen for management needs and ability to address research questions), and the use of fences/barriers to protect sites from human-caused or other disturbances (USDI 1986a:8). Appendix 2 of the 1986 Management Plan outlined "Planned Cultural Resource (Site Management) Projects," which included the annual inventory of "high sensitivity areas" (500ac/yr) with site monitoring and completion of the data retrieval by the end of fiscal year 1987 (USDI 1986a). Neither planned action was finalized.

In 1986 a separate Cultural Resource Management Plan (CRMP) was developed for the former Ciervo Hills-Joaquin Rocks Management Area, public lands managed adjacent to the CCMA (CRMPs are now referred to as Cultural Resource Project Plans – CRPPs). This particular Plan outlined measures to protect eight archeological sites identified in the region primarily in response to "ongoing impacts from road building, grazing, erosion, natural weathering, and ORV [OHV] use" (USDI 1986b:1). The eight sites were located in the Ciervo Hills (CA-Fre-1386, CA-Fre-2568, CA-Fre-2569), Cantua Creek (CA-Fre-3048/H, CA-Fre-3053, CA-Fre-3054) and Joaquin Ridge (CA-Fre-83, CA-Fre-2244) east of the CCMA. The CRMP stated that "most of these actions are occurring on a limited scale, and are not resulting in significant damage to the resources at this time" (USDI 1986:4). One exception to this was Birdwell Rock (CA-Fre-2244), a rock art site with petroglyphs becoming degraded due to weathering of the sandstone surface.

The following short-term management objectives were identified in the 1986 CRMP: (1) monitor the sites, (2) inventory or cultural resources on a regular basis, (3) record Birdwell Rock in detail; (4) protect the sites through the use of fences/barriers when significant impacts are detected (determined effective in mitigation for cattle and OHVs), and (5) if protection means are ineffective, then initiate data recovery (USDI 1986:4). The long-term management objective was to "preserve the resources in place for future socio-cultural and scientific use" (USDI 1986:4).

BLM monitors these sites on a semi-regular basis, biannually or as projects allow. The areas around these sites are inventoried under the guidance of Section 110 of the National Historic Preservation Act as much as possible, and are protected as necessary from natural causers (vegetation removal for fire) and human causers (truncated road lengths to limit users from accessing sensitive sites). Site CA-Fre-2244, Birdwell Rock, was formally documented and placed on the National Register of Historic Places in 2001**.**

Archeological site monitoring by Field Office staff, augmented (as appropriate) with an excellent Volunteer program, constitutes the primary method of data gathering for determining whether or not protective measures need to be incorporated or enhanced for a particular cultural resource. The California Archaeological Site Stewardship Program (CASSP) is the volunteer program approved by California BLM, the California Office of Historic Preservation (OHP), the California Department of Parks and Recreation Off-Highway Motor Vehicle Recreation Division (DPR-OHMVR), and the Society for California Archaeology (SCA). The SCA is the chief avocational and professional organization for archeological and historical research in California with over 1100 members and growing.

Artifacts that were not identified in previous cultural resource inventories have been discovered at recorded archeological sites; likewise archeological sites that were not identified in previous inventories have been discovered in areas regarded as adversely impacted by historic use. For example, a large chert projectile point was found at archeological site CA-SBn-60 in 2004 - a site that had been recorded in 1975. This point was identified and classified as a "Rossi Square-stemmed" point (Figure 3.13-5). The primary attributes of this artifact style are the pronounced square-shaped base and stem of the point. In relation to its size (approximately8 centimeters long) it was probably used to hunt large game animals. This projectile point style appears to represent an ancient tool form but falls out of favor with its uses circa 1000 BC (M. Hylkema 2008: Personal Communication 01/16/2008). Prior to this discovery the site's only recorded artifactual constituents were a single chert flake and a utilized chert core.


**Figure 3.13-5**: Rossi Square-Stemmed Projectile Point found in the CCMA (E. Zaborsky, USDI BLM).

With respect to the artifacts documented at prehistoric archeological sites within the CCMA, they appear to be inter-related based upon regional bead and projectile point typologies through time (Bennyhoff and Hughes 1987; Olsen and Payen 1968, 1969). Functionally the combination of sites represent a range of domestic subsistence behavior that included plant collection and processing, animal hunting and processing, trade material manufacture, intensive short-term habitation, and interment. The full extent of prehistoric time depth is not fully understood for the CCMA. To date there are approximately seventy-five cultural resource locations in the CCMA. There have been two archeological excavation data recovery projects conducted at prehistoric sites in the CCMA. These studies attempted to mitigate the effects of vandalism at site CA-Fre-1333 (Breschini et al 1983) and provide invaluable baseline data for the region at site CA-Fre-1331 (Zaborsky 2006). These research efforts were compliant with previously established CCMA Management Goals stated in the 1986 Clear Creek Management Plan and ROD (USDI 2005:3-36).

Place names in the CCMA, like Indian Hill, provide a glimpse into the possible previous activities at a given location. At this place there are at least two origins for the name "Indian Hill." One story is that it was so named because of a large Native American village site that once existed there in Clear Creek Canyon. This site was apparently known among local residents as artifacts were collected from this place (Iddings 2008: Personal Communication 11/28/2008). The other naming origin story for Indian Hill recounts that at least since 1965, the site had been occupied by a Native American man from Arizona who operated 2 small mercury retorts to earn a living. During 1967-1968, this individual was arrested by the San Benito County Sheriff's Department as he was wanted for murder in Arizona. Apparently he had been hiding from law enforcement authorities in the CCMA (Bunning 2008: Personal Communication 11/21/2008).

Another interesting namesake is Jade Mill, and like Indian Hill is located in Clear Creek Canyon. Jade Mill is currently a BLM limited facility camping site, but the area was once a mill site for jadeite material during the 1950s and 1960s. During this post-World War II era many people lived in the Canyon operating small mercury retorts to sustain themselves. Evidence of these small habitations and millsites have been lost to erosion, vandalism, or were cleaned-up under the BLM Abandoned Mine Lands remediation program. Jade Mill, the Alpine Mine, and the Xanadu Mill were sites in the Clear Creek Canyon watershed that were remediated to eliminate point-source pollution of mercury into larger watershed systems (e.g., Pajaro River watershed) (Figure 3.13-6). Many of these small sites were also located on top of earlier claims. For instance, the Jade Mill area had once been a chrysotile asbestos mine site operated by the "San Benito Asbestos Company" formed in 1917 (Fowkes and Iddings 2008:15).

**Figure 3.13-6**: Xanadu Millsite prior to Abandoned Mine Lands clean-up (T. Moore, USDI BLM).

### 3.13.4.2 Special Considerations

Clear Creek Serpentine Area of Critical Environmental Concern

The Clear Creek Serpentine Area of Critical Environmental Concern (ACEC) within the Clear Creek Management Area (CCMA) roughly approximates the boundary for the Hazardous Asbestos Area (HAA). While there is no stand alone ACEC Management Plan, there are significant planning issues within the ACEC including cultural resources management. Under the 1986 Clear Creek Management Plan and Decision Record, policies and guidance for the management of prehistoric (and to a lesser extent historic) resources were established - with an emphasis on physical and administrative protection and data retrieval as a mitigation measure. Refer back to Section 3.13.4.1 for more specific information.

San Benito Mountain Research Natural Area

There are at least three prehistoric sites within the San Benito Mountain Research Natural Area (SBMRNA). These sites are small prehistoric lithic scatters, and at least one site has an unrecorded historic - possibly protohistoric - component. One of the sites is split between public and private land. Native American issues related to the SBMRNA focus on continued and future access to the area for traditional uses (non-Federally recognized groups). Current management direction for cultural resources in the SBMRNA is to protect all cultural resources, encourage public partnerships for research and education, and consult with Native Americans from local tribes.

Another observation between native plants and archeological sites was made at CA-SBn-212, located inside the Clear Creek Serpentine ACEC but out of Clear Creek Canyon and in the upper San Benito River corridor. The site has produced several temporally diagnostic surface artifacts ascribed to tool forms used between 3,600 and 1,600 BP which correlates to the "Pacheco A" complex of the San Luis-Little Panoche regional artifact chronology. In 1997 no other prehistoric activities and/or artifact types had been identified at this site. In addition to its possible great antiquity, the botanical setting at the site also deserved attention. It was noted that the archeological deposit occurred "almost exclusively within the extent of a large occurrence of rabbit brush [*Chrysothamnus spp.*]…Discussions with the Area Botanist have concluded that while rabbit brush is not unknown for the region, its occurrence this far west may be unusual, as is its occurrence on serpentine soils…its ethnogrpahic use among Native Americans is well documented within California" (L. Hylkema 1997).

At present probably the most interesting association between cultural and botanical resources is the relationship of prehistoric archeological sites and *Camissonia benitensis* (CABE) populations. It is well documented that mining during the 1860s - 1940s "impacted a sizeable portion of suitable habitat for the species" and modern-day formal and informal campsite areas have "eliminated most of the remaining habitat" (Taylor 1990:1). Early camps associated with mining activity were located on terraces adjacent to Clear Creek Canyon "doubtlessly had great negative impact on populations of C. benitensis, but the degree of such impact is purely speculative…Judging from the degree of past mining disturbance evident today, somewhat over half of the alluvial terraces along Clear Creek were impacted by this activity" (Taylor 1990:69). Even before intensive recreation management by the BLM occurred in the CCMA, by 1963 many areas had been impacted by camping activities "adjacent to Clear Creek, the headwaters of San Benito River, White Creek and in the Spanish Lake Area… there is heavy littering by the present campers" (USDI 1963:10).

The geographic distribution of CABE is generally "restricted to flat to gently sloping alluvial terraces" (Taylor 1990:24). At present, there are at least fifteen archeological sites that are directly associated with CABE Populations.

Native American Values

There are no Federally recognized tribal entities residing within the Planning Area boundary. However, the Tachi Yokuts Tribe of Santa Rosa Rancheria in Lemoore, Kings County, ranged prehistorically and protohistorically within the foothills of the western San Joaquin Valley and Diablo Range. The Hollister Field Office consults with the Federally recognized Tachi tribe as undertakings or proposals have the potential to affect their ancestral lands. There are also several non-Federally recognized tribes, groups, and individuals of Ohlone/Costanoan descent that the Hollister Field Office consults with as Bureau policy dictates: to make good-faith efforts in consultation when projects have the potential to impact Native American archeological sites, native plant material collection areas, sacred sites, or other places of spiritual or socio-cultural value. Refer back to Section 3.13.2.2 "Native American Values."

A sacred site is defined by the BLM as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site" (DM 8120; from Executive Order 13007, Section 1(b)(iii)).

National Register of Historic Places

The National Register of Historic Places (NRHP) is the official list of the Nation's historic places "worthy of preservation." Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service (NPS) which is part of the U.S. Department of the Interior (http://www.nps.gov/nr/). National Register properties are distinguished by having been documented and evaluated according to uniform standards and set of criteria. These criteria recognize the accomplishments of all peoples who have contributed to the history and heritage of the United States and are designed to help state and local governments, Federal agencies, and others identify important historic and archeological properties worthy of preservation and of consideration in planning and development decisions.

Below is a list of potentially eligible properties for listing to the National Register of Historic Places (NRHP) within the CCMA Planning boundary. These are geographic/physiographic areas which contain one or more cultural resources ("properties") that are interrelated, some may even be considered a district:

| ***Name of Resource/Property*** | ***Era(s) of Significance*** |
|---|---|
| White Creek | Prehistoric |
| Condon Peak/Upper Los Gatos Creek | Prehistoric |
| New Idria Townsite | Historic |
| San Benito Mountain Natural Area | Prehistoric, Protohistoric, and Historic |
| Clear Creek Canyon | Prehistoric and Historic |
| Hernandez Valley | Prehistoric and Historic |
| California State Gem Mine | Historic |
| Los Picachos | Prehistoric and Historic |
| Larious Canyon | Protohistoric, Historic, and Ethnographic |
| San Carlos Bolsa | Prehistoric and Historic |
| Cantua Creek | Prehistoric, Protohistoric, and Historic |

| | |
|---|---|
| Joaquin Ridge / Joaquin Rocks | Prehistoric, Historic, and Ethnographic |
| Upper San Benito River | Prehistoric, Historic, and Ethnographic |

The above locations are intended to be general points of reference for discussion and are not yet properly defined historic districts or properties with recognized boundaries. Some of these historic locations are not in public ownership or are partially on private property. In the case of the New Idria townsite and California State Gem Mine, these properties are entirely on private land and would require approval of the land owner for nomination to the NRHP. Of note, the New Idria Gould Rotary furnace structure has been proposed to the NRHP for listing, and its nomination is currently under review by the California State Office of Historic Preservation. The Gould rotary furnace was first developed and used extensively for mercury mineral ore processing at New Idria – a technological innovation that was mimicked by other mining industries around the world during the 20th century (Figure 3.13-7).

**Figure 3.13-7**: Gould Rotary Furnace at New Idria 1942 (A. Feininger, Office of War Information, National Archives).

Traditional Cultural Properties

The NRHP contains a wide range of historic property types that reflect the diversity of the nation's history and cultures. Typically buildings, structures, sites, historic districts, landscapes or individual objects can be listed to the Register if they meet the criteria specified in the Criteria for Evaluation (36 CFR 60.4).

One level or type of cultural significance a property may possess and may make it eligible for inclusion to the NRHP is “traditional” cultural significance. "Traditional" in this context refers to “those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice” (Parker and King 1998:1). According to the BLM, a “tradition” is defined as a “longstanding, socially conveyed, customary patterns of thought, cultural expression, and behavior, such as religious beliefs and practices, social customs, and land or resource uses. Traditions are shared generally within a social and/or cultural group and span generations” (Department Manual 8120). This definition does not conflict with or challenge the TCP concept.

Traditional cultural significance of a historic property by definition is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include:

> A location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
>
> A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
>
> An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
>
> A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
>
> A location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity.

A Traditional Cultural Property (TCP) is eligible for listing to the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community” (Parker and King 1998:1). Traditional cultural values are central to the way a community or group defines itself, and maintaining those values is often vital to maintaining the group's sense of identity. Properties with traditional cultural value ascribed to them often take on this kind of vital significance. Typically any damage to or infringement upon them is “perceived to be deeply offensive to, and even destructive of, the group that values them” (Parker and King 1998:2).

TCPs can be difficult to recognize and define. A traditional ceremonial location may look like just a mountaintop or a lake; a culturally important neighborhood may look like any other group of houses, and an area where culturally important technological, economic, or artistic activities have been carried out may look like an ordinary building, field, or stream. TCPs may not necessarily be revealed through standard archeological or historical surveys. The existence and significance of TCPs often can only be ascertained only through interviews with users of the property or through other forms of ethnographic research. The subtle nature of TCPs “make it easy to ignore them; on the other hand it makes it difficult to distinguish between properties having real significance and those whose putative significance is spurious” (Parker and King 1998:2).

The concept of the TCP was originally applied with a focus to Native American properties, but the intent of TCPs "should not be taken to imply that only Native Americans ascribe traditional cultural value to historic properties…Americans of every ethnic origin have properties to which they ascribe traditional cultural value, and if such properties meet the National Register criteria, they can and should be nominated for inclusion in the Register" (Parker and King 1998:3).

Some National Register properties can be less than fifty years in age, only as long as their significance can be adequately demonstrated under the general NRHP Criteria. This test of "exceptional importance" for a property ultimately determines its eligibility for listing in the National Register - a principle which safeguards against the listing of properties which are only of "contemporary, faddish value" and to ensure that the National Register is "a register of **historic** places" [emphasis theirs] (Sherfy and Luce 1998:1).

As a general rule "historic" properties that have achieved significance within the past fifty years are not eligible for listing to the National Register because the Register is "intrinsically a compilation of the Nation's **historic** resources that are worthy of preservation" and "does not include properties important solely for their contemporary impact and visibility" [emphasis theirs] (Sherfy and Luce 1998:1). It is nearly impossible and impractical to evaluate the historical impacts or relative value of a property immediately after an event occurs or a building is constructed; the passage of time is necessary "in order to apply the adjective 'historic' and to ensure adequate perspective" (Sherfy and Luce 1998:1).

Naturally, the more recent a property has achieved a recognizable level of significance the more difficult it is to demonstrate its "exceptional importance" (Sherfy and Luce1998:7). "Exceptional importance" does not necessarily imply a national-level of significance, rather it is a "measure of a property's importance within the appropriate historic context, whether the geographic scale of that context is local, State, or national" (Sherfy and Luce 1998:8). In the evaluating and justification of "exceptional importance" it is important to remember that the level at which this evaluation is made is "directly related to the geographic level or 'scale' of the property's historic context" (Sherfy and Luce 1998:8).

Arguably there are at least three distinct Communities that indentify the CCMA in a distinct way with their own distinct meaning: the California Indian/Native American Community ("The Land"), the OHV Recreation Community ("The Creek"), and the Gem & Mineralogical Society Community ("Clear Creek"). These three Communities use the CCMA in a fashion that fits well with the definition of a TCP, and has demonstrated this relationship in a meaningful way with the CCMA as a property over time.

In a request for public comments about the future use of and access into the CCMA, a total of fourteen Comment Letters were received from various clubs and organizations that had a self-perceived stake in the disposition of management at "Clear Creek." Nine letters came from off-highway vehicle (OHV) groups (American Motorcycle Association (AMA), District 36; BlueRibbon Coalition (BRC); California Association of 4-Wheel Drive Clubs, Inc. (CA4WD); California Off Road Vehicle Association (CORVA); Hayward Motorcycle Club, North Bay Motorcycle Club; OHV Consortium rep. by Moore, Turcke, & Smith Chartered; Sacramento Top Gun Jeep Club, Timekeepers Motorcycle Club), three letters came from gem and mineralogical societies (Bay Area Mineralogists (BAM); California Federation of Mineralogical Societies; Searchers Gem and Mineral Society), and one letter each from a botanical society and equestrian society (California Native Plant Society (CNPS) and California Equestrian Trails Lands Council, respectively) (USDI 2008).

A fourth community, the Hunting Community, is another set of people that could make a case for a Traditional Cultural Property relationship with the CCMA. The presence of this group is notable: technically this traditional use of the CCMA spans thousands of years, but the continual practice of use is not well documented - modern hunting methods and tools differ from prehistoric hunting techniques. Today's hunting trends focus around use of the Condon Peak area in the CCMA for pig, upland game

birds like quail, and big game like deer. The San Carlos Bolsa area and even Clear Creek Canyon are popular for deer and pig hunting, and to the east of the CCMA on Joaquin Ridge deer hunting is very common. Early data from the region collected by the BLM indicated hunting as a recreational pursuit at least by the 1960s (USDI 1963:4).

*California Indian/Native American Community*

The CCMA has been used for thousands of years by local Native American tribal groups, including the Yokuts and the Costanoan/Ohlone. They lived, hunted game for food, quarried minerals for tools and pigment paint, camped for short-term and long-term intervals, harvested plants for food, fuel, and medicines, and conducted socio-religious ceremonies that maintained their cultural identity. The evidence of these use-patterns is preserved in archeological sites, but also in California Indian traditions passed down between the generations. Some of these traditions were only known through oral history and were not documented in the ethnographic studies conducted by Anthropologists in the late 19th and early 20th centuries (Chapter 3.13.3.2).

Identified through consultation with California tribes, tribal groups, and individual Native Americans, there are several TCPs within the CCMA (Figure 3.13-8). In fact, the CCMA itself should be regarded itself as a single TCP for this Community. For the purposes of this RMP the exact locations and details of the nature of these tribal use areas are not discussed as part of BLM practice and to avoid unanticipated impacts to Native American practitioners. Needless to say that many places in the CCMA are associated with special uses, and to the east of the CCMA in the Joaquin Ridge area.

**Figure 3.13-8**: California Indian Traditional Use Area within the CCMA
(E. Zaborsky, USDI BLM).

*Gem and Mineralogical Society Community*

The CCMA has been an important location for over one hundred years, used by a special group of people who are interested in the science and beauty of geology. The people of this community search for and collect rock, mineral, and gem specimens from all over the world and are not ascribed to a single ethnicity, gender, economic class, or level of formal education. This community is known to gather together and share their experiences, finds, and sometimes trade collected items for other geologic items or for economic profit. Many of these community members join one another in regional organizations or private clubs. For the purposes of this discussion, this community shall be identified as the Gem and Mineralogical Society Community, and it is the whole CCMA which provides a significant part of their community identity.

Some of the best information about this community of gem and mineral enthusiasts, collectors, and scientists whom view the CCMA as a special place and part of their group's identity was addressed in an October 2007 comment letter to the BLM from William Spence, President of Bay Area Mineralogists. It should be noted that some of the individuals in this community refer to themselves as "rockhounds," a term which is also used outside of the community to identify a mineralogical enthusiast that could be a novice or even a professional in the geological sciences:

> BLM should understand that without exaggeration CCMA is a world class rockhounding destination…Since WWII the discoveries of new minerals here have been made primarily by the efforts of rockhounds. Free access to CCMA for rockhounding is essential for the continuance of the hobby in northern California and continued research and discoveries related to the geology and mineralogy of San Benito County (USDI 2008).

Spence went on to describe more about their community; members are from both genders and visit the CCMA in small groups of "2 to 8 people, sometimes in larger groups but not often." Visitation to the CCMA by rockhounds may be as much as ten times per year but "the norm is probably between 1 and 3 visits per year." Another important aspect of the community is that "most rockhounds are over 40 years of age" (USDI 2008).

At least forty-five different species of rocks and minerals that are desired by rockhounds can found within the CCMA, including amethyst, benitoite, fresnoite, jadeite, plasma agate, quartz, and serpentine (Iddings 2004: 119-133). Some of the earliest documented recreational use of the area by the BLM identified the area as "intensively by gem and mineral clubs" (USDI 1963:4). Moreover, many universities and colleges have used the CCMA as a field school site since the 1900s, including local institutions like West Hills Community College in Coalinga, San Jose State University, the University of California, Berkeley and Santa Cruz campuses, and Stanford University.

The practice of being a "rockhound" and the participation in gem and mineral societies or clubs began in earnest during the early 20$^{th}$ century as an academic pursuit in California, and by the 1930s was a popular hobby. "Rockhounding" became more popular following World War II as more clubs and societies formed around the state (Spence 2008: Personal Communication). The CCMA became a known destination for rockhounders because so many different types of rock and gem specimens were available in one geologic formation (the Clear Creek Serpentine ACEC).

One such rockhounder during this era was Phil Bolander of Oakland, California. Bolander was a gem collector who was the first to discover perovskite and diopside in San Benito County. Bolander later died of a heart attack in the early 1950s while trying to free his car from mud on Clear Creek Canyon Road (Spence 2008: Personal Communication 10/31/2008). The great variety of minerals in the CCMA has

been the draw "of many mineralogical societies over the years" but the unique gem benitoite is the only mineral that has "been intensely prospected for ever since its discovery" (Frazier and Frazier 1990:58). It is collected and prized by the rockhounding community not only for its beauty "but also its rarity…all in all, a most spectacular, unusual possession to have" (Norton 1976:32).

The mineral benitoite is only found in one locality in the entire world: the CCMA. Discovered in 1907, benitoite gems were originally mistaken for some type of diamond but that theory was soon discounted by University of California, Berkeley, geology professor George C. Louderback in 1909. Louderback published "one of the great classic papers of mineralogy and gemology: Benitoite, its paragenesis and mode of occurrence, Bulletin of the Department of Geology, University of California, vol. 5, no. 23, pp.331-380" (Frazier and Frazier 1990:56). This "much sought after publication" is famous for not only for its numerous illustrations but also for its completeness of the geological and mineralogical description of benitoite. This study was recognized world-wide and has been described as a "bright chapter in the history of science in California" (Frazier and Frazier 1990:56). Louderback himself visited the benitoite mine, known in 1908 as the Dallas Gem Mine, and collected some outstanding specimens which are still on display in the Geology Department at University of California, Berkeley (Figure 3.13-9). Neptunite specimens from the benitoite mine are recognized as some of the world's finest examples, and Joaquinite gems are unique to only the benitoite mine in the CCMA (Spence 2008: Personal Communication 10/31/2008). Louderback was not only a professor at Berkeley but also graduated from the school with a Bachelor's degree in 1986 and a Ph.D. in 1899. Louderback died in 1957 and is regarded as "one of the founders of the scientific tradition of the University of California" (Taliaferro, Buck, and Lenzen 1959; George D. Louderback Foundation 2008).

**Figure 3.13-9**: Benitoite Specimen on Display at University of California, Berkeley (E. Zaborsky, USDI BLM).

Benitoite is a barium silicate crystal with a unique triangular crystal habit, "distinctive in the mineral world for being the only known representative of the ditrigonal dipyramidal crystal class" (Wilson 2008:1). Its color can be described as "pale to dark cornflower-blue to sapphire- blue color," found in

direct association with neptunite and joaquinite and "is a special favorite among collectors" (Wilson 2008:1). Benitoite is primarily a collector's item but there is at least one industrial application for the gem: a minor amount of high quality benitoite is used to "help align and adjust electron microprobe beams" (CGS 2002:1).

In anticipation of the second annual convention of the California Federation of Mineralogical Societies in Bakersfield, January 1937, geology students William Nisson and George Switzer collected benitoite specimens from the mine and offered them for sale at the convention. Nisson became a geologist and discovered the copper mineral Nissonite east of Panoche in San Benito County (Spence 2008: Personal Communication). Switzer went on to start the Smithsonian Institution National Gem and Mineral Collection, beginning with the acquisition of the Hope Diamond in 1958. This National Collection is one of the most comprehensive in the world; it includes fifteen thousand gems, three hundred and fifty thousand mineral specimens, three hundred thousand rock and ore specimens, and thirty-five thousand meteorites (Hevesi 2008).

Switzer graduated from the University of California, Berkeley, in 1937 and then earned a Master's degree (1939) and a Ph.D. (1942) in mineralogy at Harvard University. Switzer was Chairman of the Mineral Sciences Department at the Smithsonian's National Museum of Natural History from 1964 to 1969, and had been Associate Curator of the museum's Division of Mineralogy 1948 - 1964 (Hevesi 2008). He also played a significant role in analyzing rocks brought back from the moon by the Apollo 15 and 16 space missions of the National Aeronautics and Space Administration (NASA). In the 1970s through a grant from NASA, he acquired an electron probe micro-analyzer for minerals studies. This instrument, new at the time, allowed researchers to determine a mineral's origin. Dr. Switzer and other scientists examined samples moon rock samples with the analyzer and determined that "the moon never had water on its surface and never had an atmosphere like Earth's" (Hevesi 2008). Switzer passed away this year in March 2008.

The benitoite mine site also attracted two gem collectors from Los Angeles, California, in the 1930s: Peter Bancroft and Ed Swoboda. Photographs from their trips show the original cabins built in the 1900s and a forest prior to wildfires that consumed the CCMA in the 1940s and 1950s. Both of these rockhounds became "internationally prominent mineral collectors by the 1970s" from their work the CCMA (Spence 2008: Personal Communication).

An infamous story related to the benitoite mine dates to 1938. According to rockhounds, the Italian Ambassador to the United States was interested in the gem Benitoite, and purchased the largest cut gem known at the time - approximately 6.5 carats. He intended to present the gem as a gift to Benito Mussolini, the leader of Italy who would have his country become a part of the Axis powers in World War II. Subsequent to the Allied victory in Europe, the status and location of Mussolini's gem was lost to history and its whereabouts are currently unknown (Frazier and Frazier 1990:49).

During the 1950s, the benitoite mine was operated by Clarence L. Cole of Oakland, California, who promoted and advertised himself as "Cole's Mines" in various gem and mineral journals. He subleased the mine to various parties when he was not working it himself, including Josephine Louise Scripps (1910-1992), heir to the Scripps-Howard newspaper fortune and "a dedicated mineral collector" (Wilson 2008: 4).

In the late 1970s-1980s, the benitoite mine was operated by Buzz Gray and Bill Forrest of Fresno County, California. Gray and Forrest's mining activities and publicizing benitoite to collectors had finally brought the gemstone to the attention of the general public beyond the gem and mineralogical community. In 1985 benitoite was officially declared the State Gemstone of California. Gray and Forrest purchased the mine property from the Dallas family (Hellen Dallas Read) in 1987 (Wilson 2008:5).

It is important to remember that "scientific history was made with the discovery of benitoite" because to date "no naturally formed minerals have been proven to belong to this crystal class except benitoite and pabstite, the tin analog of benitoite" (Frazier and Frazier 1990:56). Pabstite was discovered in 1963 in the Kalkar quarry of Santa Cruz County, California (now part of the University of California, Santa Cruz) and is the only known locality in the world. It was named after the late Dr. Adolf Pabst of the University of California, Berkeley, "one of the greatest of American mineraologists…and was well known as a friend of amateur mineral collecting and collectors" (Frazier and Frazier 1990:56).

In 2003 gem concentrate material was produced by a new magnetic separation system, the first instance of magnetic separation technology used to separate gems from a concentrate. The new technique was employed at the benitoite mine site and effective in isolating benitoite gems from its natrolite matrix because "only benitoite, among all the various minerals in the deposit, contains no iron." The use of this new, innovative process has finally allowed "commercial quantities of faceted benitoite became available for the first time since the early 1900s" for high-end jewelry brokers as well as a "flood of specimen material" that can be shared among the gem and mineralogical community (Wilson 2008:6).

On the County Road access to the private road to the Benitoite Mine - now referred to as the California State Gem Mine - there is a monument erected to honor the discovery of Benitoite. Constructed by the avocational historical society "E Clampus Vitus" (Monterey Viejo Chapter 1846 and James Savage Chapter 1852) and dedicated October 27, 2001, the plaque inscription reads:

> Benitoite was discovered on February 22, 1907 by James Marshall Couch while prospecting for quicksilver on a fifty dollar grubstake for shares from R. W. Dallas and Tom Sanders. On July 30, 1907, mineralogy professor George D. Louderback identified it as a new mineral species, Barium Titanium Silicate ($BaTiSi_3O_9$). He named it Benitoite after the river, county and nearby mountain range. The gem-quality crystal combines the color of a sapphire with the fire of a diamond. It looks like two studdy triangular pyramids attached at their bases; its shape is unique. It flouresces a bright deep-sky blue under ultraviolet light. Benitoite in gem quality occurs nowhere else in the world. It is associated with other rare minerals such as Fresnoite, Joaquinite, Natrolite, and Neptunite. They formed in fractures of a serpentine rock from hydrothermal solutions. Just how such solutions occurred and what other conditions caused the crystallization of these rare minerals is still not well understood. Benitoite was declared the official California state gem on October 1, 1985.

*Off-Highway Vehicle (OHV) Recreation Community*

As evidenced in visitor use data at CCMA and as witnessed in the Public Comment meetings for CCMA plan scoping in October 2007 and May 2008, there is an OHV community of several thousand people that consider the CCMA a special destination place. From the oral comments made at public meetings, in-the-field visitor contacts, and written statements provided by this community at meetings and open comment periods for planning documents, it is clear there is a history of use in the CCMA that is generational, familial, and possibly unique to this Management Area. Most of the community members live in central California and regard the "The Creek" as one of the more challenging, remote, and beautiful places to ride in the state. A history and information web site maintained by the public about the CCMA succinctly described the relationship between OHV use and the CCMA landscape:

> There is probably no place in California quite like Clear Creek for vehicle recreation. The old roads and trail provide an infrastructure for exploring the Clear Creek area. Whether you enjoy four-wheeling or dirt-biking, you will be able to find a trail to enjoy. There are roads and trails to satisfy every appetite - from easy to technically difficult. The upper elevations offer spectacular views.

> This area is also very rich in California history and because of the rugged conditions and remote location it can only be explored with OHV and dirt bikes are probably the vehicle best suited for exploring this rich and beautiful space. However, irresponsible driving can damage or destroy some these important historical artifacts. Please act responsibly while you tour this wondrous resource of the People's land (Iddings 2006).

The history of OHV use in the CCMA began unofficially with the use of mining trucks in the 20th century, which arguably created a large network of roads in the area to access mines and mill sites in the region. OHV as an established recreational pursuit did not occur in the CCMA until the 1950s-1960s. Perhaps the first motorcycle club (M/C) to "adopt" the CCMA was the Mountaineers M/C. The Mountaineers M/C was established in 1951, mostly from guys who were hillclimbers living in the San Jose area (Bunning 2008: Personal Communication). At one time the club was a recognized with the American Motorcycle Association (AMA), District 36. One of the club founders, Slim Kocher, was a Ride Leader in the CCMA for many years. Club Rides were usually held during the winters, from 1960s-1980s, and took place all over the CCMA. The Mountaineers M/C still exists today as a loose organization of dirtbike and off-highway motorcycle riders; there are no dues. In 1985 Kocher passed away and the club erected a monument to his memory in the CCMA.

Glen Haston was the primary ride leader in the CCMA for the Mountaineers M/C in the 1960s. During this era the Mountaineers cut and engineered many of the original motorcycle OHV trails in the CCMA. On Saturdays club members would cut trails with machetes and on Sunday test-ride the newly constructed trails. In the winter of 1970, extensive flooding in the Clear Creek Canyon forced the Mountaineers to ride over the hill to Idria. There they met with then-mine Superintendent Mark Ward and camped out in the town (Bunning 2008: Personal Communication). This began a pattern of more extensive use in the CCMA of motorcycle-related OHV traffic. The Salinas Ramblers M/C (SRMC; once called the Salinas Dirt Riders) started coming to CCMA as a club in the 1960s. Gary Estes of SRMC (1962) was in the CCMA riding regularly beginning in 1969. The Mountaineer M/C trail system was extensively used by the SRMC during the 1980s (Bunning 2008: Personal Communication).

Until the 1970s and 1980s recreational motorcycle use apparently had been primarily in the Clear Creek Canyon area of the CCMA (Figures 3.13-10 and 3.13-11). The Idria and San Carlos Bolsa areas also received a fair amount of recreational activity from hunting and hiking, which created its own network of user trails. One motorcycle rider who was born in the 1930s used to visit relatives that worked the mines at Idria (a former mine superintendent) with his family until the company closed the mines in 1974. He began riding in the 1950s at CCMA, which according to him at that time had minimal motorcycle use but was becoming a more common pastime for local residents (Boyes 2008: Personal Communication).

**Figure 3.13-10**: Gathering of OHV Recreational Users in the CCMA 1973 (Unknown, USDI BLM).

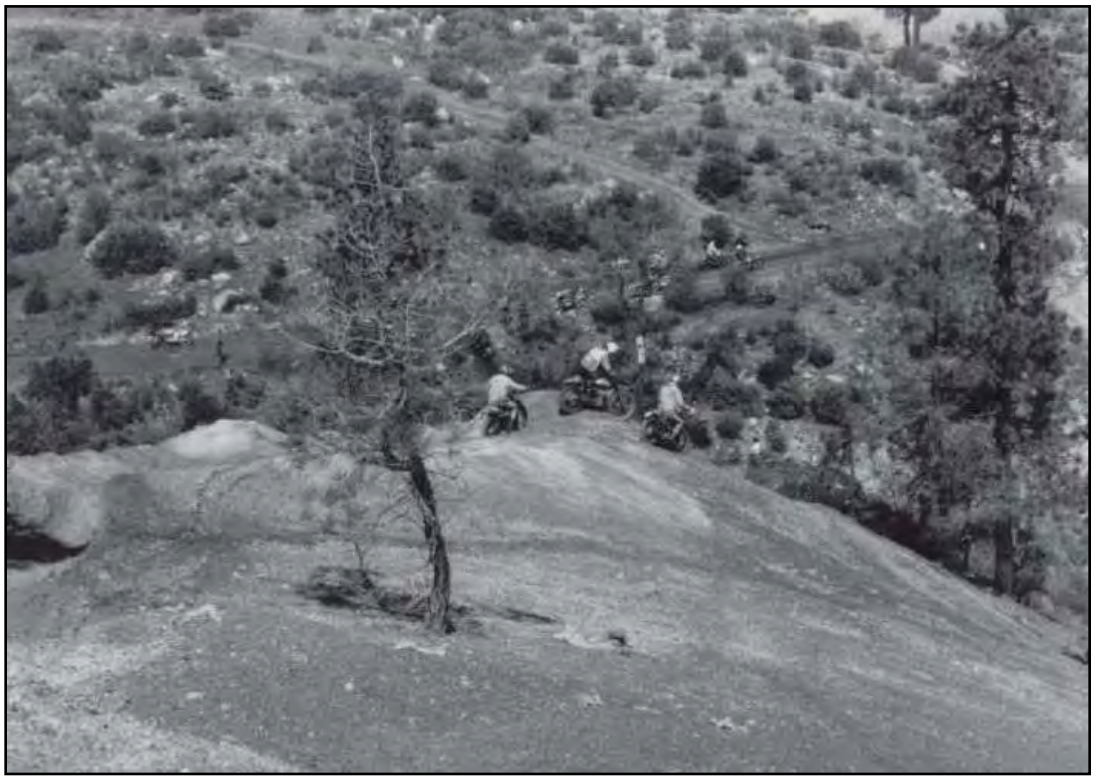

**Figure 3.13-11**: OHV Recreational Use in the CCMA 1973 (Unknown, USDI BLM).

The Salinas Dirt Riders disbanded around 1973-1976 and those members joined the Salinas Ramblers. During the 1950s and 1960s many of these riders had been using the Panoche Hills for OHV recreation (Tobin 2008: Personal Communication). By the 1960s OHV use on public and private lands in the inner South Coast Ranges increased. In the Panoche Hills, Tumey Hills, Ciervo Hills, and Kettleman Hills conflicts with grazing rights and soil erosion problems prompted the BLM to close those areas to OHV use in 1970 (Figure 3.13-12). As observed by many, much of this OHV use was redirected to the CCMA and "caused conflicts with other recreational uses and accelerated the erosion rates on the bald slopes used for motorcycle free play areas" (Griffen and Yadon 1989:17).

**Figure 3.13-12**: OHV Use Impacts in the Panoche Hills 1968 (Unknown, USDI BLM).

The SRMC formed in 1934, founded by Salinas, California, resident Larry Ketzel. The SRMC was "a family affair from the beginning…women have always been in the club and children are welcome on rides and campouts…The club's emphasis is on riding for pleasure" (Belli 1984). The club began with six charter members and strived to maintain a target membership of sixty people. The club historically would organize rides for fun and also to raise money for charity. Starting in 1982, the CCMA become the location of an AMA-sanctioned one hundred mile national enduro sponsored by the SRMC, nationally televised by ESPN (sports television network). The last of these "Quicksilver Enduros," the longest-running national Enduro and named in recognition of the rich mining history in the CCMA, was held in 2007.

There is more to a cultural property for a community than its historical use, although that is a significant component. Another component is how that community views that property as a place and what values they ascribe to it. In a non-traditional way, OHV use in CCMA can be viewed (quite literally) as the vehicle that allows a person to transcend the ordinary experiences of daily life and be allowed to contemplate other perspectives of being. The transcendence is commonly associated with values regarded

exclusive to Wilderness concepts which emphasize a non-mechanized experience. A "Wilderness" can be a physical place, but it relies upon a "symbolic environment, a socially constructed behavioral setting…Like a church, cathedral, or monument to which it is so often compared, wilderness has become invested with meanings that make it prone to support spiritual interpretation and experience" (Kaye 2006:6).

As evidenced in the eighty written comments provided by the CCMA OHV user community, there are more values being demonstrated than simply OHV recreation. Without trying to bias their comments, for many of these people OHV is part of their wilderness experience and becomes a "medium for transcending the effects of socialization and conformity" (Kaye 2006:4). Below are selected questions and responses from the Public Scoping Form Comments reprinted out of the BLM "Public Scoping Report Clear Creek Management Area Resource Management Plan and Environmental Impact Statement June 2008" which demonstrate community values related to OHV use at the CCMA:

*Question: What do you value most about CCMA, and why?*

> Besides great riding, this place is like a second home to me and my family. I have been recreating there since I was five years old. To have this place taken away is like losing a family member.
>
> CCMA is the largest, most unique and most versatile area I have ever ridden. If it is close I will not have the opportunity to enjoy it anymore, nor will I have the opportunity to share it with my children.
>
> The variety of terrain and great single-track! The weekends we enjoy as an entire family -- it would be very difficult to describe the importance to my entire family!
>
> Dirt bike riding, it is a huge wilderness area with many trails. It is a great place to enjoy the outdoors with friends and family.
>
> My family and friends have enjoyed using Clear Creek for many years. I enjoy camping, quad riding, four wheeling with my family and friends.
>
> If I want to go ride my motorcycle and asbestos it should be my God-given right to do so. CCMA is an area of history and heritage good for one thing, camping and riding. My club has used this area since the early 1950s.
>
> An outstanding place to ride off-road motorcycles and ATVs and other off-road recreation, four wheeling camping, etc. generations of families have enjoyed this venue.
>
> CCMA provides the most diverse experience anywhere in the nation for OHV use. CCMA was home to the longest-running national and early [enduro?] in the USA.
>
> Mental health cannot be measured by any chart. Mental health that is received by riding at Clear Creek, outweigh any supposed health risk assumptions given. We are not criminals do not turn us into criminals, that is the only government agenda.
>
> Freedom.
>
> A place to ride so I do not have to ride a legally [sic]. A place to go with friends and family. A place for kids to ride so they don't go down the wrong path.

> It's a very family-friendly area. Freedom. Family. Friends. Nature. The best riding in the world. Clear Creek is what California and America are all about. Don't take away my freedom!
>
> I value the time spent there with friends and family and what Clear Creek offers people during the different seasons of the year. I have enjoyed OHV riding in CCMA for over 35 years. I'm 68 years of age and have taken my family of four on many, many outings to CCMA. I value the recreation aspect of CCMA.
>
> I value the world-class riding and four wheeling. The incredible feeling of freedom being surrounded by beauty and open spaces. The memories that I have made in Clear Creek are some of the fondest memories that I have. The openness availability to move around unique soils and therefore plants and animals and birds. The stark beauty.
>
> It is very important to me that access to the land continues while protecting the land from destructive use that threatens the many rare species. Being able to get away from all the distractions at home (TV, phone, cell phone, etc.) and spend time together doing something we all enjoy is "priceless."

### 3.13.4.3 Trends

Archeological sites are fragile, and there are a variety of things that can alter, damage, or destroy them. There are two general categories of forces that can damage or destroy archeological sites and their values: natural forces and human forces. Examples of natural forces are erosion from wind or water, flooding, freezing and thawing, animal action (e.g., burrowing, digging, or trailing), vegetation, fire, landslides, earthquakes, or volcanic eruptions. Examples of human forces are vandalism, looting and theft, uncontrolled recreation (e.g., off-highway vehicles, bicycles, or animal traffic), development (e.g., agriculture, mining, logging, oil and gas, dams, roads, or utilities), fire suppression activities, noise vibration, or incompatible laws, regulations, and procedures.

Forces of nature act continually on archeological sites, ranging from the relatively minor activities of earthworms and freeze-thaw cycles to major catastrophic events such as earthquakes and volcanic eruptions. Many natural forces have acted in conjunction with human action over time to form the archeological site, and archeologists have developed techniques to understand how natural forces affect the formation of archeological sites. Sometimes erosion and patterns of plant growth help archeologists find archeological sites. Some natural forces have worked to encapsulate sites that were later discovered and studied by archeologists. However, these same forces can change and can destroy archeological information by increasing the rate of decay for perishable organic materials such as fabrics, basketry, and leather, as well as disrupt the spatial and temporal relationships of archeological information (e.g., moving artifacts around).

The most varied and damaging forces affecting archeological sites are caused by humans. Looting and vandalism are the major sources of site damage and destruction. Motivations for these behaviors vary. Archeological sites are sometimes "mined" for commercial profit where artifacts have monetary value on the national and international art markets. This is especially true on BLM lands in the Southwestern United States and along the Colorado River in Southern California. Other sites are looted to acquire relics for personal collections or small-scale profit at hobby shows. This is probably the more common problem to BLM in Central California. These kinds of activities are illegal on Federal, tribal, state and county public lands without a permit.

Although site damage and destruction from looting is deliberate and intentional, other actions that damage cultural resources occur largely because of ignorance of a site's existence or its importance. Despite a general, widespread public fascination with archeology and learning about a "hidden" past, the consideration of archeological sites and related issues (including Native American values) is usually not factored into the daily conduct of individuals, governments, or businesses unless legislated and implemented.

General land development and resource exploitation activities continue to increase as the nation's growing population demands for more food, housing, manufactured goods, and of course places to recreate - in a variety of different ways. Each of these actions involves land modification that can damage or destroy archeological sites. While not intentional, some of these activities take a greater toll on archeological sites than others. For example, agricultural activities such as land-leveling and plowing may either move archeological materials around and mix materials from separate layers or just totally destroy the site, depending upon the depth of the archeological remains. Massive land modifications that accompany flood control projects, large-scale residential developments, and interstate highway construction can cause the loss of hundreds of archeological sites – site that represent entire communities that once thrived in the past. Recreational access and site development can also impact archeological resources through indirect or unintentional user activities or poorly developed facilities by the agency responsible for providing the recreational opportunity.

Off-highway vehicle (OHV) use presents the most immediate threats to negatively impacting cultural resources in the Clear Creek Management Area (CCMA), especially at archeological sites. With a properly designed and well-designated route system, inadvertent damage to archeological sites can be avoided. Typically the observed and reported damage to cultural resources in the CCMA results from off-trail vehicular play or OHV trespass into closed areas that are protected for natural and/or cultural resource values. There have been a few incidents of reported unauthorized collection at prehistoric and historic sites, but as best as can be determined these incidents fall into the category of uninformed, unintentional attempts at artifact collection, not directed vandalism or intentional looting of sites for artifacts.

There is also illegal marijuana cultivation in the CCMA. This activity has the distinct possibility of indirectly impacting archeological resources through physical site alteration (e.g., spring sites development, planting, etc.). This illegal activity also affects Native American traditional cultural use practitioners. The presence of marijuana farmers protecting their gardens with firearms or other weapons poses a danger to the safety of the practitioners, not to mention the disruption to the natural ecosystem that native use plants need to thrive. Natural weathering and soil erosion also affects cultural resources in the CCMA. The serpentine soils of the New Idria Formation are highly susceptible to heavy rain events that can displace large amounts of soil given the right circumstances. Other factors that can affect cultural resources result from agency use: recreational site development, road maintenance, or controlled burning/prescribed fires. These factors are identified through planning and are mitigated for through project redesign, monitoring, Native American consultation, data retrieval, or a combination of these measures.

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# 3.14 Paleontological Resources

## 3.14.1 Introduction

The paleontological resources found on the public lands are recognized by the BLM as constituting a fragile and nonrenewable scientific record of the history of life on earth, and so represent an important and critical component of America's natural heritage. BLM will exercise stewardship of these resources as a part of its public land management responsibility.

## 3.14.2 Regulatory Framework

In addition to the Federal Land Policy and Management Act of 1976 (FLPMA), Paleontological Resources are protected under several regulations and policies described below:

Antiquities Act of 1906 (16 U.S.C. 431-433) provides that penalties shall be assessed against "any person who shall appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States" except as granted permission by the appropriate secretary of the department having jurisdiction; permits the examination, excavation, or gathering of antiquities from government property by recognized scientific or educational institutions in accordance with uniform rules defined in the act.

Title 43 CFR 8365.1-5 addresses the collection of invertebrate fossils and, by administrative extension, fossil plants, including the willful disturbance, removal and destruction of scientific resources or natural objects, and Subpart 8360.0-7 identifies the penalties for such violations.

Title 43 CFR 3802 and 3809 address protection of paleontological resources from operations authorized under the mining laws.

BLM Manual 8270 and Handbook H-8270-1 provides the criteria for permitting, collection, and use of fossils on BLM administered lands, and creates a framework for how geologic formations are ranked according to paleontological potential.

## 3.14.3 Regional Setting

### 3.14.3.1 Geologic Setting

The CCMA Planning Area is within the Coast Range Physiographic Province of California; bounded by the Pacific Ocean to the west and the great Central Valley to the east. It is characterized by northwest-southeast trending faults and mountain ranges (Staebler 1981; USGS 2005). From the Upper Cretaceous time period through the Miocene epoch much of Hollister Field Office Area was periodically covered by shallow, warm seas which allowed sediment to wash onto the area from the low-lying continental mass to the east**.** This is evident in the San Joaquin Management Area that shows great thickness of Jurassic age or younger marine and terrestrial sedimentary deposits (Staebler 1981).

### 3.14.3.2 Paleontological Setting

Since the first major paleontological discovery in 1937of a nearly complete plesiosaur in the Moreno Formation, both the Moreno and Temblor Formations have produced many fossils that are either endemic, unique, or serve as guide fossils (Staebler 1981). Most major localities within the Moreno and Temblor

Formations are located within the boundary of the Panoche/Coalinga Area of Critical Environmental Concern (ACEC).

There are no significant paleontological resources that have been discovered within the boundary of the CCMA. It is expected that fossil invertebrates can be associated with the Panoche and Franciscan Sandstone Formations which contact the New Idria Serpentine Formation (refer to Table 3.14.4.2. below):

### Table 3.14.4.2 - Rock Formations within the CCMA Planning Area and their Paleontological Sensitivity

| Formation Name | Formation Description | Formation Age | Fossil Types known to Occur | Paleontological Sensitivity[1] |
|---|---|---|---|---|
| Panoche | Clay shale to conglomerate beds of boulders up to several feet in diameter | Upper Cretaceous | Mollusca including ammonites | Class 3 |
| Franciscan | Sandstones, shales, cherts, and limestones | Jurassic, Cretaceous | Invertebrates, vertebrates, plants | Class 3 |
| New Idria Serpentine | Metavolcanic minerals and ores | Late Jurassic | None | Class 1 |

*Notes*: [1] Paleontological Sensitivity conditions are subject to change based upon new data provided to BLM by qualified experts working in the Planning Area.

Paleontological Sensitivity is defined by the "Potential Fossil Yield Classification" (PFYC) system. The PFYC is utilized for land use planning, the preliminary assessment of potential impacts to fossils for specific projects, and identify proper mitigation needs. It is intended to provide a tool to assess potential occurrences of significant paleontological resources on BLM administered lands.

Using the PFYC system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed level. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment.

There are five classes within the PFYC system; Class 1 is rated as having "Very Low Potential" to Class 5 having "Very High Potential." It is important to note that although granite, lava beds, and other igneous or metamorphic rock types are usually considered to be void of any fossils, outcrops of these rocks may have fissure fillings, cave-like structures, sinkholes, and other features that may preserve significant paleontological resources or information, so the potential is not zero; therefore Class 1 is applied to these rock types usually considered not to contain fossil resources. The New Idria Serpentine body as defined by the BLM Clear Creek Serpentine ACEC falls under this Class 1 category.

For convenience, the five classes as defined by the PFYC system are provided below:

***Class 1*** – **Very Low**: Geologic units that are not likely to contain recognizable fossil remains. The probability for impacting any fossils is negligible. Assessment or mitigation of paleontological resources is usually unnecessary. The occurrence of significant fossils is non-existent or extremely rare.

***Class 2*** – **Low**: Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant non-vertebrate fossils. The probability for impacting vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Assessment or mitigation of paleontological resources is not likely to be necessary. Localities containing important resources may exist, but would be rare and would not influence the classification. These important localities would be managed on a case-by-case basis.

***Class 3*** – **Moderate** or **Unknown**: Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential. This classification includes a broad range of paleontological potential. It includes geologic units of unknown potential, as well as units of moderate or infrequent occurrence of significant fossils. Management considerations cover a broad range of options as well, and could include pre-disturbance surveys, monitoring, or avoidance. Surface-disturbing activities will require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources. These units may contain areas that would be appropriate to designate as hobby collection areas due to the higher occurrence of common fossils and a lower concern about affecting significant paleontological resources.

***Class 4*** – **High**: Geologic units that containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface disturbing activities may adversely affect paleontological resources in many cases. The probability for impacting significant paleontological resources is moderate to high, and is dependent on the proposed action. Mitigation considerations must include assessment of the disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access resulting in greater looting potential. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.

***Class 5*** – **Very High**: Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation. The probability for impacting significant fossils is high. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. On-the-ground surveys prior to authorizing any surface disturbing activities will usually be necessary. On-site monitoring may be necessary during construction activities.

### 3.14.4 Current Conditions and Trends

The primary causes of paleontological resource damage are road construction, unauthorized collection, wildfires, natural weathering and erosion. The majority of BLM data regarding fossil-bearing rock units in the Hollister Field Office area is focused on lands within the Panoche/Coalinga ACEC. The New Idria Serpentine body within the CCMA is a geologic mass that was once a volcanic intrusion. This nearly 33,000 acre formation was designated by the BLM as the Clear Creek Serpentine Area of Critical

Environmental Concern (ACEC) in 1982. As the formation is volcanic in origin, there are no fossil present within the ACEC and none have been scientifically documented to date.

A 1991 study for possible expansion of OHV-based recreation in the CCMA considered twelve planning factors including paleontological resources (USDI 1991:1-3). The report addressed 102,000 acres in the CCMA region that covered Byles Canyon, Larious Canyon, San Carlos Bolsa, Cantua Creek, Joaquin Ridge, White Creek, and Condon Peak (USDI 1991:4). It was determined that there were "no known vertebrate fossil locations in the study area" and the geological formations in the CCMA did not suggest that there could be such fossil locations (USDI 1991:27). Moreover, paleontological resources in the CCMA did "not limit further consideration of OHV recreation" (USDI 1991:27).

Significant vertebrate fossils have been found east of the CCMA Planning Area on private and public lands, primarily in locations associated with the Moreno Shale deposits along Cantua Canyon. Invertebrate fossils have been found in various locations also on private and public lands in Los Gatos Creek Canyon south of the CCMA Planning Area. These fossils are associated with the sandstone formations outside of the Clear Creek Serpentine ACEC.

Fossils are also known to occur throughout the Coalinga and Pleasant Valley areas east of the Planning Area. For example, an unusual single invertebrate fossil specimen was recovered by a volunteer in 2006 on public lands near Black Mountain, east of the CCMA Planning Area.

There have been no requests from researchers or the general public about conducting paleontological studies in the CCMA Planning Area. Consistent with the Clear Creek Management Area RMP Amendment and Route Designation Record of Decision (2006), the identification and protection of all vertebrate and significant invertebrate paleontological localities remains a priority.

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# 3.15 Social and Economic Conditions

## 3.15.1 Introduction

This section discusses the social and economic environments within the Planning Area and the ways in which public lands and public land resources administered by the Bureau of Land Management (BLM) interact with that environment. The social and economic indicators discussed include demographic factors, employment, and income, as well as some non-quantifiable elements such as quality of life, traditions, and life styles.

## 3.15.2 Regulatory Framework

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, (Federal Register 1994) requires that disproportionately high and adverse health or environmental impacts on minority and low-income populations be avoided or minimized to the extent feasible. EO 12898 requires Federal agencies to achieve environmental justice by identifying and addressing disproportionately high and adverse human health and environmental effects, including the interrelated socioeconomic effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

## 3.15.3 Regional Setting

Throughout most of the western United States where public lands are located, the resident population within the administrative boundaries of a Field Office is small, and the public land area is often the major component of the total land area. However, the 12 counties in which the HFO public lands are located – Alameda, Contra Costa, Fresno, Merced, Monterey, San Benito, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, and Stanislaus – have a resident population of over eight million, and the HFO administers only 2.5 percent of the total land area, about 274,000 acres. At 63,000 acres, CCMA comprises almost one-quarter (~23%) of the BLM-administered lands in the region. Other communities within commuting distance from CCMA include residents from Tulare, Madera, San Luis Obispo and Kings Counties.

The large population centers near CCMA have implications for public land management because they represent the potential user and customer base that is within a three-hour drive from CCMA, but they do not provide a useful context for discussion of socioeconomic conditions. The number of people and the size of the economy associated with that population dwarf any of the social and economic contributions that might be made by public land resources. To facilitate discussion of socioeconomic conditions, the local analysis area for this RMP/EIS will be defined as the Central Coast and the Southern Diablo Range – each of which focuses on communities most directly affected by the CCMA RMP/EIS alternatives. The Central Coast analysis area focuses on residents of Santa Clara, Monterey, and Santa Cruz counties; and the Southern Diablo Range analysis area includes San Benito, Merced, and Fresno Counties. San Benito and Fresno counties encompass CCMA and a large block of contiguous BLM public lands in the Southern Diablo Range located west of Interstate 5, north of the town of Coalinga and south of the town of Los Banos.

## 3.15.4 Current Conditions and Trends

### 3.15.4.1 Demographics

Table 3.15-1 indicates the populations in the counties within the Planning Area, in California, and in the U.S in the years 1990, 2000, and 2004. The population is large because it includes much of the south San Francisco Bay Area. Almost a quarter of California's total population resides within the Planning Area. The rate of population growth within the Planning Area was about the same as that for the entire state from 1990 to 2000 but dropped below the State rate after 2000. For both periods, the State and the region

**Table 3.15-1 Total Population, by County, in the Planning Area**

| County | 1990 | 2000 | 2004 | Total % Change | |
|---|---|---|---|---|---|
| | | | | 1990-00 | 2000-04 |
| Fresno | 670,250 | 804,333 | 876,842 | 20.0 | 9.0 |
| Merced | 179,400 | 211,245 | 237,155 | 17.8 | 12.3 |
| Monterey | 356,797 | 403,943 | 425,521 | 13.2 | 5.3 |
| San Benito | 36,911 | 53,789 | 57,353 | 45.7 | 6.6 |
| Santa Clara | 1,495,296 | 1,692,759 | 1,749,365 | 13.2 | 3.3 |
| Santa Cruz | 229,329 | 256,488 | 259,990 | 11.8 | 1.4 |
| **Total in Area** | **2,967,983** | **3,422,557** | **3,606,266** | **13.3** | **5.1** |
| **California** | **29,828,496** | **34,098,740** | **36,590,814** | **14.3** | **7.3** |
| **U.S. (mil.)** | **248.7** | **281.4** | **293.7** | **13.1** | **4.4** |

grew at a faster rate than the nation. Population growth in the 1990s moved at a more rapid pace in the counties surrounding the Bay Area, probably reflecting a move to more affordable residential and commercial property on the part of families and businesses. San Benito County, of which Hollister is the county seat, grew faster than any other county in the Planning Area because, according to most reports, the northern part of the county became a bedroom community for people working in Santa Clara County and beyond.

In rough terms, the population described in the table represents the population within a three-hour drive of the public lands administered by the HFO and thus a pool of potential public land users and customers. Although many of the area residents may not even know BLM lands are located nearby, the sheer size of the pool speaks to the potential demand for public land resources, in particular, recreation resources. Discussions with area residents, public land users, and BLM staff indicate that, in fact, recreationists come from all over California and the U.S. to recreate in CCMA.

The populations of the counties and major cities and towns in the two regional analysis areas are shown in Table 3.15-2. However, the large population statistics from Santa Clara County are not included in any of the remaining tables in this analysis in order to focus directly on the social and economic conditions of the communities most affected by the land use planning decisions in the CCMA RMP/EIS.

The Central Coast has grown at a slower pace than the State and the rest of the HFO for several reasons: driving time to the Bay Area and local housing costs make the area's towns less attractive as bedroom communities, and the closure of Fort Ord in the early 1990s resulted in actual population declines in some communities, notably Seaside and Marina, two towns directly associated with activity at the former Fort Ord. Two places within the Central Coast – Watsonville and the communities in the Salinas Valley – outpaced the average population growth rate of California.

Public lands in CCMA are accessed from the sparsely populated San Benito valley on the west and the San Joaquin valley on the east. The rather large population totals for Merced and Fresno Counties mask the relatively smaller populations in the immediate vicinity of CCMA. Tract data from the 2000 Census indicate that less than 20 percent of Fresno and Merced Counties' one million residents in 2000 lived in the Interstate 5 Corridor just east of the Diablo Range. This analysis area grew far more rapidly than the State average, driven by the growth of Hollister and Los Banos as bedroom communities and population increases in Fresno and other towns in the central San Joaquin valley.

**Table 3.15-2 Populations of Counties and Major Towns in the Local Analysis Areas**

| Central Coast | | | | | |
|---|---|---|---|---|---|
| **County** | **1990** | **2000** | **2004** | **Total % Change** | |
| | | | | **1990-00** | **2000-04** |
| **Central Coast** | | | | | |
| **Monterey** | **356,797** | **403,943** | **425,521** | **13.2** | **5.3** |
| Marina | 27,550 | 21,014 | 19,165 | -23.7 | -8.8 |
| Monterey | 31,800 | 29,674 | 30,314 | -6.7 | 2.2 |
| Salinas | 107,600 | 143,776 | 152,590 | 33.6 | 6.1 |
| Seaside | 38,950 | 31,696 | 33,386 | -18.6 | 5.3 |
| **Santa Cruz** | **229,329** | **256,488** | **259,990** | **11.8** | **1.4** |
| Santa Cruz | 48,800 | 54,593 | 56,018 | 11.9 | 2.6 |
| Watsonville | 30,850 | 44,265 | 48,041 | 43.5 | 8.5 |
| **Total** | **586,126** | **660,431** | **685,511** | **12.7** | **3.8** |
| **Diablo Range** | | | | | |
| **Fresno** | **670,250** | **804,333** | **876,842** | **20.0** | **9.0** |
| Clovis | 49,650 | 68,468 | 81,256 | 37.9 | 18.7 |
| Coalinga | 8,050 | 16,213 | 16,735 | 101.4 | 3.2 |
| Fresno | 350,700 | 427,652 | 458,203 | 21.9 | 7.1 |
| Reedley | 15,650 | 20,756 | 21,849 | 32.6 | 5.3 |
| Sanger | 16,650 | 18,931 | 20,612 | 13.7 | 8.9 |
| Selma | 14,650 | 19,444 | 21,881 | 32.7 | 12.5 |
| **Merced** | **179,400** | **211,245** | **237,155** | **17.8** | **12.3** |
| Atwater | 22,100 | 23,113 | 26,594 | 4.6 | 15.1 |
| Los Banos | 13,750 | 25,869 | 30,898 | 88.1 | 19.4 |
| Merced | 55,700 | 63,893 | 70,415 | 14.7 | 10.2 |
| **San Benito** | **36,911** | **53,789** | **57,353** | **45.7** | **6.6** |
| Hollister | 19,000 | 34,413 | 36,993 | 81.1 | 7.5 |
| **Total** | **886,561** | **1,069,367** | **1,171,350** | **20.6** | **9.5** |
| | | | | | |
| **California** | **29,828,496** | **34,098,740** | **36,590,814** | **14.3** | **7.3** |

### 3.15.4.2 Employment and Income

Table 3.15-3 presents employment data for the Central Coast and Diablo Range analysis areas from 1980 to 2002, the last year for which data are available. Table 3.15-4 presents personal income data for the same areas and the same period. Data for all of California and for the U.S. are shown as well for comparison purposes.

**Table 3.15-3 Total Employment Central Coast and Diablo Range Analysis Areas, 1980 to 2002**

| Area | 1980 | 1990 | 2000 | 2002 | % Change | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1980-90 | 1990-00 | 2000-02 |
| **Central Coast** | | | | | | | |
| **Monterey** | 160,425 | 202,278 | 222,474 | 235,299 | 26.1 | 10.0 | 5.8 |
| **Santa Cruz** | 84,962 | 125,987 | 149,579 | 148,933 | 48.3 | 18.7 | -0.4 |
| **Central Coast** | **245,387** | **328,265** | **372,053** | **384,232** | **33.8** | **13.3** | **3.3** |
| **Diablo Range** | | | | | | | |
| **Fresno** | 275,065 | 345,726 | 411,608 | 427,912 | 25.7 | 19.1 | 4.0 |
| **Merced** | 64,009 | 77,254 | 84,576 | 88,941 | 20.7 | 9.5 | 5.2 |
| **San Benito** | 10,680 | 15,618 | 21,604 | 22,559 | 46.2 | 38.3 | 4.4 |
| **Diablo Range** | **339,074** | **422,980** | **496,184** | **516,853** | **24.7** | **17.3** | **4.2** |
| **California (Mil.)** | **12.8** | **17.0** | **19.6** | **19.9** | **32.8** | **15.7** | **1.3** |
| **U.S. (Mil.)** | **114.2** | **139.4** | **166.8** | **167.0** | **22.0** | **19.6** | **0.2** |

**Table 3.15-4 Personal Income in the Central Coast and Diablo Range Analysis Areas, 1980 to 2002**

| Area | 1980 | 1990 | 2000 | 2002 | % Change | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1980-90 | 1990-00 | 2000-02 |
| **Total Personal Income (millions of 2002 dollars)** | | | | | | | |
| Central Coast | | | | | | | |
| **Monterey** | 7,299 | 10,074 | 12,638 | 13,091 | 38.0 | 25.5 | 3.6 |
| **Santa Cruz** | 4,689 | 6,894 | 10,462 | 9,707 | 47.0 | 51.8 | -7.2 |
| **Central Coast** | **11,988** | **16,968** | **23,100** | **22,799** | **41.5** | **36.1** | **-1.3** |
| **Diablo Range** | | | | | | | |
| **Fresno** | 12,102 | 15,534 | 18,416 | 19,544 | 28.4 | 18.6 | 6.1 |
| **Merced** | 2,811 | 3,759 | 4,319 | 4,640 | 33.7 | 14.9 | 7.4 |
| **San Benito** | 350 | 900 | 1,631 | 1,598 | 157.1 | 81.2 | -2.0 |
| **Diablo Range** | **14,913** | **19,293** | **22,735** | **24,184** | **29.4** | **17.8** | **6.4** |
| **California (mil.)** | **621,037** | **892,291** | **1,153,20** | **1,154,68** | **43.7** | **29.2** | **0.1** |
| **U.S. (mil.)** | **5,017,67** | **6,692,13** | **8,798,67** | **8,900,00** | **33.4** | **31.5** | **1.2** |
| **Per Capita Personal Income (Annual, 2002 dollars)** | | | | | | | |
| **Central Coast** | | | | | | | |
| **Monterey** | 24,961 | 28,176 | 31,357 | 31,842 | 12.9 | 11.3 | 1.5 |
| **Santa Cruz** | 24,769 | 30,024 | 40,904 | 38,323 | 21.2 | 36.2 | -6.3 |
| **Central Coast** | **25,049** | **28,949** | **34,978** | **33,830** | **15.6** | **20.8** | **-3.3** |
| **Diablo Range** | | | | | | | |
| **Fresno** | 23,378 | 23,106 | 22,962 | 23,492 | -1.2 | -0.6 | 2.3 |

**Table 3.15-4 Personal Income in the Central Coast and Diablo Range Analysis Areas, 1980 to 2002**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Merced** | 20,726 | 20,889 | 20,406 | 20,623 | 0.8 | -2.3 | 1.1 |
| **San Benito** | 19,182 | 24,432 | 30,286 | 28,660 | 27.4 | 24.0 | -5.4 |
| **Diablo Range** | **22,972** | **22,707** | **22,386** | **22,773** | **-1.2** | **-1.4** | **1.7** |
| **California** | **26,092** | **29,783** | **33,918** | **32,989** | **14.1** | **13.9** | **-2.7** |
| **U.S.** | **22,081** | **26,809** | **31,182** | **30,906** | **21.4** | **16.3** | **-0.9** |

For both analysis areas, the data demonstrate that economic change varies greatly from State and national trends but also varies within the analysis areas themselves. This is not surprising given the size of the areas and the diversity of terrain and history within them, but this makes it difficult to make generalizations about the areas.

Employment growth in the Central Coast analysis area seemed to mirror the rate for the State, but the experiences of Santa Cruz and Monterey Counties were quite different. Santa Cruz employment growth was very rapid in the 1980s, began to slow down in the 1990s, and has recently been stagnant. Monterey's employment growth lagged that of the State in the 1980s, slowed down in the 1990s, but then became robust in the first few years of this century.

In the Diablo Range analysis area, average employment growth lagged behind the State rate in the 1980s, began to outpace it in the 1990s, and grew much more rapidly from 2000 to 2002. These averages, however, mask the continuing very high rate of growth in San Benito County for the entire 22-year period, the fact that Merced lagged behind the State growth rate until recently, and that Fresno County has maintained steady growth throughout this period.

California's per capita income grew at a slower rate than the U.S. average between 1980 and 2000 and declined faster between 2000 and 2002. Consequently, the gap in 1980 between California's very high per capita income and the U.S average has narrowed considerably. The same trend has been followed in the Central Coast area despite a surge in personal income in Santa Cruz County in the 1990s. The Diablo Range area represents an anomaly in that per capita income has declined since 1980. A per capita income that was slightly higher than the U.S. average is now less than 75 percent of the national average.

### 3.15.4.3 Environmental Justice

The requirements for environmental justice review during the environmental analysis process were established by Executive Order 12898 (February 11, 1994). That order declares that each Federal agency is to identify "disproportionately high and adverse human health or environment effects of its programs, policies, and activities on minority populations and low-income populations."

Table 3.15-5 describes the results of the 2000 U.S. Census with regard to ethnicity and poverty in the counties that make up the Central Coast and Diablo Range analysis areas. Most of the counties share the same general ethnic patterns that the State of California exhibits – a very large Hispanic population, ranging from 25 to 50 percent of the population; distinct minority populations of African Americans, generally comprising less than 5 percent of the population; Asian/Pacific Islanders, comprising between 5 and 10 percent of the population; and a very small Native American population. There are no Native American Tribal lands within the Planning Area. Santa Cruz is the county that least represents the State ethnic pattern, with minority populations that are all below the State average.

The percent of the population with personal income below the poverty level is extremely high in both Fresno and Merced Counties, over 20 percent of the population. With the very low and declining real per capita income shown for these counties in Table 3.15-4, these poverty levels are not surprising.

**Table 3.15.5 Ethnicity and Poverty Level, Central Coast and Diablo Range, 2000 Census**

| County | Ethnicity, Percent | | | | Percent Below Poverty Level |
|---|---|---|---|---|---|
| | Hispanic | African American | American Indian | Asian-Pacific | |
| **Central Coast** | | | | | |
| Monterey | 46.8 | 3.7 | 1.0 | 6.4 | 13.5 |
| Santa Cruz | 26.8 | 1.0 | 1.1 | 3.5 | 11.9 |
| **Area Total** | **39.0** | **2.9** | **1.1** | **6.2** | **12.8** |
| **Diablo Range** | | | | | |
| Fresno | 44.0 | 5.3 | 1.6 | 8.2 | 22.9 |
| Merced | 45.3 | 3.8 | 1.2 | 7.0 | 21.7 |
| San Benito | 47.9 | 1.1 | 1.2 | 2.6 | 10.0 |
| **Area Total** | **44.0** | **4.9** | **1.4** | **8.3** | **22.0** |
| **California** | **32.4** | **6.7** | **1.0** | **11.2** | **14.2** |

### 3.15.4.4 BLM Contribution to the Local Economy

**Recreation**

Although no management decisions for public lands outside the CCMA will be part of this planning effort, these areas may be referred to here to provide a more complete discussion of the socioeconomic role of recreation on public lands in the Planning Area. These include other public lands administered by the BLM, Forest Service, the National Park Service, and California State Parks.

The major share of recreation use in the CCMA is concentrated in the Serpentine ACEC, with over 78,000 visits in 2006 and 2007 combined. Together they account for over 70 percent of the recreation use on public lands in the Planning Area. (See Section 3.8, "Recreation," for a more extensive treatment of recreation use). There are two semi-developed campgrounds in the CCMA that traditionally receive the majority of visitor use from October to May. Compared to the recreation requirements of the millions of people who reside within 2 hours of other major blocks of public lands in Central California, the use of CCMA public lands is inconsequential. The same is true for expenditures related to recreation on CCMA public lands.

The California Department of Parks and Recreation recently commissioned a study that was conducted by California State University, Sacramento's Department of Recreation, Parks and Tourism Administration from 2007 to 2009. The preliminary findings of the study report that 74.9 million people visit California state parks annually, spending an average of $4.32 billion per year in park-related expenditures. About half of this amount is related to recreation on the California Coast, which means the other half of all of the expenditures were made in other regions including the Coast Ranges, Sierra-Nevada, and the California Desert.

The amount of spending within the CCMA would not be significant given size of the Diablo region and its economy. However, recreation on public lands in CCMA is still very important to many sectors of the local economy, and to the many individuals who recreate there. The motorcycle shops in Hollister rely heavily on off-highway vehicle recreation opportunities in CCMA, which along with Hollister Hills SVRA, is a primary local OHV resource. Several shop owners indicated a very heavy reliance on OHV at CCMA. In addition to hosting several major national events such as the Quicksilver and Wild Boar enduros, the area is close enough to several hundred thousand residents that it is a popular weekend recreation area. On weekends, the area draws visitors from several hours away for a variety of motorized and non-motorized recreation activities.

Other forms of recreation at CCMA include hunting, rock-hounding, and hiking. The area is highly valued by these visitors as well as the OHV community because it is nearby, because it offers varied terrain, and because there are no comparable properties that allow public access in the vicinity. The CCMA is also frequently said to be valued as a place to get away from the stress of population and traffic.

One segment of the local community, however, appears to experience a direct economic benefit from recreation on BLM public lands in the Diablo Range, and CCMA in particular. Private landowners with large ranches who live adjacent to large tracts of public land in the Diablo Range charge hunters for access to their own private land and to adjacent BLM land (Moore 2005). These charges are often in the form of membership fees in hunting clubs that provide lodging or camping sites and a variety of support features in addition to access.

Hunting is an important recreation activity on public lands in the Diablo Range. Upland game birds (chukar, quail), black-tailed deer, and wild pig are all hunted there. The southern part of the Range is in an area called "the pig triangle" (King City to Paso Robles to Coalinga) because of the number of pigs taken there every year. Hunters come here from throughout the state, and they purchase some supplies and equipment locally in support of their hunting. However, the only economic sector that clearly benefits from hunting in the Diablo Range is the hunting clubs.

Many of the ranchers that benefit financially from managing hunting clubs and providing access also hold BLM grazing leases. Several of the smaller ranchers who participate in this indicated that the benefit from hunting-related activities exceeded that from grazing. Land values in the Diablo Range have risen in recent years beyond their potential to produce income from grazing. It may be that the potential of these lands as hunting areas was an element in the increase in value.

Beyond any financial contribution, the public lands in the Central Coast and Diablo Range, like those in CCMA, provide places for local residents and others to get away from the very densely populated communities in this part of California. The area is accessible for day trips to the more than 8 million residents of the Bay Area and the Central Valley, and it provides a sense of isolation that is difficult to find elsewhere in the region.

**OHV Recreation**

According to a 1993-1994 report prepared by the California Department of State Parks and Recreation Off Highway Motor Vehicle Recreation (OHMVR) Division titled, "*Off Highway Vehicle Recreation's $3 Billion Economic Impact in California & A Profile of OHV Users: A Family Affair*", expenditures by OHV users for equipment, activities and events generated about $3 billion in economic activity in 1992, and supported 43,000 jobs. The OHMVR Division estimated there are some 100,000 miles of roads and trails, on more than 200 county, state and federal sites, open to OHV use; and approximately 3.5 million people, 14.2% of California households, participated in OHV activity statewide in 1992.

The report also concluded that rural communities, places that often need it the most, realize much of the economic benefit. In particular, the report detailed the benefits to San Benito County from OHV recreation at Hollister Hills SVRA from 1992-1993, including 85,000 visitors with an economic impact totaling $4.1 million and over 100 jobs attributable to OHV recreation.

During this RMP/EIS effort, BLM evaluated statistics from the US Census 2000 data and a 2009 study prepared by Dean Runyan and Associates, Inc. for the California Travel and Tourism Commission to determine impacts of travel expenses by county in California. Although BLM has not estimated the economic benefits generated from recreation-related expenditures by visitors to the CCMA alone, the majority of CCMA public lands are in southern San Benito County; and the data shows that travel and recreation in San Benito County generate some $78,300,000 in spending in the county, $25,300,000 in earnings, and 940 jobs in the county (directly and indirectly). This amount ranks San Benito number 47 of 58 counties with revenues generated and number 52 of 58 counties with jobs created from travel and recreation tourism (Dean Runyan Associates, Inc. 2009). The growth in jobs for the travel and recreation-related sectors since 1992 has been less than 100. Jobs related to travel and recreational tourism account for 5.7 percent of all jobs in San Benito County.

Much of the economic benefit for income and employment, from people's expenditures for motorized recreation, appears closer to the urban homes in the visitor-shed, than in the communities near the CCMA. Other factors that influence economic conditions are associated with restaurants, lodging, and gas stations where visitors spend money traveling to and from the CCMA. Purchases of vehicles for recreation use are prime examples of big-ticket expenditures that occur at considerable distances from the CCMA, although several notable retail motorcycle and OHV businesses are located in San Benito County.

In particular, motorcycles are popular vehicles for motorized recreation in the CCMA. The US Census Bureau 2001 Zip Code Business Patterns (http://censtats.census.gov/cbpnaic/cbpnaic.shtml) provide information by zip code, for the number of businesses and categories of numbers of employees at these businesses. The pertinent North American Industry Classification System (NAICS) category 441221 covers vendors of all-terrain vehicles, mopeds, motorbikes, motorcycles, and motorcycle parts and equipments, both new and used.

Also, California State Parks and Recreation commissioned a study by ICF International titled, "Estimating the State Fuel Tax Paid on Gasoline Used in the Off-Highway Operation of Vehicles for Recreation", which was completed in September 2006. The ICF report developed estimates on the amount of fuel used for off-highway vehicle (OHV) recreation on public lands in California, as well as providing information on the geographic distribution of OHV users and the numbers of off-highway vehicles used for recreation.

The ICF study was prepared to assist the Department of Transportation (DOT) and the OHMVR Division with decisions regarding transfers of fuel tax funds to the Off-Highway Vehicle Trust Fund (OHVTF). California State Parks funded the study because of concerns over the existing Fuel Tax Transfer Model, which is derived from two surveys carried out by Tyler and Associates in 1989-1990.

The OHVTF is administered by the OHMVR Division of California State Parks and Recreation, and is used for the acquisition, development, and maintenance of off-highway recreation facilities and opportunities as well as the protection of natural and cultural resources associated with off-highway recreation.

Findings from the ICF survey were compared to those presented in the 1990 Study. The results suggest the number of households that drive off-highway for recreation decreased from 13.6% in 1989 to 9.9% in

late 2003. Another objective of the study was to determine whether people are using their OHVs for recreation, or to gain access to a recreational pursuit. According to ICF, over half of the respondents claimed to "drive off-highway for the fun of it", and to gain access for some other recreational pursuit. One-third of respondents indicated that they only drive off-highway to gain access to a recreational pursuit other than OHV recreation, and less than 15% reported OHV use strictly for recreational purposes.

Perhaps the most important objective of the study was to determine the amount of non-registered OHVs in California. The results of the ICF study show the ratio of non-registered to registered vehicles has dropped significantly from 1990. The decrease in non-registered vehicles has been attributed to efforts by retail dealerships that now aid purchasers in registering their vehicles with DMV, and new enforcement programs that began following the results of the 1990 study, as well as amnesty programs with DMV to create incentives for non-registered vehicle owners to register their OHVs. A comparison of the estimated non-registered vehicles in 1989 and estimated non-registered vehicle in 2003 shows a major decline in off-highway motorcycles.

As noted in their conclusion, "The ICF International Study provides a significant improvement in the data used for estimating the amount of gasoline used for recreation on public lands in California." The ICF International Study also improved vehicle counts by vehicle type. Significant miscounting of registered ATVs as "motorcycles" in the Existing Tax Transfer Model resulted in overestimation of non-registered vehicles.

By correcting counts of vehicle types, the study identified an overestimation of approximately 1.4 million vehicles from the 1990 data. In addition, a significant increase in 4WD vehicles was observed by taking into account vehicle models that had been produced since 1990 when the Existing Tax Transfer Model was developed. Overall, the ICF report estimates that California use approximately 151,000,000 gallons of gasoline recreating off-highway on public lands and the total tax revenue from the purchase of fuel alone generates almost $28,000,000 for the State, which represents less than 50% of the total tax revenue reported in the 1990 study (ICF 2006).

**Grazing**

Although no management decisions for public lands outside the Clear Creek Management Area will be part of this planning effort, these areas may be referred to here to provide a more complete discussion of the socioeconomic role of livestock grazing on public lands in the Planning Area.

The BLM manages long-term grazing leases on 57,633 acres of public land in the Planning Area, providing 7,547 animal unit months (AUMs) of forage annually. As noted in Table 2.4-7, these leases include public lands outside of CCMA. All of the grazing is done by cattle operations, and all of the forage provided annually is in the Diablo Range area. (See Section 3.11, "Livestock Grazing" for a more extensive treatment of public land grazing.) At the current average California private land lease rate for livestock grazing land ($14.50/AUM), the annual forage contribution from CCMA public lands is valued at just over $109,000.

The forage provided annually by BLM-managed lands in the Diablo Range amounts to less than 0.1 percent of the total livestock forage requirements of the three counties that make up the analysis area, and there is no forage contribution in the Central Coast area. In general terms, the economic contribution of public lands in the Planning Area to the livestock economy of the Diablo Range analysis area is negligible. However, that is not the case when individual economic units are considered.

The three largest leaseholders authorized for grazing on public lands in the CCMA lease from 1,036 AUMs to 2,914 AUMs annually. These leaseholders account for almost two-thirds of the acres leased by

the HFO in the CCMA and for over 80 percent of the AUMs. On average, 45 percent of the acreage they graze is public land. That figure serves as an indicator of the degree of importance public lands hold for these individual grazing operations. Moreover, for the remaining 8 smaller leaseholders, public lands make up 25 to 50 percent of their grazing acreage. Most of these smaller lessees may not be viable economic units, but their grazing operations likely yield some supplemental income, and public lands clearly are important to that supplement.

**Minerals**

The Federal mineral estate in the southern portion of the Diablo Range has historically been a source of both oil and natural gas, though nearly all of the production in Fresno and San Benito counties has been outside of CCMA. Moreover, production in the entire region has declined in the recent past, and the potential for oil and gas development in CCMA is extremely limited given more reasonably foreseeable energy and mineral development on other lands. In 2004, annual production in the entire Hollister Field Office stood at 585 million cubic feet (mmcf) of natural gas and 50,500 barrels of oil. Both of these figures are less than 2/100 of a percent of annual production of natural gas and oil in California. Although important at one time, the production of asbestos, bentonite, and mercury from public lands has ceased and is unlikely to start up again. (See Section 3.12, "Energy and Minerals," for a more extensive treatment of mineral extraction in the CCMA)

**Public Revenue**

Public land management activities and resource uses contribute only marginal revenues to local and State governments, based on the very limited Federal revenue from grazing fees, oil and gas royalties, and fees for recreation special use permits. Payment in Lieu of Taxes (PILT) based on BLM land ownership in the entire 12 county Hollister Field Office, contributed about $225,000 to local government revenues in 2004, which comprises a very small portion of these governments total revenues. As with other quantifiable economic indicators such as personal income, the public land resources in the CCMA are simply too small relative to other public revenue generators to make a significant contribution.

### 3.15.4.5 Other Socioeconomic Contributions of BLM Lands

In addition to the contribution of public land resources to local income and employment, other socioeconomic elements that are more difficult to quantify are affected. Especially in areas of the western U.S., where BLM lands make up the majority of the land base, public land resources may have a distinct effect on the lifestyles, quality of life, and traditions of a community. Since data on these types of socioeconomic indicators are not gathered in any regular and systematic way by a governmental entity, the analysis in this section is based on comments received by BLM over many years regarding CCMA from knowledgeable local individuals, government employees, and businessmen.

Considering these issues involves a review of the economic and social conditions described in the sections above, and acknowledging the broader context of socioeconomic indicators, and understanding the importance of things such as quality of life, community traditions, and lifestyles, and how they would be affected by land use alternatives in the CCMA RMP.

Several focal points emerged from the scoping meetings. comments, and discussions with public land visitors, including the potential utility of public lands as a way to connect Native Americans with their ancestral lands; the role that public lands play as a place to escape, to experience remoteness, and to have an unstructured outdoor experience; the place that public lands in the Diablo Range serve in linking modern day residents with traditional lifestyles; and the use of public lands as a mitigation pool for endangered species habitat.

A recurrent theme in most discussions of public lands in the CCMA was their function as a place to escape, to get away from the stress of population. Visitors to CCMA from the Bay Area must drive several hours, but then may spend an entire day riding, hiking, or rockhounding without seeing another person. An important element of this feeling of escape is that experiences on public lands are far less regulated, far less structured, than those at other recreation sites. There are a number of State Parks in the Planning Area, for example, but they are heavily used, sometimes requiring reservations, and often with a single focus, such as motorcycling, that requires intense regulation to manage its use safely. The downside to the remoteness of areas such as the CCMA is that many illegal activities such as poaching, trespassing, and marijuana cultivation are more prevalent.

Public comments referred repeatedly to the link between public lands in the CCMA and traditional lifestyles and practices. Many of the current grazing leaseholders are descended from the original homesteaders. Although few of these people derive their financial livelihood from public lands today, they still place great value on grazing cattle where their fathers and grandfathers did, and on hunting the same hills and canyons that their family has hunted for generations.

### OHV Recreation and Family Values

Since 1984, the classic stereotype of an OHV recreationist does not reflect the growing popularity of the sport, as public lands are now host to visitors of all ages including families, women, children, and octogenarian riders who enjoy OHV use on public lands.

Increasingly, recreational use of OHVs is a social sport, with most visitors coming in groups. The 1993-1994 California State OHMVR Division study describes how motorcycle clubs and OHV user associations often function as extended families, with families, singles, and couples all traveling together to enjoy the sights and camaraderie associated with outdoor recreation on public lands. In 1992, the OHMVR Division determined that 82% or more of the OHV-owning households had two or more drivers per household.

The importance of family-oriented recreation identified by the OHMVR Division is emphasized in the findings of a 1993 Statewide User Survey Analysis that emphasizes the physical, emotional, and mental benefits of outdoor recreation activities. This California State Parks report states, “Recreation has the potential to be a major balancing factor in peoples’ lives. Depending on the specific recreation or activity chosen, users can seek either excitement or relaxation through recreation. Participation in group outings builds an understanding of team work and provides a positive group affiliation. Family recreation strengthens the solidarity of the family unit.” These same values are reflected in public visitor use and enjoyment of CCMA, as local clubs and organizations sponsor numerous annual family events on public lands.

### Public Health and Safety

Besides preserving and protecting natural and cultural resources, BLM’s stewardship role extends to protecting public health, safety, and property. The Bureau is responsible for maintaining facilities and infrastructure, reducing health and safety risks to employees and the public, and protecting public lands from hazardous materials releases, illegal dumping of wastes, theft and destruction of Federal property, misuse of resources, and wildland fires.

In CCMA, releases of hazardous substances can have a significant impact on the health, diversity, and productivity of the public lands as well as on the health and safety of individuals who utilize and work on those lands. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), provides BLM’s authority and identifies agency responsibilities when responding to sudden releases of

hazardous substances affecting public lands, or from historic disposal or release sites associated with abandoned mine lands that continue to pose a risk the overall protection of the environment and human health.

CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986. SARA expanded the federal government's response authorities and clarified that federal facilities are subject to the same CERCLA requirements as private industry. Under Section 120 of CERCLA, each department, agency, and instrumentality of the United States is subject to, and must comply with, CERCLA in the same manner as any nongovernmental entity. Generally, funds from the Superfund do not go towards paying for the cleanup of releases from federally-owned facilities [Section 111(e)(3)].

Historically, approximately 80 percent of all hazardous substance releases on public lands in CCMA were related to mines and mill sites. The other 20 percent have been caused by illegal activities, such as illegal dumping, industrial wastes, and illicit drug production. In recent years, marijuana cultivation has increased substantially, introducing even more fertilizers and toxic wastes into regions not previously plagued by this problem, as well as previously located encampments.

The National Contingency Plan (NCP) establishes the processes and procedures used by lead agencies to respond to releases of hazardous substances pursuant to CERCLA. The NCP is published in the Code of Federal Regulations (CFR) under 40 CFR 300. As the lead agency responsible for releases on CCMA public lands, BLM must ensure that any investigatory or cleanup action taken pursuant to CERCLA, in response to a release of a hazardous substance affecting public lands, is in accordance with the NCP.

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# 3.16 Visual Resource Management

## 3.16.1 Introduction

BLM lands in the Planning Area were inventoried for scenic quality in 1979. These inventories were used in the 1984 Hollister RMP when the public lands were assigned to one of four visual resource management (VRM) classes, and scenic quality has not been reassessed to date. However, public lands in CCMA are known for the outstanding scenic quality, as numerous peaks and ridge routes in the area provide unparalleled views of Central California. In particular, San Benito Mountain is the highest peak in the Southern Diablo Range and boasts a vista that spans the entire San Joaquin Valley and Coast Ranges. Other locations to be considered with regards to visual resources management classifications include Tucker Mountain, Goat Mountain, Santa Rita Peak, Condon Peak, and Wright Mountain.

## 3.16.2 Regulatory Framework

Visual resources on BLM land are regulated by the guidance provided in the BLM Handbook H-8410-1. The visual resources of an area are inventoried and then assigned to a class by rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points. Visual resource classes are defined as follows:

- **Class I Objective:** To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II Objective:** To retain the existing character of the landscape. The level of change to the characteristic landscape should be low and not attract the attention of a casual observer.
- **Class III Objective:** To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate and may attract the attention but should not dominate the view of the casual observer.
- **Class IV Objective:** To manage activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high and may dominate the view and be the major focus of the viewer's attention.

## 3.16.3 Regional Setting

The CCMA consists of contiguous lands and isolated parcels spread across the rugged, mountainous terrain, although it is generally surrounded by low-elevation, rural ranching areas located in the nearby valleys. Elevations range from 1,000 to more than 5,000 feet. Modifications of public lands typically consist of visitor use facilities and range improvements such as fence lines and wildlife guzzlers. Electrical transmission lines, radio communication sites (including buildings and towers), and fuelbreaks are also located on BLM lands in CCMA.

## 3.16.4 Current Conditions and Trends

### 3.16.4.1 Overview of Management Zones

Approximately half of the BLM public lands in CCMA lie within the Serpentine ACEC. Visual resources in the Serpentine ACEC include expansive views of California's Central Valley, as well as the Sierra-Nevada and Coast Ranges. Scenic values in the Tucker, Condon, Cantua, and San Benito River management zones, emphasize other distinct watershed features associated with the New Idria serpentine

mass, San Carlos Bolsa, Tucker Mountain, Condon Peak, White Creek, the San Benito River, and Hernandez Valley.

BLM public lands in the Cantua Zone are also highly visible from U.S. Interstate 5. Scenery in this area is typical of the grassy hills along the western edge of the San Joaquin Valley, and therefore is an important visual resource. From the Ciervo Hills, west of the I-5 corridor, two large communication sites are visible on the ridgeline but they do not dominate the landscape, which is characterized by annual grasslands and scattered California junipers.

BLM lands in the San Benito River Zone are generally inconspicuous, although they are visible from Coalinga Road. Also, this zone includes Goat Mountain, which has been identified as preferred location in CCMA for recreational hang-gliding because of the prevailing wind patterns and ideal topography.

The Condon Zone includes BLM-managed properties that share boundaries with two significant California State Lands Commission holdings. Neither of these two areas has been assigned VRM class designations at the time of this report.

Of course, the predominant feature in the Southern Diablo Range is Joaquin Ridge, culminating at Joaquin Rocks, and Black Mountain. These arid foothills in the rain shadow of the Diablo Range are characterized by annual grassland/shrub vegetation and the steep chaparral and oak-covered slopes of the Diablo Range. Although Joaquin Ridge and Joaquin Rocks are outside the CCMA RMP 'planning area', BLM will consider potential effects on these resources in the CCMA RMP.

In the Tucker zone, public lands have limited non-motorized access, but are visible from Hernandez Valley and Vallecitos. The topography in this area is typical of the inner central coast range, with steep, rugged canyons, sandstone cliffs, and escarpments. Vegetation in this region is typically mixed chaparral and chamise chaparral. There are some areas of oak savannah and oak woodland, especially in canyon bottoms and on north-facing slopes.

Table 3.16-1 identifies the VRM Class standards that are currently applied to lands managed by the HFO.

**Table 3.16-1 Existing VRM Designations**

| Mgt. Zone | Current Decision |
|---|---|
| Serpentine ACEC,<br>Tucker,<br>Cantua,<br>San Benito River | • Class IV, unless otherwise stated.<br>• Limit communication facilities to existing sites.<br>• Utility corridors are established along utility rights-of-way. |
| Condon Zone | • Class III in the Condon Peak area.<br>• Limit communication facilities to existing sites.<br>• Utility corridors are established along utility rights-of-way. |
| San Benito Mountain RNA and WSA | • Class I<br>• No expansion of existing sites in the RNA.<br>• Utility corridors are established along utility rights-of-way. |

### 3.16.4.2 Visual Resources Inventory

BLM's analytical process for VRM identifies, sets, and meets objectives for maintaining scenic values and visual quality. Once inventoried and analyzed, lands are given relative visual ratings (visual resource classifications). VR class ratings are derived from an analysis of scenic quality rated by landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modifications. A determination of viewer sensitivity levels to changes in the landscape, and the distances that visual quality can be seen across a landscape, in order to determine an appropriate VRM Class objective.

Management Classes describe the different degrees of modification to the basic elements of the landscape (form, line, color, texture) that would be allowed from BLM management in CCMA. When a site-specific project is proposed, the degree of contrast between the proposed activity and the existing landscape is measured (Contrast Rating). The Contrast Rating process compares the proposed activity with existing conditions element-by-element (form, line, color, texture) and feature-by-feature (land/water surface, vegetation, structures). The Contrast Rating is compared to the appropriate Management Class to determine if contrasts are acceptable. If the proposed project exceeds the allowable contrast, a BLM decision is made to (1) redesign, (2) abandon or reject, or (3) proceed, but with mitigation measures stipulated to reduce critical impacts.

Currently, only the San Benito WSA and Research Natural Area are managed as VRM Class I areas, where only natural changes from ecological processes and very limited management activity are allowed, and contrasts within the landscape are designed to avoid attracting attention.

All other BLM public lands within CCMA are managed as VRM Class 4 areas, which allows contrasts within the landscape that attract attention and could be dominating features in terms of scale, but still attempts to repeat the form, line, color, and texture of the characteristic landscape.

The CCMA visual resource management classification process included an identification of cultural modifications in the landscape and an evaluation of the effects of those modifications on character and quality. The trend in scenic quality since most of the visual resource assessment work was done in 1979 has been relatively stable and unchanging in terms of landscape character and scenic quality. Much of this can be attributed to the amount of rough terrain throughout the Planning Area, coupled with lack of water, which were seen to be hindrances to development.

However, OHV use has increased over the past thirty years, and the resulting impacts to scenic qualities are highly visible in Clear Creek Canyon, and are expected to continue to increase in designated vehicle use areas within CCMA. Due to the degree of cultural modification (particularly surface area disturbance) observed over the period, HFO determined that the scenic quality of certain areas may have been reduced as a result of the cultural modifications. As a result, BLM is considering revised VRM Classes for certain areas as part of this RMP/EIS process including the Serpentine ACEC and the Condon management zone. A brief discussion of these areas follows.

Serpentine ACEC

The Serpentine ACEC encompasses both the San Benito Mountain RNA (4,147 acres) and WSA (1,500 acres). It was designated as VRM Class IV in the 1984 Hollister RMP. Rugged terrain, inclement weather conditions limit visitor use during summer and winter months. The existing character of the landscape is mostly retained, although the level of visual contrast is high in many areas due to historic timber harvesting, mining operations, and road construction. Since 2006, HFO has observed lower levels of

surface disturbance from OHV use on designated routes, and the presence of the San Benito Mountain RNA and WSA are valid reasons for reconsideration of the ACEC management as VRM Class II rather than IV.

Condon Zone

This management zone includes the Condon Peak/White Creek area located northwest of Coalinga, to the north of Coalinga-Los Gatos Road. It was designated as VRM Class III in the 1984 Hollister RMP. Scenic quality is moderate to high and very minimal impacts from surface disturbance or other visual contrast are visible from primary viewing routes. Existing conditions warrant retention of the Class III designation. However, the potential for increased use of this area for OHV recreation, hunting, camping, and fuelbreaks warrant consideration of Condon zone management as VRM Class IV rather than III because of impacts associated with these surface disturbing activities.

This area also abuts the CCMA's southern boundary and portions of it receive moderate vehicular traffic associated with private landowners and numerous clubs and organizations accessing CCMA public lands from Coalinga-Los Gatos Road, as well as law enforcement and military activities, which are expected to increase into the future.

The range of alternatives for VRM classification of these areas is described and analyzed in Chapters 2 and 4, respectively.

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# 3.17 Fire Management

## 3.17.1 Introduction

Fire risk is the probability that wildfire will start from natural or human-caused ignitions. Fire hazard is the presence of ignitable fuel coupled with the influences of terrain and weather. The nature of fuels, terrain, and weather conditions combine to dictate fire behavior, rate of spread, and intensity. Wildland fuel attributes refer to both dead and live vegetation and include such factors as density, bed depth, continuity, loading, vertical arrangement, and moisture content. In the wildland urban interface (WUI), structures are also potential fuel. Fire tends to burn more rapidly and intensely upslope than on level terrain. Also, weather conditions such as high ambient temperatures, low relative humidity, and windy conditions favor fire ignition and erratic fire behavior. The Hollister Field Office (HFO) strategy for wildfire management is to reduce the risk of unwanted fire in the Planning Area by managing wildland fuel and reducing human-caused ignitions. To develop the most effective management strategy, the Planning Area is divided into eight fire management units (FMU) based on geography and fuel type (see Map 6 in Appendix I). The FMUs differ in fuel type, acreage, and land use (see Table 3.17-1).

**Table 3.17-1 Fire Management Units (FMU) in the Planning Area**

| Fire Management Unit | Type | Dominant Vegetation/Fuel | BLM acres in CCMA |
|---|---|---|---|
| | | | |
| San Benito Natural Area | Special Management Area | Southern Ultramafic Jeffrey Pine Forest (also referred to as the "San Benito Forest" [Kuchler, 1997], comprising a Jeffrey-Coulter-foothill pine and incense cedar association), and Serpentine Chaparral (more specifically leather oak [*Quercus durata*] chaparral) | 4,147 |
| Clear Creek Serpentine ACEC | Area of Critical Environmental Concern | Serpentine Barrens, Serpentine Foothill Pine-Chaparral Woodland | 30,300 |
| Hernandez Valley | Wildland Urban Interface | Non-Serpentine Foothill Pine-Chaparral Woodland, Chamise Chaparral, Valley Oak Savannah, Blue Oak Savannah, and Non-Native Grassland | 5,000 |
| San Joaquin Valley South | Special Management Area | Annual grassland and shrub with steep chaparral and oak-covered slopes | 14,500 |
| San Joaquin South Continued | Special Management Area | Annual grasses and herbaceous forbs with few scattered California Juniper | 6,500 |

*Source*: HFO Fire Management Plan (2008).

## 3.17.2 Regulatory Framework

The Bureau of Land Management (BLM) is responsible for wildland fire and fuel management in the Planning Area. The HFO, under a mutual aid agreement with the California Department of Forestry and Fire Protection (CALFIRE), provides appropriate management response (AMR) for all wildland fires within the HFO. CALFIRE is responsible for actual fire suppression on HFO lands. The HFO currently manages wildland and prescriptive fire through the 1984 Hollister RMP and 2008 Fire Management Plan (FMP).

## 3.17.3 Regional Setting

Currently, wildland fire use (WFU) is not an option to achieve management goals on HFO land. The goal is to suppress all wildfires involving less than 10 acres 90 percent of the time. Prescribed fire and non-fire fuels treatments, including mechanical, biological, and chemical, are implemented as appropriate to create fire-safe communities, protect private property, achieve resource management goals, and restore ecosystem health. All activities comply with the 1984 Hollister RMP and HFO Fire Management Plan (2008).

## 3.17.4 Current Conditions and Trends

### 3.17.4.1 Historic Fire Patterns

The natural (historic) fire regime for the Planning Area is characterized by low-intensity surface fires with a recurrence frequency of less than 35 years. A historic fire regime is the natural role of fire across a landscape and the practice of Native American burning in the absence of modern human intervention (Agee 1993; Brown 1995). Fire managers define five natural (historical) fire regimes that are classified based on the average number of years between fire recurrences combined with its severity to the dominant vegetation (Schmidt et al. 2002). Severity is judged on the damage caused to vegetation. For example, a stand replacing fire completely burns the dominant overstory vegetation and is consider a severe fire. Based on the Schmidt et al. classification, the historic natural recurrence of fire for ecosystems in the Planning Area is Fire Regime Class I, which includes surface fires with a recurrence of 0 to 35 years and low to moderate severity.

Natural and human-caused fire has long been an integral part of vegetation communities in the Planning Area. Lightening-ignited fire is a natural component of central California ecosystems, and its occurrence is important to maintaining the health of rangeland ecosystems. Native Americans used fire for such things as hunting, improving wildlife habitat, land clearing, and warfare. As such, many of the plant species and communities within the Planning Area are adapted to recurring fire through phenological, physiological, or anatomical attributes. Some plants that occur in the Planning Area (e.g., chaparral shrub species) require recurring fire to persist.

However, the migration of European settlers into the area changed the natural fire regime in several interrelated ways, directly in response to changes in human intervention (Agee 1993; Brown 1995). The nature of vegetation (fuel) changed due to land use practices such as homesteading, livestock grazing, agriculture, water development, and road construction. Livestock grazing reduced the amount of fine fuels such as grasses and forbs, which carried fire across the landscape. In addition, continuous stretches forest and rangeland fuels were broken up by land-clearing activities. The removal of the natural vegetation allowed introduced weedy plants to colonize and occupy – in many instances – large expanses of land. The annual grasslands of central California are an example. Many of these weedy plants become flashy fuels as they age, causing fires to burn faster and hotter than with normal wildland fuels. In addition, more than a century of fire-suppression policy resulted in an unusually large accumulation of hazardous fuels in many rangeland ecosystems. The presence of flashy fuels coupled with the large accumulation of naturally occurring fuels has created hazardous situations for public safety and fire management.

Modern-day land managers continue the use of fire in the Planning Area by using prescribed fire as a tool to improve wildlife habitat, control noxious weeds, or reduce hazardous fuels. Their primary efforts in managing fuels and fire are to protect human life, economic values, and ecological values. An example is a WUI, which occurs where forest or rangeland vegetation intermixes with human structures and values.

Proactive and vigilant fire and fuels management in the Planning Area is necessary to protect the WUI and its associated economic and ecological values from fire loss.

### 3.17.4.2 Recent Fire History

Fires have regularly occurred in the Planning Area, with several fires burning thousands of acres. (see Table 3.17-2). Fires occur an average of four times per year, and approximately 85 percent are caused by humans. This level of human-caused fire is of concern to the HFO because of the threat it poses to WUI communities and other economic and ecological values important to the residents of central California.

**Table 3.17-2 Fires Occurring within the HFO for the Years 1980 through 2008**

| Fire Management Unit | Fire Number | Largest Fire (acres) | Average Fire Size (acres) | Total Area Burned (acres) | Ignition Cause | |
|---|---|---|---|---|---|---|
| | | | | | Lightening | Human |
| San Benito Natural Area | 2 | 150 | 76 | 152 | 1 | 1 |
| Clear Creek Serpentine ACEC | 2 | 1 | 0.6 | 1.1 | 2 | 0 |
| San Joaquin Valley South | 10 | 18,340 | 1,972 | 19,724 | 1 | 9 |
| San Joaquin South Continued | 19 | 7,800 | 1,082 | 20,560 | 3 | 16 |
| Hernandez Valley | 18 | 2,797 | 519 | 9,339 | 3 | 15 |

Table 3.17-3 presents an overview of the values at risk to fire loss, fuel hazard, and the approach to reduce fuel hazards in the FMUs. The level of fuel hazard is based on what is termed the fire regime condition class (FRCC). The FRCC includes three classes that measure the degree departure from the historical natural fire regime (Hann and Bunnell 2001). The departure from a natural fire regime is caused by changes to vegetation characteristics such as fuel composition, fire frequency and behavior, and other associated disturbances. The three FRCCs are low (FRCC 1), moderate (FRCC 2), and high (FRCC 3). The FRCC for an area is assigned based on current fuel conditions. FMUs that are classified as FRCC 1 are considered to be within the historic range of the fire regime variation for a vegetation type in central California; FMUs classified as FRCC 2 and FRCC 3 exhibit, respectively, moderate and considerable departure from the normal range of variation. Currently, the FMUs are classified as either FRCC 2 or FRCC 3.

Fires that occur in areas classified as FRCC 3 will usually burn more severely than fires in areas classified as FRCC I. In extreme cases, FRCC 3 fires can "sterilize" the soil by destroying the soil seed bank, soil organic matter, and soil microorganisms, and kill vegetation that otherwise may survive a less intense fire.

**Table 3.17-3 Fire Management Unit Values at Risk and Fire Regime Condition Class Targets and Management Actions**

| FMU | Values At Risk | FRCC | | Management Actions to Reach FRCC Proposed in CCMA RMP (Ch. 2) | | |
|---|---|---|---|---|---|---|
| | | Current | Target | Wildland Fire Use | Prescribed Fire Use | Non-fire Fuels Management |
| San Benito Natural Area | Unique forest assemblage, Special status species habitats, Watersheds | 3/2 | 1 | No | No | No |
| Clear Creek Serpentine ACEC | Special status species habitats, Watersheds, Cultural sites, Wildlife habitat | 3 | 1 | No | Yes | Yes |
| Hernandez Valley | WUI, Watersheds, Wildlife habitat, Grazing Riparian | 3 | 1 | No | Yes | Yes |
| San Joaquin Valley South | Special status species habitats, Watersheds, Cultural sites | 3/2 | 1 | No | Yes | Yes |
| San Joaquin South Continued | Camping sites, Cultural sites, Special status species habitats, Grazing, Wildlife habitat | 3/2 | 1 | No | Yes | Yes |

The recovery of desirable vegetation in these situations will usually not occur without management intervention. Rehabilitating or returning FMUs classified as FRCC 2 or FRCC 3 to a lower classification may require proactive fuels management in the form of prescriptive vegetation treatments to reduce the buildup of hazardous fuels (Brown 2000). Prescribed fire, mechanical treatment (mowing, chopping, thinning), chemical treatments (herbicides), and biological treatments (livestock grazing, insects) are ways to improve the FRCC rating of an FMU by changing the nature of the fuel load and distribution to be within the range of natural variation, thereby reducing fire risk. Prescribed fires are carefully planned and purposely ignited to achieve specific management goals under very controlled conditions.

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# 3.18 Lands and Realty

## 3.18.1 Introduction

The lands and realty program can be divided between land tenure adjustments and land use authorizations. Land tenure adjustments focus primarily on land acquisition and disposal, while land use authorizations consist of BLM approvals of rights-of-ways (ROWs), utility corridors and communication sites, and other leases or permits. Scattered tracts of public lands are present throughout the Planning Area, complicating BLM's ability to manage or control access or provide opportunity for enjoyment by the public. Opportunities exist to increase public benefits by disposing of some public lands through sale or exchange, or to acquire offered lands in areas that would enhance public enjoyment and facilitate resource management more efficiently. Acquired lands through previous land tenure adjustments are incorporated into this plan.

## 3.18.2 Regulatory Framework

### 3.18.2.1 Federal Regulations and Policies

In addition to being consistent with the goals and objectives for natural resources within the Planning Area, land tenure decisions must conform to the following regulations and policies:

- **Federal Land Policy and Management Act of 1976 (FLPMA)**– Lands are to be retained in Federal ownership, unless it is determined that disposal of a particular parcel will serve the national interest. Land use plans should avoid prescribing the method of disposal, acquisition, or property interest to be acquired.
- **FLPMA (Sales – Section 203, 43 USC 1713(a); Exchanges – Section 206, 43 USC 1716(a); and Reservation and Conveyance of Minerals – Section 209, 43 USC 1719(a)) or other statutes and regulations** – Lands or interest in lands that are available for disposal must be identified by parcel or by specific areas (on a map or by legal description).
- **Federal Land Transfer Facilitation Act (FLTFA) of 2000** – The FLTFA amended FLPMA to allow disposal in land use plans prior to July 25, 2000. The FLTFA currently does not apply to lands identified for disposal after July 25, 2000.
- **Recreation and Public Purposes Act (RPPA) of 1954, 43 U.S.C. § 869, et seq.1** – The RPPA, as amended, authorizes sale or lease of public lands for recreational or public purposes to State and local governments, and to qualified nonprofit organizations. RPPA leases must be for definitively proposed project with reasonable timetable and satisfactory plans for development, they must meet FLPMA disposal criteria, and no lands having "national significance" can be conveyed. Amount leased must be "reasonable" – no set amount total, but limits the amount per year by entity and should be no more than is "reasonably necessary" for the proposed use.
- **43 CFR 2740, 43 CFR 2912, 43 CFR 2911, and 43 CFR 2920 Land Use Authorizations** – Describes where and under what circumstances authorizations for use, occupancy, and development (such as major leases and land use permits) may be granted.
- **43 CFR 2806 – Corridor Designation.** Existing and potential ROW corridors (potential corridors include existing ROW routes with the potential for at least one additional facility and thus can be considered a corridor if not already designated) to minimize adverse environmental impacts and the proliferation of separate ROW.

#### 3.18.2.2 County General Plans

The Planning Area includes 2 counties, each with their own County General Plan. In addition to these concerns, County General Plans define open space and conservation policy in the Planning Area and opportunities to coordinate with federal agencies like the BLM. The followings General Plans are currently in place: Fresno County, February 1995 and San Benito County, February 1995.

### 3.18.3 Regional Setting

The HFO administers approximately 63,000 acres of public land located in 2 counties. There are an additional 3,500 acres of private land with Federal ownership of the subsurface minerals, also known as "split-estate." Adjacent landowners include private holdings and the federal, state, county, or local governments. Consolidation of federal lands through exchange or disposal per FLPMA and as amended in the Federal Land Transaction Facilitation Act (FLTFA) would require consideration of suitability criteria, multiple-use values, and consistency with other HFO management objectives and plans.

### 3.18.4 Current Conditions and Trends

Since the release of the 1984 Hollister RMP, BLM has pursued an aggressive land exchange program to consolidate public lands in the Central Valley surrounding Clear Creek and Condon Peak. Most of these realty actions occurred as a result of land tenure decisions within the 1984 Hollister RMP. Land tenure adjustments have resulted in the disposal of approximately 2 acres for every acre acquired.

The trend in land exchanges have allowed for more efficient and better management of resource values on BLM lands with contiguous ownership. Acquisition of non-federal lands has improved public access, provided additional protection for threatened and endangered species habitat, reduced the potential for trespass, and improved the management and protection of cultural and rangeland resources. Land disposals have relieved BLM of the administrative burden of managing isolated parcels of federal lands. Long-term benefits include the reduction of encroachment onto public lands from the surrounding private property and increasing the local property tax rolls of additional private lands.

#### 3.18.4.1 Lands for Retention

All lands not identified for disposal through this land use plan are identified for retention. They would be considered on a case-by-case basis for exchange or disposal per FLPMA. Lands identified for retention are considered as unsuitable for entry under any of the agricultural land laws because of significant multiple-use values.

#### 3.18.4.2 Land Acquisition

Acquisition of lands in the past decade have been along the west side of the San Joaquin valley (Ciervo Hills – Joaquin Rocks) and were considered the highest priority action needed to implement a recovery strategy for the rare complex of San Joaquin endemic species in the northern sector of their range.

#### 3.18.4.3 Land Disposal

Public lands transferred from BLM ownership are made subject to existing ROWs. ROWs closed through the disposal of public lands tend to be for small access roads rather than the larger utility ROWs. Lands that should be considered for disposal are scattered parcels that are difficult to manage, parcels that are continually threatened with encroachment or parcels without public access. No lands will be made available for disposal that will compromise the management objectives for the CCMA.

### 3.18.4.4 Land Use Authorizations

**Rights of Way**

Requests for ROW or construction of utility sites and related facilities outside of designated or established corridors are considered on a case-by-case basis (this would include additional costs for mitigation). Communication sites are authorized under FLPMA according to BLM's ROW policy. The CCMA has several mountaintops that are well suited for communication sites. There are presently seven communications sites located on or near San Benito Mountain, Santa Rita Peak, Spanish Lake, Sampson Peak and Sampson Creek Ridge. Existing utility corridors are located along Spanish Lake Road in the northeast portion of the CCMA.

### 3.18.4.5 Forecast

The BLM's lands and realty program for the Hollister Field Office includes a general acquisition and disposal plan, consistent with the goals and objectives for natural resources, that identifies a primary target area for future land acquisitions almost exclusively in western Fresno County. Many of the lands in this target area are adjacent to Clear Creek Management Area; and while the CCMA RMP identifies potential land tenure adjustments, future opportunities for acquisition or disposal of lands inside the CCMA boundary would be considered in light of the entire for the Hollister Field Office lands and realty program.

**Land Tenure Adjustments**

Acquisition and Disposal

Although BLM may determine that disposal of a particular parcel will serve the national interest (FLPMA Section 102(a)(1)) through the land use planning, the CCMA RMP avoids prescribing the method of disposal, acquisition, or property interest to be acquired. Lands or interest in lands are available for disposal under a variety of disposal authorities, provided they meet the criteria outlined in FLPMA (Sales - Section 203, 43 U.S.C. 1713(a); Exchanges – Section 206, 43 U.S.C. 1716(a); and Reservation and Conveyance of Minerals, Section 209, 43 U.S.C. 1719(a)) or other statutes and regulations, are identified by parcel on Maps A – G in Appendix I.

None of the BLM-managed lands in CCMA are available for disposal under the Federal Land Transaction Facilitation Act of 2000 (FLTFA), because none of these public lands were identified as suitable for disposal in a land use plan prior to July 25, 2000. Conversely, all of the CCMA RMP amendments prior to 2000 proposed withdrawal of areas to be continued, modified, or revoked (including how the lands would be managed if the withdrawal were relinquished and an opening order issued) (see 43 CFR 2300). These proposed withdrawals were intended to be applied BLM-administered lands in Clear Creek Canyon and the San Benito Mountain RNA to protect unique resource values. However, none of the proposed withdrawals were ever fully processed, so these public lands are still subject to mineral entry.

Land Classifications: Recreation and Public Purposes Act

Public comments received during the scoping period for the CCMA RMP suggested that BLM authorize sales or leasing of public lands in CCMA. With the exception of public lands in the Serpentine ACEC, BLM will evaluate suitability of public lands for disposal in the CCMA RMP. Pursuant to the BLM Land Use Planning Handbook, lands classification under the Recreation and Public Purposes Act are required for sales (see 43 CFR 2740) and leases (see 43 CFR 2912). To the extent that the land use planning procedures pursuant to 43 CFR 1600 differ from applicable classification procedures under 43 CFR 2400, the latter procedures shall be followed and applied.

The criteria that supports classification decisions is the same criteria utilized in the land use planning process to make decisions concerning the disposal or retention of public lands (FLPMA, Section 203). The process usually begins with an application by an entity desiring land (focuses on purpose to be served) for BLM-managed lands identified as suitable for lease or sale under the RPPA during the land use planning process. If lands are not identified as "suitable" for disposal in RMP, then a separate notice of realty action (and RMP Amendment) must be published and circulated prior to lease/sale.

A commitment by lessee(s) or conveyee(s) to a plan of physical development, management and use of the lands shall be required before a lease or conveyance is approved. To assure development of public lands in accordance with a development plan and compliance with an approved management plan, the authorized officer may require that public lands first be leased for a period of time prior to issuance of a patent, and funds from RPPA sales and leases usually go to the General Treasury.

**Land Use Authorizations**

Authorizations for use, occupancy, and development (such as major leases and land use permits) are currently granted (see 43 CFR 2740, 43 CFR 2912, 43 CFR 2911, and 43 CFR 2920, respectively) within existing and potential right-of-way corridors (potential corridors include existing right-of-way routes with the potential for at least one additional facility and thus can be considered a corridor if not already designated) to minimize adverse environmental impacts and the proliferation of separate right-of-ways (see 43 CFR 2806). However, the potential for development of areas in CCMA for renewable energy projects (e.g., wind and solar), additional communication sites, and other uses are limited, as wind and solar energy have low potential to produce significant economic activity. Nevertheless, western Fresno County is the area most likely to see interest in wind and solar energy development.

Currently, the Serpentine ACEC is not a right-of-way avoidance area (areas to be avoided but may be available for location of right-of-ways with special stipulations and areas which are not available for location of right-of-ways under any conditions). However, this type of restriction would be consistent with BLM's management objectives to minimize asbestos exposure and reduce asbestos emissions in the ACEC. Terms and conditions that may apply to right-of-way corridors or avoidance areas, including best management practices to minimize environmental impacts would be necessary to maintain resource values and protect public health and safety.

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# 4.0 ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the environmental consequences, or impacts, that are expected to occur as a result of implementing the management actions described for each alternative in Chapter 2. The depth and breadth of the impact analyses presented in this chapter is commensurate with the level of detail of the management actions presented in Chapter 2, and on the availability and/or quality of data necessary to assess impacts. The baseline used for expected impacts is the current conditions in the Planning Area described in Chapter 3. For the purpose of analysis, alternatives are grouped similar to Chapter 2 based on varying levels of motorized or non-motorized access inside the Serpentine ACEC, and other allowable uses, land use authorizations, and the associated mitigation measures for public health and safety.

Generally, the impact analysis for each resource program is organized into the following subsections:

- Introduction to analysis and the types of impacts that would occur under the range of alternatives.
- Overview of Impacts to Resources;
- Impacts and Mitigation Measures under Alternatives A, B, C, D, and E;
- Impacts and Mitigation Measures under Alternatives F and G;
- Cumulative effects under Alternatives A, B, C, D, and E;
- Cumulative effects under Alternatives F and G;

The BLM's Preferred Alternative is identified in Chapter 2, Section 2.5, and comprises a combination of land use authorizations and management actions proposed within the range of alternatives. Therefore, the environmental analyses of the direct, indirect, and cumulative impacts on the human environment from the BLM's Preferred Alternative are included in the subsections listed above for each resource program.

## 4.0.1 Impact Analysis Methodology

In general, impacts to resources in the Planning Area are analyzed by determining the effects on a given resource from its resource-specific management actions (e.g., the Recreation section addresses impacts to recreation from recreation management actions), and then by determining the effects on that resource from the management actions listed under other resources (e.g., the Recreation section addresses impacts to recreation from biological resources management actions). In some cases, the impacts to other resources from the management actions listed for that resource are also analyzed (e.g., the Livestock Grazing section also addresses impacts on biological resources from rangeland management actions).

Impacts are related to desired future conditions by comparing the impacts from implementation of management actions to achieving the goals and objectives specified for each resource/resource program under each alternative, and to the existing environmental conditions. For management actions that do not achieve the stated goals and objectives of that alternative, or that generally do not meet BLM's multiple use mandate, or that result in significant negative changes to physical or social conditions, the impact is characterized as adverse. For management actions that do achieve goals and objectives, the impact is characterized as beneficial. If a management action does not specifically affect a desired future condition, there is no impact. Finally, if there is not enough specificity to determine whether a management action would achieve the goals and objectives, the impact can only be described in general terms.

## 4.0.2 Types of Impacts to be Addressed

### 4.0.2.1 Direct and Indirect Impacts

Terms referring to the intensity, context (geographic extent), and duration of impacts are used in this chapter. Impacts are not necessarily only negative; many are positive benefits and are specified as such. The standard definitions for terms used in the impacts analysis include the following:

- Adverse – the effect is negative.
- Beneficial – the effect is positive.
- Negligible – the effect is at the lower level of detection; change would be hard to measure.
- Minor – the effect is slight but detectable; there would be a small change.
- Moderate – the effect is readily apparent; there would be a measurable change that could result in small but permanent change.
- Major – the effect is large; there would be a highly noticeable, long-term, or permanent measurable change.
- Localized – the effect occurs in a specific site or area.
- Temporary – the effect occurs only during implementation of a management action.
- Short-term – the effect occurs only for a short time after implementation of a management action.
- Long-term – the effect occurs for an extended period after implementation of a management action.
- Permanent – the effect is irreversible; the resource would never revert to current conditions.
- Direct – effect that occurs as a result of actions on the resource being addressed.
- Indirect – effect that occurs as a result from actions on other resources, or which are caused by the action and are later in time or farther removed in distance.

### 4.0.2.2 Cumulative Effects

40 CFR 1508.25 and the Council on Environmental Quality (CEQ) regulations require evaluation of an action's potential to contribute to "cumulative" environmental impacts during the land use planning process. 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). Cumulative impacts are also addressed in this chapter. The objective of cumulative impact analysis is to evaluate the significance of the proposed action's contribution to cumulative environmental impacts. The past and present actions are discussed in Chapter 3, Affected Environment, while the future actions are discussed in this chapter.

### 4.0.3 Incomplete or Unavailable Information

Impacts are quantified where possible. Impacts are sometimes described using ranges of potential impacts or in qualitative terms. In the absence of quantitative data, impacts are described based on the professional judgment of the interdisciplinary team of technical specialists using the best available information. Impacts analysis based on incomplete or unavailable information is identified where applicable in this chapter**. In particular, uncertainties with regards to human health risks associated with asbestos and the impacts of public health and safety management actions are addressed in Section 4.2, Hazardous Materials and Public Health and Safety.**

### 4.0.4 Mitigation Measures

Mitigation measures designed to avoid or reduce impacts are incorporated into the management actions of each alternative, as defined in Chapter 2. Therefore, impacts identified in this chapter are unavoidable and would result from implementing the management actions and related mitigation measures.

### 4.0.5 Assumptions

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, qualitative information and 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.

Several general assumptions were made to facilitate the analysis of potential impacts. The assumptions listed below are common to all resources. Other assumptions specific to a particular resource are listed under that resource.

- Changes in BLM policies have been made since the 1984 RMP was approved.
- Funding and personnel would be sufficient to implement any alternative described.
- Alternative G would make the existing temporary closure of the 30,000-acre ACEC that was issued by BLM under 43 CFR 8364.1 on May 1, 2008 permanent. Consequently, the impact analysis for Alt. G provides a baseline for comparison of the impacts associated with the temporary closure of the Serpentine ACEC to other management actions within the range of alternatives for the CCMA RMP/EIS.
- The alternatives would be implemented in accordance with all laws, regulations, and standard management guidelines/best management practices.
- 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.
- Climate change will affect the planning area and likely result in warmer and drier conditions.

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# 4.1 Recreation

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for recreation management are to (1) provide a variety of experiences and settings for a diversity of users and to meet potential changes in demand while minimizing conflicts with adjacent property owners and among user groups; (2) provide a range of recreational use opportunities while protecting sensitive natural and cultural resources from human intrusion; (3) promote sharing of ideas, resources, and expertise to increase the public's appreciation and understanding of natural and cultural resources on BLM public lands; and (4) disseminate information that will foster responsible behavior in order to achieve the highest possible environmental quality on BLM public lands.

## 4.1.1 Introduction

This section focuses on recreational opportunities and allowable uses, and impacts to users and resources. Section 4.15, "Social and Economic Conditions" addresses the social and economic value of recreation in the Planning Area. Motorized vehicle use for recreational purpose is described here; a discussion of travel route designations is included in Section 4.3, "Transportation and Access."

The alternatives analyzed in the CCMA RMP were developed based on public scoping and comments from Federal, State, Tribal, and local agencies, and in response to the purpose and need, as identified in Chapter 1. These alternatives provide a reasonable range of recreational opportunities to consider, as allowable uses and other restrictions are stratified among *Motorized* (A, B, C, D, E) and *Non-motorized* Alternatives (F and G) in order to evaluate overall protection of human health and the environment.

The range of alternatives in the Draft CCMA RMP/EIS considers a variety of management actions to address human health risks from exposure to asbestos to CCMA recreational visitors. Under Alternative A (No Action), there would be no change to the type of allowable uses and recreation opportunities on BLM-managed lands in CCMA; although, BLM would use a combination of best available control technologies (BACTs) and administrative actions (i.e. supplemental rules) to manage human health and safety risk from exposure to asbestos in CCMA, and augment the existing public asbestos hazard information program through improved signing, hand-outs, advisories, monitoring, public contact, and education programs with new information from the EPA's CCMA Asbestos Exposure and Human Health Risk Assessment incorporated into these materials.

Among the *Motorized* Alternatives (B, C, D, E) considered in the CCMA RMP/EIS, Alternative B and C would continue to provide vehicular access and OHV recreation at existing locations; although, certain allowable uses, competitive events, and commercial activities within the Serpentine ACEC would be restricted. Similarly, under Alternatives D and E, BLM would allow *Motorized* access through the ACEC, but the emphasis would be focused on establishing and managing motorized and non-motorized recreation use areas to provide appropriate recreation opportunities on BLM-managed lands outside of the ACEC.

Alternatives A, B, and C would focus on existing recreation sites and could allow expansion of existing facilities. Alternative C would limit OHV recreation in the ACEC to full-size vehicles and motorcycles only for visitors age eighteen or older. Alternative D would establish new OHV recreation sites outside the ACEC (see Table 4.1-1 below). Under all of the alternatives, except for No Action (Alt. A), overnight camping and staging would be prohibited in the ACEC. Alternative E emphasizes vehicle touring in the ACEC, as well as development of facilities for non-motorized recreation outside the ACEC.

Under the *Non-motorized* Alternatives (F and G), BLM would reduce asbestos emissions by limiting allowable uses to foot traffic only inside the ACEC (Alt. F) or minimize human health risks from exposure to asbestos by prohibiting all public use and entry in the ACEC (Alt G). Under these alternatives, public access would only be authorized inside the ACEC and the San Benito Mountain RNA for scientific research and education.

## 4.1.2 Overview of Impacts

This sub-section provides an overview of impacts that occur under all alternatives. The background and overall impact assessment is provided here and, as needed, further analysis, such as the location or severity of the impact, is provided under each alternative.

### 4.1.2.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

As described in Chapters 2 and 3, in order to manage recreation on BLM-managed lands, public lands are designated as Special Recreation Management Areas (SRMAs) or Extensive Recreation Management Areas (ERMAs). Recreation in SRMAs is under intensive management, with investment in facilities and supervision. Anything not delineated as a SRMA is an ERMA. ERMAs are typically managed for more dispersed recreation with less oversight of facilities (e.g., trails, parking areas). The designation of a SRMA or an ERMA is an administrative action and does not result in any direct physical environmental impacts. Designation of a SRMA can, however, result in changes to the recreational opportunity in that area based on subsequent planning efforts.

Under all alternatives, except G, the CCMA would be managed as a SRMA and would have some inherent management emphasis as to the type of recreation that occurs within the different management zones. Under these alternatives, non-motorized recreation activities such as hiking, hunting, and rock-hounding would be allowed throughout the CCMA. Mountain bike and equestrian use opportunities would also be available; although, they would be limited to routes and trails on BLM-managed lands outside the Serpentine ACEC under alternatives E, F, and G because of health risk concerns from exposure to asbestos emissions that would be similar to riding a motorcycle or ATV.

Camping within the Serpentine ACEC would be prohibited inside the ACEC under all the alternatives. The broad spectrum of existing recreational opportunities currently meets the needs and demands of visitors; although additional opportunities for recreation would be needed in the future, especially in areas closer to urban centers, as the population in California continues to grow. Therefore, other recreation facilities would be developed outside the Serpentine ACEC under Alternatives B-F.

Recreational use of public lands can be expected to increase as population grows, not only in the Central Coast and Diablo Range areas that support local use but also throughout the HFO and California. If recreation use were to grow at a rate proportional to projected population growth in the Central Coast and Diablo Range areas, over 50,000 annual visits would be expected, compared to the 43,000 visitor use days recorded in 2006.

Increased visitor use would place higher demands on the recreation infrastructure and increase demand for developed and maintained facilities, access points (trailheads), comprehensive trail maps, and trail maintenance. Increased use would also place more demand on management resources, natural resources, and trail system infrastructure. Current observations are that OHV use at CCMA is not increasing at the rate of other OHV areas, although publicity and population growth would be expected to contribute to slight increases in CCMA visitor use over the life of this plan.

**Conflicts with Other Uses, Adjacent Property Owners, or Among User Groups**

Conflicts among users can occur between hikers, equestrians, and mountain bikers, or between motorized and non-motorized recreationists using the same trails or areas. For example, if one user is seeking a quiet and natural experience and another user is creating considerable noise or dust, there may be resulting conflict between the users. Under all alternatives, except E and F, some level of conflict would likely exist between hiker/equestrian/mountain biker vs. motorized recreationists. This would primarily be an issue at the existing recreation facilities, mainly due to the disproportionate number of motorized users and diverse attitudes of CCMA visitors.

Additionally, conflicts can arise with adjacent property owners where poor signage or lack of property boundary posting allows potential trespass onto private property, or if nuisance noise or dust from biking or vehicles migrates from BLM lands to private property.

**Education and Interpretation**

Under all alternatives, BLM's management presence on public lands would continue to be improved through the use of signs, boundary markers, and outdoor displays. Educational and interpretive activities in and of themselves would not directly affect public services. The use of exhibits and interpretive facilities is an important and positive mechanism to educate CCMA visitors and conduct outreach regarding environmental stewardship and human health risks from exposure to asbestos. Web-based and print media would also be effective tools for assisting recreationists in planning visits to the public lands. Establishing expected behaviors and actions before a visitor arrives is the best way to minimize health risks and conflicts between users/individual recreationists and natural/cultural resources. If use patterns change based upon the selected alternative, new visitor use patterns will need to be ascertained so that education and interpretation materials can be tailored to better serve the new activities.

The construction of new education and interpretation facilities would be limited to concentrated use areas, so the impacts would be in association with existing use sites or new use site developments. In either case the education/interpretation portion of the development would have negligible impacts to the environment.

#### 4.1.2.2 Impacts from Other Management Actions

**Biological Resources**

Management actions under Biological Resources may preclude recreational activities at certain times and locations. This includes restricting recreational activities near certain nesting sites, vernal pools, or near newly re-established vegetation, or restricting pets from entering ponds that may contain special status species. These restrictions are generally limited to very small areas, and may or may not be limited to a certain time frame, depending on the Alternative. While restricting recreation to a reduced area, even temporarily, would create additional burden on the surrounding recreation areas, the intent of these restrictions is to enhance the biological or ecological resources in the area, which in the long-term should enhance the recreation user's experience.

**Livestock Grazing**

The presence of livestock near recreation sites may or may not affect the activities occurring at the site. Some observers enjoy seeing cattle on the landscapes, while the signs of livestock grazing, such as fences, manure, and stock ponds, may impact the natural aesthetic for some visitors and impair the ability to enjoy the scenery and/or the solitude of the area they are visiting. Additionally, the presence of livestock in close proximity to recreation users can cause some conflict, as there can be collisions between users

and livestock on heavily used trails. This would likely only be an issue in the Condon Zone where current grazing leases exist and future grazing leases are most likely to occur.

**Energy and Minerals**

Management actions associated with mineral and energy development may preclude recreational activity at certain locations and times. Currently, recreation users are restricted from entering public lands that are part of the Atlas and KCAC mine sites. Active and inactive mine sites have negative impact on the viewshed of the area for recreation users. Increased traffic associated with active mine operations would increase asbestos emissions and pose an additional health risk to recreation users. Existing hard rock mining claims and newly established claims will prohibit access to public lands by amateur rockhounding enthusiasts.

**Cultural and Paleontological Resources**

All alternatives afford protection of these resources and permit some level of access to special areas. If during a planned event or by accident a special resource is encountered or if a special study is under way, recreation may be restricted from that area for a limited time. The restricted area would likely be small and also fenced or otherwise marked as restricted.

**Travel and Transportation Management**

Recreational activities including horseback riding, hunting, and rock hounding, require foot and/or vehicular access. Each alternative analyzed here establishes varying degrees of motorized and non-motorized access to certain recreation areas, miles of routes, and use of routes for specialized purposes.

While closing or specifying the appropriate use of certain routes may limit unnecessary impacts to other resources like vegetation or water resources, having some routes only open to administrative or research vehicles, and some routes closed on a seasonal basis would be confusing to some visitors and would require increased signage. While useful for navigating, any additional signage may alter the natural setting of the immediate surroundings.

Additionally, closing roads to motorized access for recreation could limit the ability of the public to access those areas, especially those areas far from other public roads or in areas where the terrain is difficult to access by foot or the distance to the destination is too great.

Furthermore, closing redundant roads that were previously open could result in increased use of those roads that remain open, possibly resulting in unanticipated impacts from the increased use.

**Lands and Realty**

BLM can increase public benefits by disposing of some public lands through sale or exchange, or by acquiring offered lands in areas that would enhance public enjoyment and facilitate resource management more efficiently. The BLM can enhance opportunities on public lands by acquiring lands that offer unique or desirable opportunities, or that allow increased or improved access.

### 4.1.3 Impacts to Recreation for Alternative A

#### 4.1.3.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Under Alternative A, Clear Creek Management Area would remain a SRMA. Recreation would be governed only by existing decisions, and BLM would incorporate health risk information into public outreach and educational materials to improve human health and safety. Designation of CCMA as a SRMA would preserve BLM's ability to plan, expand, or restrict certain uses, and adequately plan for recreation use in this popular OHV recreation area, resulting in major, long-term, beneficial impacts to recreational opportunity in these areas.

Under Alternative A, vehicle use in the area would be limited to designated routes and barrens, and there would be no new roads constructed and no existing routes would be closed. This would be a considered a negligible impact to recreation opportunities in CCMA because it would maintain current management direction. However, continuing to allow motorized access in the Serpentine ACEC would be a major long-term benefit for OHV recreation because of the high-quality OHV riding opportunism available on the extensive OHV route network in CCMA, which is primarily concentrated within the ACEC.

Increased visitor use would place higher demands on the recreation infrastructure and increase demand for developed and maintained facilities, access points (trailheads), comprehensive trail maps, and trail maintenance. Increased use would also place more demand on management resources, natural resources, and trail system infrastructure. Current observations are that OHV use at CCMA is not increasing at the rate of other OHV areas, although publicity and population growth would be expected to contribute to slight increases in CCMA visitor use over the life of this plan.

Hobby gem and minerals collection (rock-hounding) and hunting would also continue to be popular activities in CCMA. Both would probably be subject to more restrictions due to human health risks from exposure to asbestos in CCMA. Areas outside the Serpentine ACEC will likely become more popular as BLM implements public health and safety measures. Volunteers could play a greater role in the development and maintenance of these areas.

Development of trails as well as installation of any other visitor facilities may become necessary to manage public use and meet recreation opportunity demands in the CCMA's San Benito Mountain Research Natural Area. Such infrastructure would require greater law enforcement presence, as well as increased demand for non-motorized trail use and improved facilities outside the Serpentine ACEC.

**Conflicts with Other Uses, Adjacent Property Owners, or Among User Groups**

Under Alternative A, user conflicts would continue to be an issue in areas where there is competition for non-motorized and motorized use on roads and trails and at other recreation facilities, such as campgrounds. Individual conflicts are temporary and localized, but would continue to have major long-term adverse effects on non-motorized recreationist and private landowners that are negatively impacted by safety hazards, noise, and large crowds associated with OHV use in CCMA. Whereas, impacts to motorized recreationist and OHV recreation would be negligible, even as recreation demand grows, because of the size of the designated OHV route network and the existing recreation facilities.

**Education and Interpretation**

Under this alternative, the use of boundary postings and outdoor kiosk/display sites would be encouraged. The Hollister Field Office would **c**ontinue to provide outreach and education through publications and field contacts to create public awareness of human health risks from exposure to airborne asbestos fibers in CCMA. By incorporating the best available information on human health risks from CCMA recreation activities, BLM's interpretation and education program would provide minor long-term benefits to public health and safety.

Additionally, all alternatives would promote a limited number of facilities in the Tucker, Condon, and Cantua management zones. Facilitates could include kiosk/display sites, restrooms, parking areas, trails, and campgrounds, depending on the need and level of use in the area. Use of such facilities would have mixed consequences. They can increase the enjoyment of recreation experiences for some visitors, but may detract from the naturalness for others. Implementation of these facilities would require greater law enforcement presence or patrol by BLM.

Overall, the addition of signs, kiosks, and facilities such as restrooms and parking areas in those areas most in need of such facilities would provide a moderate beneficial impact to recreation in those areas.

**Visitor Use Fees**

Visitor use fees were approved and implemented for CCMA on January 1, 2007. Use fees may exclude or detract certain visitors from participating in the activity for which the use fee is established. While this could adversely impact the population who cannot afford the fee, this would also have a minor beneficial impact in instances where overcrowding leads to less enjoyment of the activity or to environmental impacts.

#### 4.1.3.2 Impacts from Other Management Actions

**Biological Resources**

Alternative A affords adequate environmental protection to biological and cultural resources. If this Alternative were selected, all road activities must be consistent with BLM Manual 9113, H-9113-2, and 9114. These actions would result in minor long-term beneficial impacts for transportation.

**Livestock Grazing**

Rangeland management activities would not appreciably impact opportunities for recreation. The presence of cattle near recreation sites may or may not affect the activities occurring at the site, or have an impact on the users' enjoyment of the landscape, depending on personal preference.

**Energy and Minerals**

Major energy and mineral exploration/development is unlikely within CCMA under Alternative A based on the underlying geology and health and safety concerns associated with the presence of asbestos. However, past mining activities have adversely impacted the viewshed and have created asbestos emissions in association with road construction and vehicle traffic. Currently all hard rock mining is casual use. No plans of operations are on file. The atlas and KCAC asbestos mines are fenced and no public access is allowed.

Lode claims in the area conflict with recreation opportunities. Rockhounders can recreate on sites with active lode claim. Development mine operations will create conflicts with other uses due to increased equipment use and potential for higher asbestos emissions.

Some oil and gas development has occurred in the Cantua area historically, and future development of energy and minerals anywhere in the CCMA would have potential conflicts with recreation opportunity and use. However, development of oil and gas on BLM-administered lands is not reasonably foreseeable and future mining activities are also unlikely due to environmental constraints.

**Cultural and Paleontological Resources**

Alternative A provides adequate protection of these resources. If a special resource is encountered or if a special study is under way, recreation may be restricted from that area for a limited time. The restricted area would likely be small, and a fence or barrier would be erected. This impact would generally be localized and short-term and would not result in any noticeable changes to recreation use or opportunity.

**Travel and Transportation Management**

This alternative would maintain current motorized and non-motorized recreation opportunities on approximately 270 miles of roads and trails within CCMA. The route network would continue to be evaluated for soil loss and habitat concerns with reroutes occurring as deemed necessary by appropriate staff in conjunction with further planning efforts, in compliance with the Biological Opinion. All uses other than pedestrian would continue to be restricted to designated routes and barrens. Minor user conflicts, both within and between motorized and non-motorized users, will likely continue and is considered a minor long term impact to recreation. Primary access would continue to be the main entrance at the intersection of Coalinga Road and Clear Creek Road. Access through Idria would be analyzed for management concerns and discussed with San Benito County, the current owner of the road, regarding public safety and environmental impacts stemming from this point of entry.

Alternative A would continue to be beneficial for the users' transportation and access throughout the management area, creating no new adverse impacts to either.

#### 4.1.3.3 Mitigation

Mitigation measures are incorporated into the management actions described in Chapter 2. Therefore, no mitigation measures for impacts to recreation resources are necessary under Alternative A.

### 4.1.4 Impacts to Recreation Common to Alternatives B, C, D, E, F and G

#### 4.1.4.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Under all alternatives, Clear Creek Management Area would remain a SRMA. Recreation would be governed by BLM manuals and policy, and the Hollister Field Office would incorporate health risk information into public outreach and educational materials to improve human health and safety. If the area could not be designated as a SRMA through this RMP process, the BLM would have limited ability to plan, expand, or restrict certain uses. The inability of the BLM to adequately plan for recreation use in these popular areas would result in minor, long-term, adverse impacts to recreational opportunity in these areas.

Human health risks and impacts to natural and cultural resources associated with allowable uses and recreation opportunities in CCMA would be mitigated through management actions and restrictions unique to each Alternative. Motorized and non-motorized recreation are a component of all Alternatives, with varying levels of access and use restrictions in each of the five management zones based on EPA's Asbestos Exposure and Human Health Risk Assessment (2008).

Under Alternatives B, C, D, E, F, and G, special recreation permits (SRPs) would only be authorized outside the ACEC to further reduce asbestos exposure and emissions associated with organized events. The restrictions on SRPs for organized events in the ACEC would have major long-term negative impacts on OHV clubs and groups that have historically held competitive motorcycle races, jeep tours, and other

events; as well as any other organizations or clubs that promote group activities in the Serpentine ACEC because of the lost opportunity for fundraising and events sanctioned by the American Motorcycle Association.

As a result of the varying levels of recreation management and differences in allowable uses from Alternative A, all of these alternatives would have some potential for adverse effects on existing recreation resources. In particular, each of these alternatives would prohibit staging for recreational activities and overnight camping in the ACEC, with the exception of visitor use at Jade Mill for camping under all alternatives. Although the purpose and need for this RMP/EIS is basewd on minimizing and reducing human health risk assicaited with asbestos exposure, Upper Jade Mill campground is underlain by nonserpentine soils. BLM first identified the Jade Mill site for development of recreation facilities in the Hollister RMP (BLM, 1984); and as a result, the Upper Jade Mill site remains a favorite camping location and consistently receives heavy use.

These restrictions would have minor long-term negative impacts on all types of recreation use in the ACEC, including motorized and non-motorized activities, because of the decrease in facilities to support these visitor uses. On the other hand, Alternatives B, C, D, E, and F also promote enhancing recreation opportunities within the CCMA as a whole by developing new recreation facilities in the Tucker, Cantua, and Condon Zones, which would provide long-term benefits to recreation resources since they will no longer be exclusive to the ACEC.

Indirect impacts would increase as restrictions on allowable uses increase and recreation opportunities decrease across the range of alternatives from A - G, particularly within the Serpentine ACEC. These restrcitions would displace thousands of recreationists, who would end up seeking OHV recreation opportunities in other County, State or Federal recreation areas. Most of these other areas are smaller than CCMA and additional visitors would contribute to overcrowded conditions and additional impacts to the human environment in those areas. Overcrowding can lead to increased conflicts among user groups, decreases in recreational quality and experience, and adverse impacts to other resources like vegetative cover, wildlife habitat, soil loss and erosion, and water and air quality.

**Conflicts with Other Uses or Adjacent Property Owners, or Among User Groups**

As under Alternative A, the existing, but limited, conflicts among user groups would continue at CCMA under all alternatives. While there are no management actions defined to address this issue, the change in recreational opportunities throughout the Planning Area, as provided under Alternatives B, C, D, E, F and G would decrease the potential for these conflicts due to substantial reductions in annual visitor use.

**Education and Interpretation**

Under these alternatives, the Hollister Field Office would provide recreation information such as maps, brochures, and educational opportunities to enhance visitors' experience on BLM public lands, incorporate the best available information concerning: asbestos health hazards, OHV use designations, fire prevention, BLM regulations, and natural resources of the area into educational materials and on all maps, brochures, and kiosks.. By incorporating the best available information on human health risks from CCMA recreation activities and other BLM regulations, the Hollister Field office interpretation and education program would provide moderate long-term benefits to CCMA recreation visitors.

All alternatives would allow the construction of new or upgraded facilities, depending on the availability of funding and partnerships, including signage, wayside exhibits, and kiosks, and therefore potentially would cause increased demand for public services (e.g. restrooms, picnic areas, more parking) at remote areas like Condon Peak and Cantua Zone. These efforts would result in moderate benefits for the

awareness and understanding of CCMA resources for recreation visitors, and minor adverse effects on law enforcement patrols and emergency services.

**Visitor Use Fees**

Alternatives B through G would allow BLM the flexibility to continue visitor use fees. Use fees may exclude or detract certain visitors from participating in the activity for which the use fee is established. While this could adversely impact some visitors, most public land visitors are willing to pay a small fee for recreation opportunities in CCMA, and collection of visitor use fees could help improve recreation facilities and reduce the negative impacts associated with overcrowding or other environmental impacts. Overall, the adverse effects of visitor use fees would be outweighed by these potential benefits

#### 4.1.4.2 Impacts from Other Management Actions

**Biological Resources**

Management actions for biological resources may preclude recreational activities at certain times in order to conduct restoration or scientific activities. These would be done on a limited basis in a limited area. In the short-term, the closure to recreation of these areas would be a temporary, negligible to minor adverse impact; however, in the long-term, users could appreciate the enhanced natural surroundings.

**Livestock Grazing**

Under the range of alternatives, impacts to recreation resources and activities could result from closures of access routes due to Rangeland Health Standards and Guidelines. Without vehicular access, the resource quality remains, but the opportunity for use is reduced or eliminated. The significance of impacts on recreational activities in the Planning Area would depend on the routes no longer available as a means of access to the public lands. However, rangeland health is not a major factor in the selection of routes in CCMA. Thus little impact to recreation resources and activities is anticipated.

As with Alternative A, the presence of livestock near recreation areas could result in collisions between users and livestock on heavily used trails. Generally, limiting allotments to grazing would avoid these conflicts. Alternatives F and G would exclude grazing from the Serpentine ACEC and the entire CCMA, respectively, which could have a minor, long-term beneficial effect on recreational opportunities for hunting, as game species would have increased forage available in the Condon, Cantua, and Tucker Zones.

**Cultural and Paleontological Resources**

Same as Alternative A.

**Travel and Transportation Management**

As with Alternative A, vehicle use on all BLM lands would be limited to designated routes under all alternatives. Additionally, full size vehicle traffic on the designated roads and trails would increase incrementally over time, and might show increases due to displaced use from closed roads and areas. However, a shift in emphasis from heavily motorized use to non-motorized use might reduce overall use of some roads and bring about a minor to moderate beneficial long-term impact to the character of the landscape that contribute to the value of recreation opportunities in the CCMA.

The environmental consequences of the range of alternatives for transportation and access are described in detail in Section 4.3.

**Lands and Realty**

Under all alternatives, the BLM could enhance recreation opportunities on public lands by acquiring lands that offer unique or desirable opportunities, or that allow increased or improved access. Because these actions would be highly subject to availability of funding and/or appropriate lands for acquisition, impacts can only be addressed at a general level. A detailed description of potential acquisitions and disposals of lands by Alternative is described in Section 4.18.

#### 4.1.4.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

### 4.1.5 Impacts to Recreation for Alternative B

#### 4.1.5.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Under Alternative B, there would be no new roads constructed and no existing roads abandoned. Vehicle use in the resource area would be limited to designated routes. The public lands managed by the Hollister Field Office would remain open to motorized recreation use on designated routes, except where closed by closure notices, and/or by activity-level planning decisions. Under Alternative B, BLM would continue to manage up to 270 mile route network and 478 acres of designated barrens for OHV use.

Under this alternative, BLM would require permits for access into the Serpentine ACEC to limit annual visitor use days in order to reduce asbestos exposure to acceptable risk levels. Based on the potential for excess lifetime cancer risk calculated in EPA's risk assessment, motorized access would be limited to less than 5 days/year, and non-motorized access would be limited to less than 12 days/year. The requirement to obtain access permits for authorized recreation activities in the ACEC would have moderate long-term negative effects on recreation resources in the ACEC because the opportunities for motorized and non-motorized would be substantially reduced, even though they would continue to be available in the ACEC.

Under this alternative, user conflicts would continue to be an issue in areas where there is competition for non-motorized and motorized use within the same travel ways. Individual conflicts are short-term but the occurrence would continue over the long term or permanently. This would be considered a minor, long-term adverse impact to non-motorized recreationists. Although, limits on annual visitor use days would have major long-term adverse impacts to motorized recreationists and OHV recreation in CCMA.

**Education and Interpretation**

Same as Alternative A.

#### 4.1.5.2 Impacts from Other Management Actions

**Energy and Minerals**

Major energy and mineral exploration/development is unlikely within CCMA based on the underlying geology and health and safety concerns associated with the presence of asbestos. However, under this alternative the area would be open to lode claims and the development of a mine operation would potentially have long-term adverse impacts to recreation in CCMA because mine development would

preclude recreation use in mined areas and would generally increase asbestos exposure and emissions in the Serpentine ACEC.

**Cultural and Paleontological Resources**

Same as Alternative A.

**Travel and Transportation Management**

Route network is the same as Alternative A.

The Dry Season Use Restrictions would be extended from April 15th through December 1st, which would further reduce the visitor use season by 12 weeks and limit access to CCMA more than 60% of the year. Wet Season Use Restrictions would continue using established or improved methods as they become available. Under this alternative, visitors will be limited in their use by days/year based on the EPA and BLM risk assessment models and activity-based air sampling data gathered during the 'wet season', which is the time of year CCMA is open to the public.

#### 4.1.5.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

### 4.1.6 Impacts to Recreation for Alternative C

#### 4.1.6.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Alternative C would authorize full size vehicles on County roads and designate 150 miles of existing routes for "single track/motorcycle use only"; and visitors under the age of 18 would be prohibited in the ACEC. The Condon Peak and Cantua Zones would continue to be managed for hunting via ATV and full size vehicle as well as non-motorized recreation opportunities. Pedestrian recreational opportunities like hobby gem and mineral collection would continue to be available throughout the Serpentine ACEC.

Age restrictions, loss of route mileage and change in designations would present major long term adverse impacts on minors and ATV/4WD user groups. On the other hand, this alternative would provide major long-term benefits for (adult) motorcycle recreation by emphasizing development and maintenance of single-track trails in the Serpentine ACEC.

**Education and Interpretation**

Same as Alternative A.

#### 4.1.6.2 Impacts from Other Management Actions

**Energy and Minerals**

Same as Alternative B.

**Cultural and Paleontological Resources**

Same as Alternative A.

**Travel and Transportation Management**

The transportation network would have major long-term adverse impacts on access for all user groups other than motorcycles and full-size vehicles. Access would also further be limited to users 18 years of age and older, negatively impacting young visitors and family recreation in the ACEC. Since the county road network would be the only available routes to full size vehicles, access to areas off of major roads would also be permanently adversely impacted.

#### 4.1.6.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

### 4.1.7 Impacts to Recreation for Alternative D

#### 4.1.7.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Alternative D would only authorize full-size vehicles on County roads and BLM routes identified on Map D in the ACEC. These restrictions on allowable uses would have major long-term adverse impacts on OHV recreation in the ACEC. However, under this alternative, BLM would develop approximately 60 miles of trails to promote OHV recreation opportunities on public lands in the Cantua, Tucker, and Condon management zones. BLM would also establish new campgrounds, staging areas to support OHV recreation in the Cantua Zone, as well as lands surrounding Tucker Mountain. These new OHV recreation opportunities would provide moderate long-term benefits to OHV recreation in Central California and off-set some of the adverse impacts from prohibiting OHV recreation in the ACEC; although the quality and quantity of OHV recreation opportunities would still be diminished compared to Alternatives A, B, and C.

**Education and Interpretation**

Same as Alternative A.

#### 4.1.7.2 Impacts from Other Management Actions

**Energy and Minerals**

Mineral leasing or sales within the Serpentine ACEC would not adversely to recreation opportunities under this alternative. The withdrawal of public lands in the ACEC from locatable mineral entry would have long term beneficial impacts to recreation by reducing use conflicts between mine operations and recreationists. Conflicts for gem and mineral collection, increased asbestos emissions due to mine operations, and adverse impacts to the viewshed would be avoided.

**Cultural and Paleontological Resources**

Same as Alternative A

**Travel and Transportation Management**

Transportation and access within the Serpentine ACEC would be greatly restricted with expanded opportunities developed in the surrounding Zones. Since the dry season route network will be the only available routes within the Serpentine ACEC, access to some areas may be pedestrian only.

#### 4.1.7.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

### 4.1.8 Impacts to Recreation for Alternative E (Preferred Alternative)

#### 4.1.8.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Alternative E would allow motorized access inside the ACEC for full-size vehicles from the CCMA entrance near New Idria on Spanish Lake Road to Wright Mountain. Access would be authorized by permit only for less than 5 days/year for vehicle access and less than 12 days/year for pedestrian use. Gates would be installed where necessary to control access. Facilities such as pull-outs and parking areas would be developed in areas exhibiting unique recreational values, such as SBMRNA/WSA, Wright Mountain, and other scenic points of interest.

Alternative E would have major adverse impacts on motorized recreation in CCMA. Only 58 miles of routes would be available in the entire CCMA. Only full-size vehicles would be allowed on the designated route system. Access for hobby gem and mineral collection would be adversely impacted by route closures and could significantly increase time required for hiking to and from collecting sites. Hikers and hunters would be afforded access along the route to designated points of interest for natural and cultural resources. Public recreation opportunities in the ACEC would be further adversely impacted by requiring permits for access that limit annual visitor use days to a set number of days in the ACEC for recreation purposes.

Special recreation permits for hobby gem and mineral collection would be issued on a case-by-case basis. Under this alternative, the requirement to obtain a special recreation permit for rockhounding would have negligible impact on CCMA visitors because the opportunities for hobby gem and mineral collection would continue to be available in the ACEC.

Pedestrian access would be enhanced slightly based upon improvements to trail system and reduced conflicts with motorized vehicles. Facilities such as pull-outs and parking areas would be developed in areas exhibiting unique recreational values, such as SBMRNA/WSA, Wright Mountain parking access to Joaquin Rocks and other scenic points of interest. The Cantua and Tucker zones would be managed for non-motorized recreation opportunities, while the Condon zone would maintain existing route management objectives (RMOs). In general, these management actions would have moderate long-term benefits for non-motorized recreation outside the Serpentine ACEC; however, health and safety mitigation measures that limit annual visitor use days would have moderate long-term adverse impacts on non-motorized recreation visitors in the Serpentine ACEC because these recreation opportunities would be restricted to less than 12 days/year.

The restrictions on allowable uses under Alternative E would have major long-term adverse impacts on OHV recreationists due to the complete loss of OHV opportunities in CCMA. These displaced users would seek OHV opportunities in other recreation areas that provide OHV access, like State Vehicular

Recreation Areas (SVRAs), Metcalf County Park, Frank Raines County Park, and BLM's Jawbone Area of Critical Environmental Concern, which would most likely become more congested. This would have indirect negative effects on these and other OHV areas as increased visitor use would place higher demands on the recreation infrastructure, budget resources, and natural resources; as well as presenting safety concerns as conflicts among impacted groups/individuals will become more frequent,

**Education and Interpretation**

Informational and interpretive panels would be developed and placed at strategic locations along the access route.

#### 4.1.8.2 Impacts from Other Management Actions

**Energy and Minerals**

Under this alternative, 30,000 acres of public lands within the Serpentine ACEC would be unavailable for mineral leasing or sales and withdrawn from locatable mineral entry. These land use allocations would have a minor long-term beneficial impact on recreation resources by preserving wildlife habitat and other areas with recreation values from potential mineral leasing and development.

**Cultural and Paleontological Resources**

Same as Alternative A.

**Travel and Transportation Management**

Transportation and access would be severely limited in scope throughout the Serpentine ACEC, with pedestrian access the only available option outside of the Spanish Lake Road corridor. New opportunities would become available as developed in the surrounding zones.

#### 4.1.8.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

### 4.1.9 Impacts to Recreation for Alternative F

#### 4.1.9.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Alternative F would restrict ACEC recreation access to pedestrian traffic and require written access authorization for all other uses necessarily consistent with management goals and objectives. The restrictions on allowable uses under Alternative F would have major long-term adverse impacts on OHV and motorized recreation opportunities, as well as mechanical and equestrian opportunities due to the complete loss of OHV opportunities in CCMA. These displaced users would seek OHV opportunities in other recreation areas that provide OHV access, like State Vehicular Recreation Areas (SVRAs), Metcalf County Park, Frank Raines County Park, and BLM's Jawbone Area of Critical Environmental Concern, which would most likely become more congested. This would have indirect negative effects on these and other OHV areas as increased visitor use would place higher demands on the recreation infrastructure, budget resources, and natural resources; as well as presenting safety concerns as conflicts among impacted groups/individuals will become more frequent,

Access and facilities in other zones would be improved to support allowable uses throughout CCMA, with all zones managed for non-motorized recreation. Although, motorized routes could be developed in the Condon and Cantua zones to provide access for non-motorized recreation. These improvements would have moderate beneficial impacts for non-motorized recreation.

Under this alternative, hobby gem and mineral collection would be authorized within the Serpentine ACEC by permit only. The requirement to obtain permits for hobby gem and mineral collection would have minor short term negative effects on visitors that must learn to acquire the necessary approval before visiting CCMA. On the other hand, health and safety mitigation measures that limit annual visitor use days would have moderate long-term adverse impacts on these recreation visitors because the opportunity for rockhounding in the Serpentine ACEC would be restricted to approximately 12 days/year.

**Education and Interpretation**

Informational and interpretive panels would be developed and placed at strategic locations both within the Serpentine ACEC as well as in the surrounding management zones.

#### 4.1.9.2 Impacts from Other Management Actions

**Energy and Minerals**

Under this alternative, 30,000 acres of public lands within the Serpentine ACEC would be unavailable for mineral leasing or sales and withdrawn from locatable mineral entry. These land use allocations would have a minor long-term beneficial impact on recreation resources by preserving wildlife habitat and other areas with recreation values from potential mineral leasing and development.

**Cultural and Paleontological Resources**

Same as Alternative A.

**Travel and Transportation Management**

Transportation and access would be severely limited in scope throughout the Serpentine ACEC, with pedestrian access the only available option. New opportunities would become available as developed in the surrounding zones.

#### 4.1.9.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

### 4.1.10 Impacts to Recreation for Alternative G

#### 4.1.10.1 Impacts from Recreation Management Actions

**Recreation Uses and Demand**

Alternative G would prohibit public recreation inside the ACEC. Cantua and Tucker Mtn. zones would be managed for non-motorized recreation and Condon Peak zone would be limited to full-sized vehicles and ATVs on designated routes with a new staging area established along Los Gatos Creek Road.

Complete closure of the Serpentine ACEC would have the most significant and long-term adverse impacts on recreation opportunities among the range of alternatives because all forms of public entry in to the ACEC would be prohibited and no new recreation resources would be developed in other zones, except for the route from Coalinga-Los Gatos Road to Condon Peak, which would provide minor benefits for non-motorized recreation in the Condon Peak area.

**Education and Interpretation**

Informational and interpretive panels would be developed and placed at strategic locations in the management zones surrounding the Serpentine ACEC.

#### 4.1.10.2 Impacts from Other Management Actions

**Energy and Minerals**

Under this alternative, all public lands within the CCMA (66,500 acres) would be unavailable for mineral leasing or sales and withdrawn from locatable mineral entry. These land use allocations would only have a minor long-term beneficial impact on recreation resources because the potential for mineral leasing and development on CCMA public lands is low.

**Cultural and Paleontological Resources**

Same as Alternative A.

**Travel and Transportation Management**

With the Serpentine ACEC completely closed to public access, the surrounding management zones would sustain all transportation networks and provide the only public access to the region.

#### 4.1.10.3 Mitigation

Development of recreational trails and facilities would be established utilizing BMPs outlined in Appendix V.

### 4.1.11 Cumulative Effects

Cumulative effects of BLM's land use decisions vary among the range of alternatives, though the proposed limits on allowable uses and BLM management actions to reduce human health risk from exposure to asbestos in CCMA would all have some adverse impacts on recreation resources in the Planning Area, as restrictions on visitor use, particularly within the Serpentine ACEC, would send recreationists to other BLM areas or to other County, State or Federal recreation areas. Alternatives A, B, C, and D would have moderate beneficial cumulative effects on recreation resources in the region because they would continue to allow OHV recreation and motorized access for non-motorized recreation opportunities in the Serpentine ACEC and other management zones within CCMA. The opportunities available in CCMA for OHV recreation would benefit recreation users in the region and resources within other recreation areas by dispersing the impacts of motorized and non-motorized recreation on public lands.

Long-term adverse cumulative effects would most likely occur under Alternatives E, F and G because these alternatives effectively eliminate OHV use as it has historically occurred within CCMA and would permanently displace user groups that would be forced to seek opportunity elsewhere. These cumulative

effects would all have major long-term adverse impacts on motorized and non-motorized recreation opportunities in the planning area.

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## 4.2 Hazardous Materials and Public Health & Safety

For ease of reference, the management goals from Chapter 2 are reiterated here:

The goals for hazardous materials and public safety management are to (1) protect public health and safety and environmental resources by minimizing environmental contamination from past and present land uses (i.e., abandoned mine lands) on public lands and on BLM-owned and operated facilities; (2) comply with Federal, State, and local hazardous materials management laws and regulations; (3) maintain the health of ecosystems through assessment, cleanup, and restoration of contaminated lands; (4) manage the costs, risks, and liabilities associated with hazardous materials so that the responsible parties and not the government bear the brunt of financial liabilities; and (5) integrate environmental protection and compliance with all environmental statutes into BLM activities.

### 4.2.1 Introduction

BLM's mission to sustain the health diversity and productivity of the public lands for the use and enjoyment of present and future generations includes efforts to minimize and reduce threats from releases of hazardous substances that could have an impact on the health, diversity, and productivity of the public lands as well as on the health and safety of the individuals who utilize and work on these lands. In addition, the Federal Land Policy and Management Act of 1976 requires that BLM actions comply with approved standards for public health and safety. Of particular concern to BLM are the safety impacts related to abandoned mines, debris flows, and hazardous materials.

Under all the alternatives, BLM would continue to ensure proper handling of hazardous materials and wastes; identify mine-related, illegal dumps and other public land hazards, eliminating or mitigating them as soon as possible; and identify and resolve mining-related trespasses, especially public safety conflicts occurring with visitor use.

#### 4.2.1.1 Assumptions

**Asbestos Exposure Scenarios Under Each Alternative**

The CCMA Asbestos Exposure and Human Health Risk Assessment (EPA 2008) analyzed excess lifetime cancer risk under the current management situation (No Action Alternative) based on the average number of hours visitors spend in the ACEC conducting different types of recreation activities. The same recreation scenarios are presented in this RMP/EIS to estimate human health risk from exposure to asbestos while conducting different types of recreation activities in the Serpentine ACEC under each of the alternatives. BLM modified the number of hours visitors spend in the ACEC for each recreation scenario based on public scoping information. The scenarios were then analyzed by EPA toxicologists to determine the human health risk associated with each alternative.

The following general principles were used to calculate the human health risk from exposure to asbestos by alternative presented in Tables 4.2-2 to 4.2-10.

1. Risk calculations will be performed for the 30-year adult, 30-year combined (12-year child + 18 year adult), and 12-year child exposures.

2. Risk calculations for each scenario will be performed for mean air concentrations and the 95% upper confidence limit (UCL).
3. Risk calculations will be performed using both the IRIS and OEHHA Unit Risks.
4. Risk calculations will be performed for 1, 5 (Reasonable Maximum Exposure), and 12 (High Estimate Exposure) visiting days per year.

The following assumptions were also incorporated into the human health risk information presented in Tables 4.2-1 to 4.2-10.

1. Visitor use scenarios are presented with estimates of time spent traveling on routes in the ACEC only, based on average speeds identified below:
   i. County Roads: 10-15 mph (full-sized vehicles), ~20 mph (OHV)
   ii. Dry Season (and Scenic) Routes: 10-15 mph (full-sized vehicles)
   iii. Single Track Trails: 15-20 mph (motorcycles only)
   iv. Proposed Routes: 10-15 mph (full-sized vehicles), ~20 mph (OHV)

2. Scenarios/activities need to include 1 hour (+/-) for stopping and parking in ACEC
3. Camping and staging at Jade Mill Campground = NO RISK because of administrative improvements and engineered controls to minimize exposure and reduce emissions at the site.
4. Risk calculations for hiking and hunting would be representative of <u>all</u> non-motorized use (i.e. rockhounding).
5. Drive time and duration of non-motorized use (hiking/hunting) would vary by access location and destination, which is why time estimates increase under Alternatives D, E, and F. (i.e. 4 hr. drive-time and 8 hrs hiking/day).
6. Risk calculation for "drive-in/drive-out" based on SUV sampling data.
7. Risk calculations do not incorporate reduction value from proposed Health & Safety Mitigation Measures because they cannot be quantified.
8. A qualitative evaluation of the mitigation measures effectiveness would be incorporated into the determination of whether alternatives provide overall protection of human health and the environment.

Table 4.2-1 (below) identifies the visitor use scenarios and modified exposure estimates under the range of alternatives for the CCMA Draft RMP/EIS.

**Table 4.2-1 Visitor Use Scenarios and Average Time Estimate in ACEC under the Range of Alternatives**

| **Alternative:** | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
|---|---|---|---|---|---|---|---|
| Scenario 1: Weekend Riding | Drive in (1 hour)<br>Motorcycle (6 hours Saturday)<br>Camping (9 hours Saturday)<br>Sleeping (8 hours)<br>Camping (3 hours Sunday)<br>Motorcycle (5 hours Sunday)<br>Drive out (1 hour)<br>Decon washing and vacuum (1 hour) | Motorcycle/ATV (4 hours Sat.)<br>Motorcycle/ATV (3 hours Sun.)<br>Vehicle washing (1 hour) | Motorcycle only (4 hours Sat.)<br>Motorcycle (3 hours Sun.)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Vehicle washing (1 hour) | NA | NA | NA |
| **Total:** | **34** | **8** | **8** | **5** | * | * | * |
| Scenario 2 Day Use Riding | Drive in (1 hour)<br>Staging (1 hour)<br>ATV (6 hours)<br>Staging (1 hour)<br>Drive out (1 hour)<br>Decon washing and vacuum (1 hour) | Motorcycle/ATV (6 hours)<br>Vehicle washing (1 hour) | Motorcycle only (6 hours)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Vehicle washing (1 hour) | NA | NA | NA |
| **Total:** | **11** | **7** | **7** | **5** | * | * | * |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Scenario 3 Day Use Hiking | Drive in (1 hour)<br>Staging (.5 hour)<br>Hiking (6 hours)<br>Staging (.5 hour)<br>Drive out (1 hour) | SUV (4 hours)<br>Hiking (4 hours)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Hiking (4 hours)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Hiking (4 hours)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Hiking (4 hours)<br>Vehicle washing (1 hour) | Hiking (8 hours) | NA |
| **Total:** | **9** | **9** | **9** | **9** | **9** | **8** | ***** |
| Scenario 4 Weekend Hunting | Drive in (1 hour)<br>Hiking (8 hours Saturday)<br>Camping (7 hours Saturday)<br>Sleeping (8 hours)<br>Camping (2 hours Sunday)<br>Hiking (6 hours Sunday)<br>Drive out (1 hour)<br>Decon washing and vacuum (1 hour) | SUV (4 hours)<br>Hiking (2 hours Saturday)<br>Hiking (2 hours Sunday)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Hiking (2 hours Saturday)<br>Hiking (2 hours Sunday)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Hiking (2 hours Saturday)<br>Hiking (2 hours Sunday)<br>Vehicle washing (1 hour) | SUV (4 hours)<br>Hiking (2 hours Saturday)<br>Hiking (2 hours Sunday)<br>Vehicle washing (1 hour) | Hiking (2 hours Sat.)<br>Hiking (2 hours Sun.) | NA |
| **Total:** | **34** | **9** | **9** | **9** | **9** | **4** | ***** |

## 4.2.2 Limits and Constraints of the Analysis

### 4.2.2.1 Incomplete or Unavailable Information

The BLM's analysis of public health and safety in this RMP/EIS is based primarily on the EPA's CCMA Asbestos Exposure and Human Health Risk Assessment (2008). The EPA report identifies the limits and constraints of the analysis, which are summarized below This information is extremely relevant to evaluating the reasonably foreseeable significant adverse impacts to human health and the environment, and is essential to a reasoned choice among the range of alternatives in this draft RMP/EIS.

The constraints include areas of uncertainty within the EPA's risk assessment and other incomplete or unavailable information that affect BLM's evaluation of reasonably foreseeable effects on the human environment. In particular, BLM was unable to quantify reductions in human health risk and asbestos emissions from implementation of mitigation measures because reliable data on the effectiveness of surface hardening techniques or dust suppression on roads in CCMA cannot be obtained because of cost and feasibility issues. Therefore, BLM's evaluation of such impacts is based upon theoretical approaches or research methods discussed in the EPA's risk assessment and this RMP/EIS that are generally accepted in the scientific community.

For the purposes of analyzing human health risks from exposure to asbestos in CCMA, BLM shall incorporate by reference the definition of "reasonably foreseeable" from 40 CFR 1502.22(b)(4), which "includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason."

### 4.2.2.2 Exposure and Risk Uncertainties

The CCMA Asbestos Exposure and Human Health Risk Assessment (EPA, 2008) identifies all relevant areas of uncertainty in order to provide the public and BLM managers an understanding of the associated areas of uncertainty to make informed decisions to manage the risk of exposure to asbestos in CCMA.

As stated in the executive summary of the risk assessment (EPA, 2008; pg. ES-6):

> "The assessment of risk as a probability of an outcome always has unknown values that are estimated in health protective ways to ensure that the risks are neither underestimated nor grossly overestimated. The largest uncertainty in the assessment of risk to users of CCMA is that the risk evaluation only assesses excess lifetime cancer risk. It is known that asbestos causes debilitating and fatal diseases other than cancer, such as respiratory and pleural disease. The non-cancer effects are not quantitatively taken into account in the assessment because there is no asbestos toxicity value for non-cancer health effects, even though non-cancer effects could actually be more significant to total disease outcome from CCMA asbestos exposure. Therefore, the general probability of developing disease from exposure related to activities at Clear Creek may be significantly underestimated in the report. Uncertainties related to the exposure parameters in the CCMA assessment that could cause the estimated risk to be less or greater than the actual risk include: the frequency of exposure and the time actually engaged in dust-generating activities; the effect of the exposures on children; and the representativeness of the areas used for the sampling as accurate models of typical CCMA conditions. One exposure that was not measured, and which could cause the exposure and risk to be higher, is the continued exposure that results when

asbestos fibers from CCMA are taken home in vehicles and on equipment. Uncertainty related to the toxicity parameters of the risk characterization includes the application of the IRIS and OEHHA asbestos toxicity values, which were developed from epidemiological studies of occupational exposures, to infrequent and episodic recreational exposures. This uncertainty could mean that the actual risks could be much lower than those estimated in the CCMA assessment. Another uncertainty, adjustments for early lifetime childhood exposures, could mean that the actual risks are higher than those estimated in the report."

In conclusion, the major uncertainties inherent in the assessment of exposure to asbestos at CCMA and the resulting estimate of risk include factors that may cause the EPA calculated risks to be overestimated or underestimated. Nevertheless, the disease potential of asbestos is recognized by the EPA, the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), the California EPA and Department of Toxic Substances Control (DTSC), the National Academy of Sciences, and the World Health Organization (WHO). While there is on-going research on the relative potencies of the different mineral forms of asbestos, there is consensus in the medical and public health community that both chrysotile and amphibole asbestos cause disease.

#### 4.2.2.3 Epidemiology of Chrysotile Asbestos

During development of the CCMA Asbestos Exposure and Human Health Risk Assessment and scoping meetings for the CCMA RMP/EIS, many public comments expressed concern about the lack of an epidemiological study specific to CCMA visitors that provides empirical evidence of asbestos-related disease from exposure while conducting recreational activities.

In the Record of Decision for the Atlas Asbestos Mine Superfund Site (1991), EPA addressed comments from the public questioning the lack of asbestos-related health and epidemiological studies of the local population. In response, EPA stated "because the local population is small, an epidemiological study restricted to this population would probably not be sensitive enough to detect the incidence of asbestos related disease, even if it is occurring at an unacceptable rate." Furthermore, census data shows that California's Central Coast population is highly transitory and includes visitors or residents that travel from long distances or move in and out of the area at a rate that would further limit the efficacy of epidemiological studies of asbestos–related illnesses.

The World Health Organization (WHO) report titled "Chrysotile Asbestos" (1998) states under conclusions and recommendation for protection of human health, "exposure to chrysotile asbestos poses increased risks for asbestosis, lung cancer and mesothelioma in a dose-dependent manner. No threshold has been identified for carcinogenic risks." The WHO report reflects the collective view of an international group of experts, and was published under the joint sponsorship of the WHO, the United Nations Environment Programme, and the International Labour Organization; and produced within the framework of the Inter-Organization Programme for the Sound Management of Chemicals.

The WHO Environmental Health Criteria (EHC) program was initiated with the following objectives:

- to assess information on the relationship between exposure to environmental pollutants and human health, and to provide guidelines for setting exposure limits;
- to identify new or potential pollutants;
- to identify gaps in knowledge concerning the health effects of pollutants;

- to promote the harmonization of toxicological and epidemiological methods in order to have internationally comparable results.

Since that time, many EHC studies have been devoted to evaluating toxicological methodology, while numerous other publications have been concerned with epidemiological guidelines and evaluation of short-term tests for carcinogens. According to the WHO and EPA, the disease potential of asbestos is established by at least 40 epidemiological studies.

The WHO report (1998) states: "Commercial grades of chrysotile have been associated with an increased risk of pneumoconiosis[3], lung cancer and mesothelioma in numerous epidemiological studies of exposed workers." Whereas, "the non-malignant diseases associated with exposure to chrysotile comprise a somewhat complex mixture of clinical and pathological syndromes not readily definable for epidemiological study." Therefore, the primary focus of most epidemiological studies has been asbestosis among workers exposed to chrysotile in different occupational settings.

These studies have broadly demonstrated exposure-response or exposure-effect relationships for chrysotile-induced asbestosis. However, they all acknowledge that uncertainties still remain with regard to diagnosis of asbestos–related illnesses and the possibility of disease progression on cessation of exposure. Furthermore, risk estimates vary among the available studies. The reasons for the variations are related to uncertainties in exposure estimates, as described in Section 4.2.2.2 above.

The WHO report goes on to say the "estimation of the risk of mesothelioma is complicated in epidemiological studies by factors such as the rarity of the disease, the lack of mortality rates in the populations used as reference, and problems in diagnosis and reporting." However, the report does claim "there is evidence that fibrous tremolite causes mesothelioma in humans", and since approximately 8% of EPA's air samples from the CCMA Asbestos Exposure and Human Health Risk Assessment (2008) contained fibrous tremolite, exposure to asbestos in CCMA may contribute to the induction of mesotheliomas in CCMA visitors, even though they are exposed primarily to chrysotile.

#### 4.2.2.4 Estimates of Asbestos Emissions Reductions, Cost, Effectiveness, and Feasibility of Mitigation Measures

Table 3.3-1 identifies potential mitigation measures for management of transportation and roads to reduce asbestos emissions. The BLM's analysis of feasibility for implementation of Alternatives A through G are based on the estimates associated with the cost and effectiveness in meeting resources management goals and objectives, including reducing and minimizing human health risk from exposure to asbestos. These estimates are based on best available information at the time the Draft CCMA RMP/EIS was prepared, and are described in more detail under Travel and Transportation Management in Chapter 3, Table 3.3-1.

The analysis of cost and effectiveness in reducing asbestos emissions from surface hardening, dust suppression, and a variety of soil stabilizers on CCMA roads treatments and other mitigation measures is presented qualitatively because information on the effectiveness of these mitigation measures specific to

[3] Pneumoconiosis is defined as any chronic disease of the lungs characterized by lung fibrosis and possible loss of lung function, as caused by repeated inhalation of particulate matter, especially mineral or metallic dust particles.

CCMA is currently unavailable. Therefore, BLM developed the estimates outlined in Table 3.3-1 based on an EPA evaluation of asbestos mitigation measures prepared in 1981, and a study conducted by the California Department of Toxic Substances Control (DTSC) that briefly evaluated reductions in emissions on roads in areas with serpentine soils.

In the study titled "A Study of Airborne Asbestos from a Serpentine Road in Garden Valley, California" (April 2005), DTSC studied airborne asbestos along a privately maintained road in El Dorado County. The DTSC study concluded that unimproved roads surfaced with serpentine aggregate pose a significant risk to public health, and that resurfacing the serpentine aggregate road with a multi-layered chipseal surface resulted in a dramatic reduction in airborne asbestos emissions. The study also found that airborne asbestos was detected at greater distances than visible dust, but the level of airborne asbestos decreased with distance from roads. Nevertheless, the study suggests that local conditions on other serpentine roads, like those in CCMA may have different results due to factors such as wind, concentrations of asbestos fibers in the road surfacing material and native soils, moisture conditions, and topography.

As a result, BLM anticipates that air sample results would show lower asbestos emissions after the serpentine aggregate on CCMA roads is covered and sealed with the road surfacing materials described in Appendix V; and that dust emissions on those roads would continue to remain low. However, due to the concentrations of asbestos in the serpentine soils in CCMA, weather conditions, and the presence of 'fugitive dust' that contains asbestos fibers previously deposited on vegetation, rocks, and soils adjacent to CCMA roads could be re-suspended by wind and air disturbances from passing vehicles would still pose a risk to human health following surface hardening and dust suppression or other mitigation measures on CCMA roads.

Many of the other mitigation measures considered in the range of alternatives for the CCMA RMP/EIS are also limited to qualitative analysis because there is no information available on the effectiveness of such measures as restricting annual visitor use days/year, vehicle types, installing vehicle wash racks, enforcement of speed limits, indemnification of risk, and other administrative actions in reducing exposure to asbestos emissions in CCMA. However, the unavailable information identified above is not critical to making a reasoned analysis of Alternatives A – G because the estimates outlined in Table 3.3-1, and the qualitative analysis of other mitigation measures in Section 4.2.6.2, can be used to inform the BLM and the public on the cost and effectiveness of the mitigation measures for public health and safety. Regardless of the location, resources conditions, and levels of use on roadways, all mitigation measures on routes in the ACEC would have to be monitored and evaluated for effectiveness in reducing asbestos emissions to meet the purpose and need of the CCMA RMP/EIS for overall protection of human health and the environment.

### 4.2.3 Overview of Impacts of Hazardous Materials on Public Lands

In general, all the hazardous materials and public safety management actions in the range of alternatives would contribute to meeting the BLM's goals and objectives, because they are designed to improve the overall environmental resource protection and public safety for public land uses. However, the No Action Alternative would have major negative impacts to public health and safety by increasing the public's long-term risk of contracting cancer associated with exposure to asbestos from CCMA.

Alternatives B and C would have minor beneficial impacts to human health and the environment, compared to Alternative A, because Alternatives B and C include administrative management actions and other projects to reduce asbestos emissions in CCMA.

Other management actions to minimize asbestos exposure included under alternatives D and E would result in moderate beneficial impacts to environmental resource protection and public safety, compared to Alternatives B and C, because of further limits on allowable uses, as well as other projects to reduce asbestos emissions in CCMA.

Finally, alternatives F and G would have major long-term benefits to human health and the environment, compared to all the other alternatives, because allowable uses would reduce asbestos emissions to dust generated by foot traffic (Alt. F), or BLM would minimize asbestos exposure by prohibiting all public use and entry into the Serpentine ACEC (Alt. G).

Other authorized BLM activities involving hazardous materials or wastes that could impact public land resources include rangeland improvements, energy and minerals development, and lands and realty. Land use authorizations and permits will incorporate requirements for the proper use, storage, and disposal of hazardous materials and wastes, such as petroleum products, pesticides, herbicides, lubricants, drilling wastes, waste waters, and mining wastes in compliance with Federal and state regulations.

#### 4.2.3.1 CCMA Naturally Occurring Asbestos

Asbestos is the name given to a group of six different fibrous minerals that occur naturally in the environment. Asbestos fibers are too small to be seen by the naked eye. They do not dissolve in water or evaporate. They are resistant to heat, fire, and chemical or biological degradation. The two general types of asbestos are amphibole and chrysotile (fibrous serpentine). Chrysotile asbestos has long, flexible fibers. This type of asbestos is most commonly used in commercial products. Amphibole fibers are brittle, have a rod or needle shape, and are less common in commercial products. Although exposure to both types of asbestos increases the likelihood of developing asbestos-related diseases, amphibole fibers tend to stay in the lungs longer. They also are thought to increase the likelihood of illness, especially mesothelioma, to a greater extent than chrysotile asbestos.

Naturally occurring asbestos refers to those fibrous minerals that are found in the rocks or soil in an area and released into the air by routine human activities or weathering processes. If naturally occurring asbestos is not disturbed and fibers are not released into the air, then it is not a health risk. Asbestos is commonly found in ultramafic rock, including serpentine rock, and near fault zones. The amount of asbestos that is typically present in these rocks ranges from less than 1% up to about 25%, and sometimes more. Asbestos can be released from ultramafic and serpentine rock if the rock is broken or crushed.

Asbestos exposure results from breathing in asbestos fibers. If rocks, soil, or products containing asbestos are disturbed, they can release asbestos fibers into the air. These fibers can be breathed into your lungs and could remain there for a lifetime. Asbestos exposure is not a problem if solid asbestos is left alone and not disturbed.

Elements that contribute to human health risks from asbestos exposure include, but are not limited to asbestos type and size of airborne fibers, frequency and duration of exposure to asbestos emissions, time since initial exposure to asbestos emissions, extent of exposure to asbestos emissions, and exposure to other pre-existing lung conditions. In particular cigarette smoking significantly increases risk of cancer associated with asbestos.

Children have more time to be exposed and develop asbestos-related diseases. Medical experts do not know whether lung differences may cause a greater amount of asbestos fibers to stay in the lungs of a child who breaths in asbestos compared with the amount that stays in the lungs of an adult.

Asbestos-related diseases can be cancerous or non-cancerous. Examples of non-cancerous asbestos related disease include asbestosis, which is a scarring of the lungs, and pleural diseases. Asbestosis is typically caused by very high exposure levels over a prolonged period of time, as seen in work-related asbestos exposure. Smoking increases the risk of developing asbestosis. Some late stage symptoms include progressive shortness of breath, a persistent cough, and chest pain.

Pleural changes or pleural plaques include thickening and hardening of the pleura (the lining that covers the lungs and chest cavity). Most people will not have symptoms, but some may have decreased lung function. Some people may develop persistent shortness of breath with exercise or even at rest if they have significantly decreased lung function.

Lung cancer is cancer of the lungs and lung passages. Cigarette smoking combined with asbestos exposure greatly increases the likelihood of lung cancer. Lung cancer caused by smoking or asbestos looks the same. Symptoms for lung cancer can vary. Some late stage symptoms can include chronic cough, chest pain, unexplained weight loss, and coughing up blood.

Lung cancer from all causes affects about 61 out of every 100,000 Americans a year. According to the American Cancer Society, it is the leading cause of cancer-related death in both men and women and accounts for about 29% of all cancer deaths. Asbestos exposure is only one of many potential causes of lung cancer. Cigarette smoking is by far the most important risk factor for lung cancer. Cigarette smoking combined with asbestos exposure greatly increases the likelihood of lung cancer.

Mesothelioma is a rare cancer mostly associated with asbestos exposure. It occurs in the covering of the lungs and sometimes the lining of the abdominal cavity. Some late stage symptoms include chest pain, persistent shortness of breath, and unexplained weight loss. Mesothelioma is relatively rare. According to the American Cancer Society, there are about 2,000 – 3,000 new cases per year in this country. It is most common in asbestos-related work exposure though it has been observed in certain communities worldwide where people have had lifetime exposures to naturally occurring asbestos. (DHHS, 2006).

#### 4.2.3.2 Illegal Dumping

Illegal dumping of hazardous materials and wastes occurs area-wide and is a common concern throughout the Planning Area. Impacts are typically localized and could be short- to long-term, depending on the time of site discovery and the corrective action. Illegal dumping may occur at any time and any place, particularly along secluded roads and trails that are relatively accessible to motorized vehicles. Hazardous materials and wastes may take the form of 55-gallon drums and other, smaller containers, but also may include large automobile parts, household appliances, large- and small-scale illicit drug laboratories, and discarded household solid wastes. Because BLM-managed lands are typically remote and secluded, but must be made available to the public, management actions to identify and maintain an inventory of hazardous materials sites and eliminate or mitigate them as soon as possible would have an added benefit to the environment and public safety.

#### 4.2.3.3 Abandoned Mine Lands

Abandoned mines, particularly for copper and mercury ores, are scattered throughout BLM public lands within the Planning Area, especially in the San Joaquin and Salinas Management Areas. Abandoned mines may pose a threat to human health and the environment through the presence of abandoned hazardous materials, such as cyanide, which may be found in containers or in tailings piles; acid mine drainage; and containers of diesel fuel and gasoline for operating the mining equipment. Also, physical threats to public safety include open shafts and tunnels, deteriorated buildings, and mining equipment. Eroding tailings piles may pose a threat to the environment, particularly if they contain extraction chemicals (e.g., cyanide) or elevated levels of metals, or if they are eroding into a stream or creek. Because BLM-managed lands are typically remote and secluded but must be made available to the public, the management actions to identify and maintain an inventory of hazardous materials sites, including abandoned mines, and eliminate or mitigate them as soon as possible, would be an over benefit to the environment and public safety. Depending on the type of mining, adits, tunnels, and caves also create a beneficial impact to biological habitats for nocturnal species such as bats.

#### 4.2.3.4 Energy and Mineral Development

Oil and gas development activities often require the use of or creation of hazardous materials, including drilling muds. Drilling muds may contain various contaminants such as mercury, cadmium, arsenic, and hydrocarbons, among others, and if not managed correctly can seep into surrounding surface and ground water and degrade the quality.

Hard rock mining operations in the CCMA have resulted in mercury, chromium and asbestos contamination in state waters. Any development of mine operations has potential to result in additional contamination to waterways as well potential airborne asbestos emissions.

#### 4.2.3.5 Livestock Grazing

Rangeland use can require the use or storage of hazardous materials such as fuel tanks and various paints, solvents or thinners. In the event of an accidental spill, the fuel can migrate to into surrounding surface and ground water and degrade the water quality.

### 4.2.4 Impacts from HAZMAT and Public Health & Safety for Alternative A

#### 4.2.4.1 CCMA Asbestos Exposure and Human Health Risk

The EPA Superfund program defines the acceptable risk range for exposure to a carcinogen, like asbestos, as $10^{-4}$ (1 in 10,000) to $10^{-6}$ (1 in 1,000,000) excess lifetime cancer risk. Exposures which are calculated to cause more than 1 in 10,000 excess cancers are considered to be of concern and may require action to reduce the exposure and resulting risk.

In 2004, as part of the process of evaluating the completeness of the Atlas Mine cleanup for possible delisting from the federal Superfund list, EPA Region 9 initiated an asbestos exposure and human health risk assessment for the CCMA. The goal of the assessment was to use current asbestos sampling and analytical techniques to update a 1992 BLM Human Health Risk Assessment and provide more robust information to BLM on the asbestos exposures from typical CCMA recreational activities and the excess lifetime cancer risks associated with those exposures.

The assessment was conducted consistent with U.S. EPA policy and guidance, including the Risk Assessment Guidance for Superfund (RAGS) (EPA/540/1-89/002), and with the encouragement of the California Air Resources Board (CARB) and the California Department of Toxic Substances Control (DTSC).

In 2004 and 2005, Region 9 collected air samples while EPA employees and contractors participated in typical recreational activities at the Clear Creek Management Area. The samples were collected from the breathing zone of individuals riding motorcycles and all-terrain vehicles (ATV), driving and riding in sports utility vehicles (SUV), hiking, camping, sleeping in a tent, fence-building, and washing and vacuuming vehicles after use at CCMA. Sample cassettes were placed to collect air samples representing the breathing zone heights of both adults and children, and samples were collected for both lead riders and those trailing behind them. These activity based air samples were then analyzed for asbestos.

#### 4.2.4.2 CCMA Asbestos Exposure and Human Health Risk Assessment (EPA 2008)

After the exposure data was collected for the various individual activities, the activities were used to calculate risk for seven CCMA use scenarios. Risk estimate calculations were then conducted for the scenarios. The scenarios were designed to make the risk estimations better reflect the typical activities an individual would participate in during a typical day or weekend visit to CCMA and to provide more useable information to BLM and the public regarding health risk associated with these activities. The scenarios were developed with input from BLM and DTSC. The report provides excess lifetime cancer risk estimates for the seven scenarios and is available on-line at:

http://www.epa.gov/region09/toxic/noa/clearcreek/index.html.

**Exposure Assessment** - Most of the asbestos found in the EPA air samples was short fiber (< 5 microns in length) chrysotile asbestos. However, only the fiber size which has been most closely linked to asbestos disease, the longer Phase Contrast Microscopy Equivalent or PCME fibers (> 5 microns long, 0.25 – 3.0 microns wide, > 3:1 aspect ratio) were used in the EPA exposure and risk assessment. The activity-based sampling showed that activities which disturbed the soil recorded significantly elevated asbestos levels in the breathing zone.

**Risk Characterization** – Importing the mean and 95% upper confidence level of the mean (UCL) exposure data into the scenarios, excess lifetime cancer risk was estimated using both the U.S. EPA Integrated Risk Information System (IRIS) and the California EPA Office of Environmental Health Hazard Assessment (OEHHA) cancer toxicity values for asbestos.

Calculations were prepared for 30-year adult exposures, as recommended by the Superfund risk assessment guidance. In addition, 30-year combined child and adult exposures (12 years as a child and then 18 years as an adult) and 12-year child exposures (a population which recreates with families from ages 6 to 18) were also evaluated. Risks were calculated for 1 visit per year, 5 visits per year (Reasonable Maximum Exposure), and 12 visits per year (High Estimate) for the recreational scenarios.

The risks are compared to the EPA Superfund program acceptable risk range for exposure to a carcinogen, like asbestos, of $10^{-4}$ (1 in 10,000) to $10^{-6}$ (1 in 1,000,000) excess lifetime cancer risk. Exposures which are estimated to cause more than 1 in 10,000 excess cancers are considered by EPA to be of concern and may require action to reduce the exposure and resulting risk.

There was no combination of scenario, toxicity value, or visits per year that was below the lower end of EPA's acceptable risk range, i.e. risks less than 1 in 1,000,000. Only Scenario 3 (Day Use Hiking) had risk calculations within the acceptable range. Using the IRIS toxicity value, as shown in Figure ES-1, EPA's risk estimations found that making five or more visits to CCMA per year over a 30-year period to participate in recreational Scenarios 1 (Weekend Rider), 2 (Day Use Rider), 4 (Weekend Hunter), or 5 (Combined Rider/Workday) could put recreational users at an excess lifetime cancer risk above EPA's acceptable risk range of $1x\ 10^{-4}$ (1 in 10,000) to 1 in $10^{-6}$ (1 in 1,000,000). The highest IRIS risk estimation, 2 in 1,000 ($2 \times 10^{-3}$), was based on the 95% UCL exposure concentration for 12 visits per year for recreational Scenario 1 (Weekend Rider).

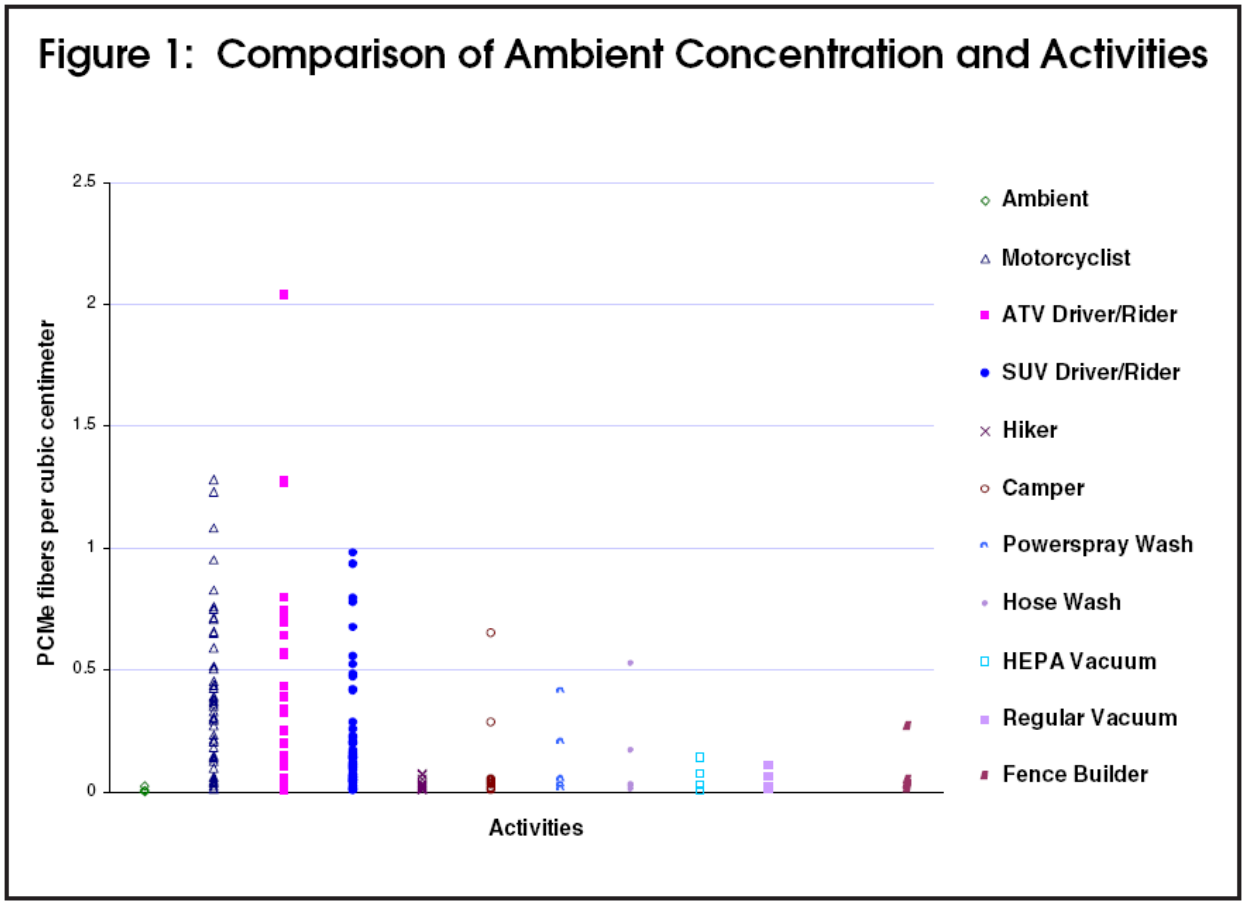
Using the OEHHA toxicity value, even one visit per year for recreational scenarios 1, 2, 4, and 5, put users above EPA's acceptable risk range. The higher risks reflect the fact that the OEHHA asbestos toxicity value is 8 times larger than the value in IRIS. At the high end of the risk range, excess lifetime cancer risk estimations using the OEHHA toxicity value and the 95% UCL concentration indicate that recreational users riding motorcycles 12 weekends per year could have as much as a 1 in 100 ($1 \times 10^{-2}$) lifetime chance of developing asbestos related cancer. It should be noted that neither the IRIS nor OEHHA values are designed for very high exposure levels, so the number calculated for the high-end risk has a higher degree of uncertainty than the numbers calculated for the lower exposure scenarios. However, the risks are still extremely high.

#### 4.2.4.3 Results

It is important to note that the EPA risk assessment presents quantitative estimates of excess cancer risk over a lifetime in a population based on the defined exposure scenarios. The scenarios have been designed to represent current and future exposures for recreational and working users of CCMA. The numbers do not predict individual exposures or individual health outcomes. It is also important to reiterate that the asbestos concentrations used by EPA in the CCMA Asbestos Exposure and Human Health Risk Assessment are based only on asbestos fibers known as phase contrast microscopy equivalent (PCME) fibers because they are the fibers whose shape and size have been most closely linked to asbestos disease.

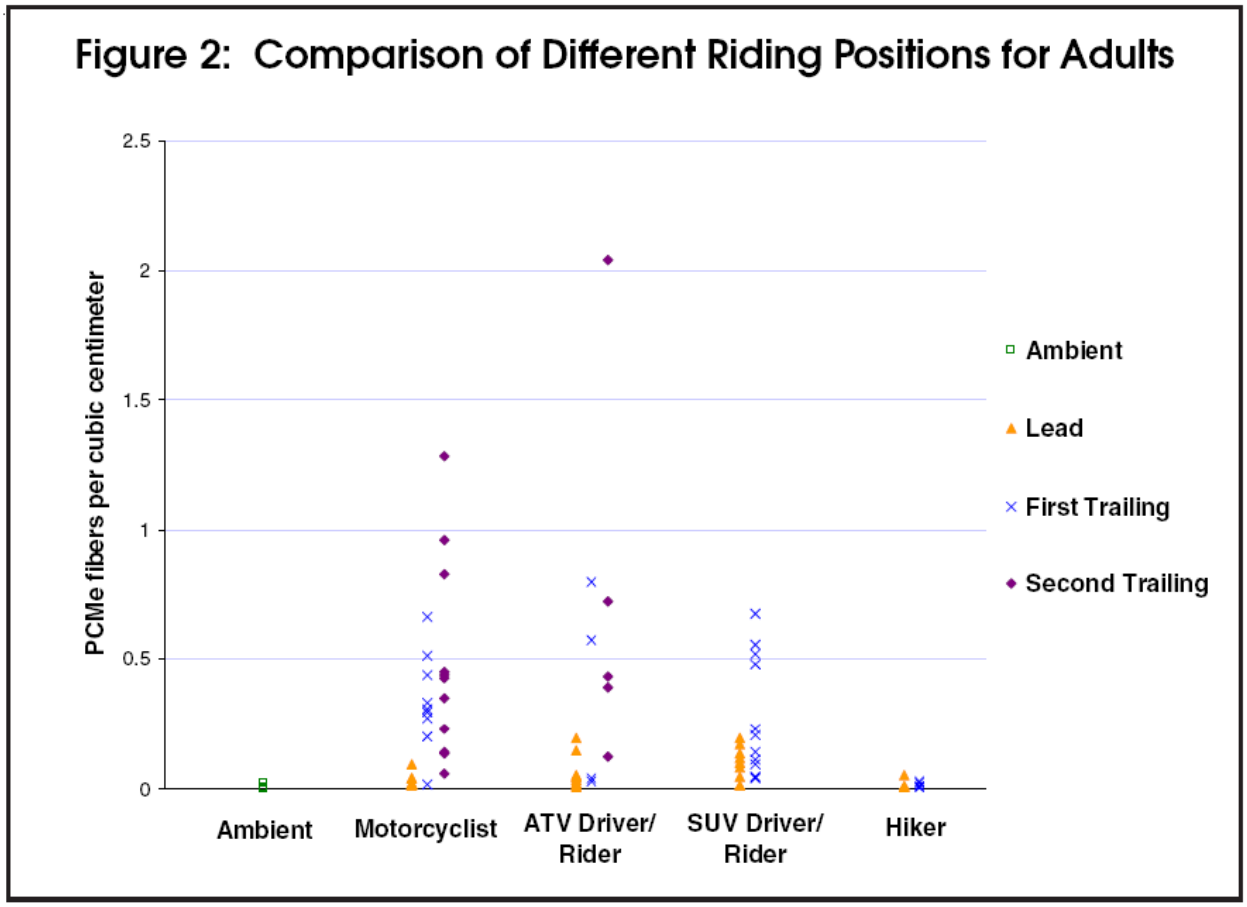
### The Activity Drives the Exposure

Figure 1 shows the individual sample results for each activity and for measurements of CCMA ambient air. The data shows that the activities which typically create the most soil disturbance and dust, motorcycling, ATV driving/riding, and SUV driving/riding, also release the most asbestos into the breathing zone. In some instances, the concentration of asbestos measured in the EPA samples even exceeded what the U.S. Occupational Safety and Health Administration (OSHA) sets for workers as a 30-minute limit for asbestos.



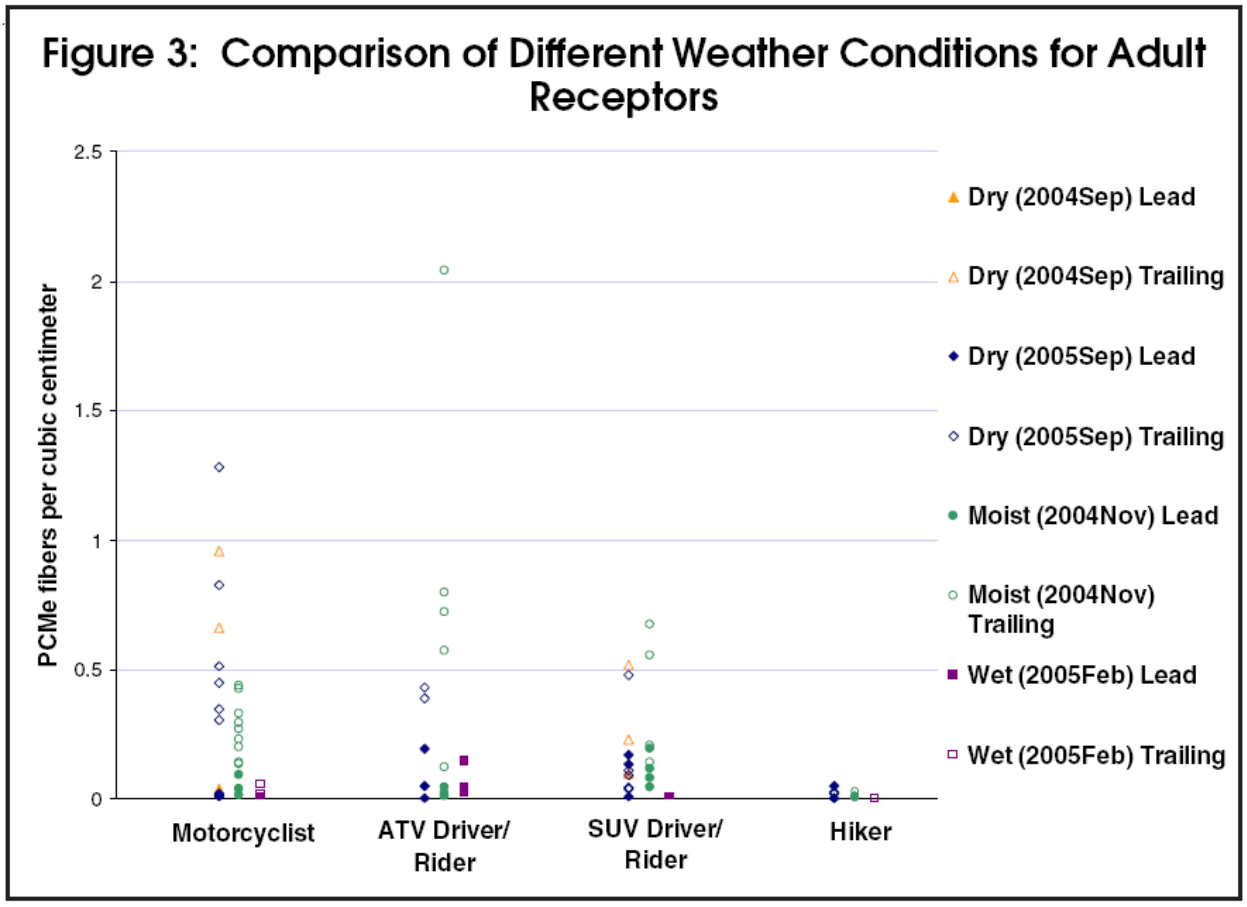
### Position Is Important

Figure 2 shows the results for motorcycle riders in the lead and trailing behind and for ATV and SUV drivers/riders. First trailing drivers/riders encountered higher asbestos air concentrations than lead drivers/riders and second trailing drivers/riders typically encountered higher levels than first trailing drivers/riders. This means that the asbestos levels in the air increased with the larger dust clouds encountered by those riders following one or more riders ahead of them.



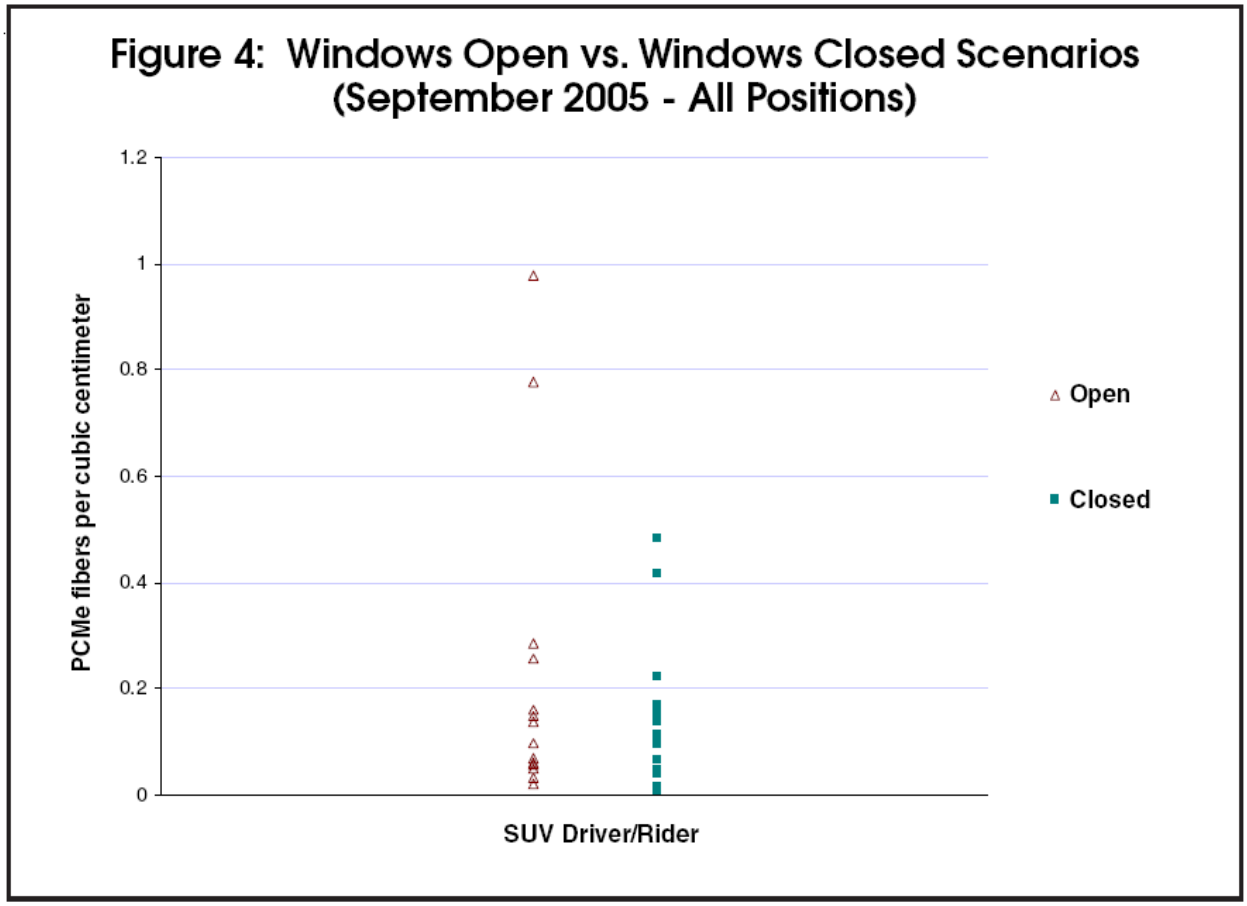
### Wet Weather Reduces But Does Not Eliminate Exposure

Figure 3 shows the effect of sampling event weather conditions on asbestos air concentrations. Using rainfall patterns and on-site observations, the September 2004 and 2005 events were determined to be conducted under ~~"~~dry" conditions, with little or no precipitation in the month prior to the event. The November 2004 event was designated as occurring under ~~"~~moist" conditions, with two to three inches of rain in the two weeks before the event. The February 2005 events were conducted under ~~"~~wet" conditions, with rain immediately before and during the events. Based on the sampling results, it appears that only active rainfall reduces asbestos air concentrations, although further study would be needed to define the exact conditions necessary to reduce dust generation and asbestos exposure.



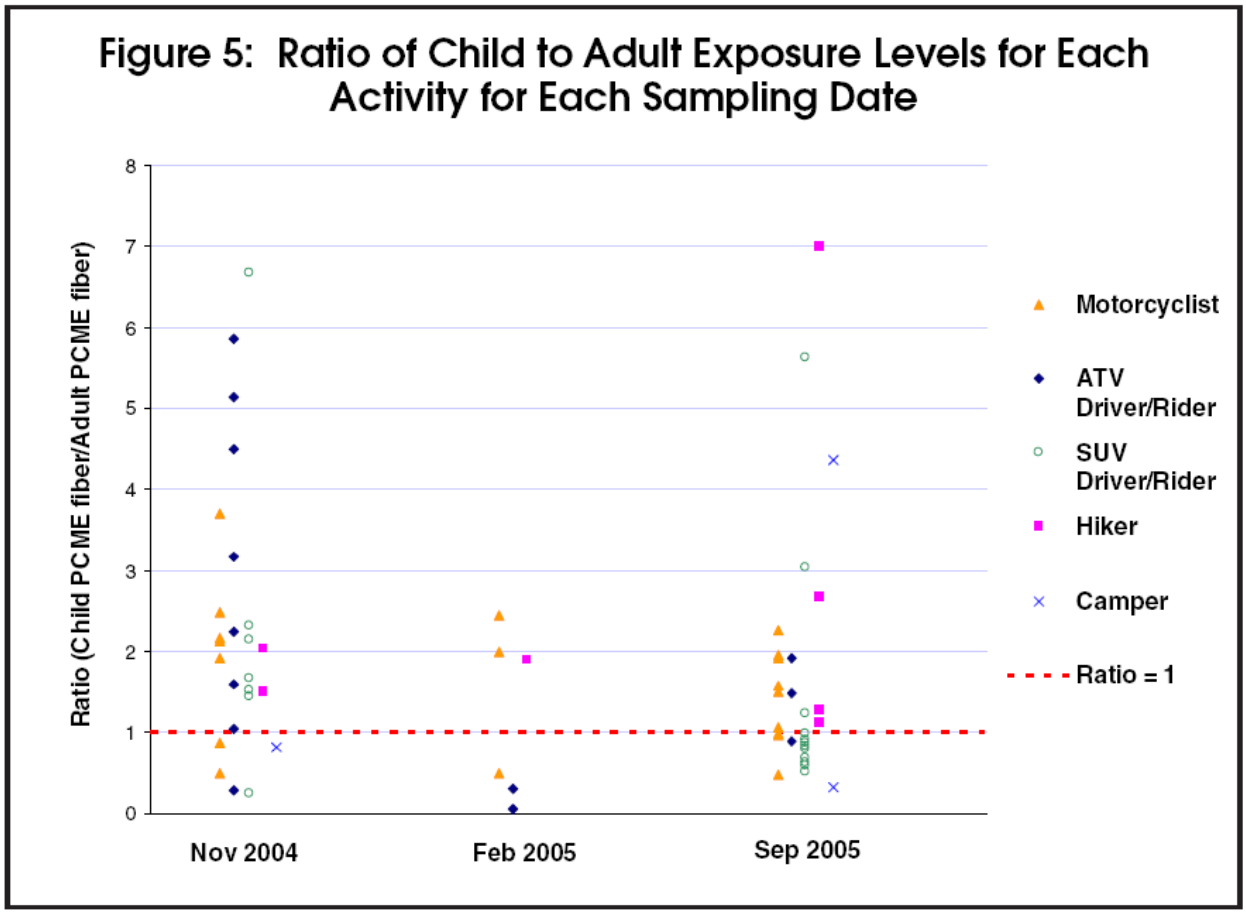
### SUV Exposures Were Significant

As shown in Figure 4, driving on the unpaved CCMA access roads resulted in significant measured asbestos air concentrations inside the vehicles, even with the windows closed and the air system set to ~~"r~~recirculate".



### Child Exposures Tend to Be Higher

Figure 5 shows the ratio between the child and adult samples collected at the same time on the same sampler. With the exception of the camping activity, the majority of child exposures exceeded the exposure recorded for the paired adult sample. In total, the asbestos concentration in the child sample exceeded the concentration in the adult sample 64% of the time.




### Amphibole Asbestos was Detected in the Air Samples

While *chrysotile* asbestos was the predominant asbestos mineral type found in the EPA air samples, almost 8% of the PCME fibers were identified as tremolite, actinolite, or another amphibole asbestos mineral. There is an emerging consensus in the scientific community that amphibole asbestos may present an even greater health risk.

#### 4.2.4.4 Other Impacts from HAZMAT for Alternative A

BLM is required by Federal, State, and local regulations to collect, store, and dispose of hazardous materials and wastes appropriately. Impacts would be beneficial for environmental resource protection and the safety of the public by implementing the recommendations from the past and future Compliance Assessment Safety, Health, and Environment (CASHE) audits, which may include correcting deficiencies in storage of hazardous materials, disposal practices for hazardous wastes, and other possible findings identified in the CASHE audits. Additional beneficial impacts of management actions are related to monitoring for illegal dumping of chemicals on Federal lands to identify and cleanup potential impacts to the environment and public safety before the hazard migrates off-site and correcting abandoned mining-related and other public land hazards.

Under Alternatives A, impacts from oil and gas development will likely be limited to areas with high development potential (reference Map 10, Appendix I). Additionally, under all alternatives, oil and gas development is expected to be minimal over the next 10-15 years. Therefore, the impacts of hazardous materials use from oil and gas development are expected to be negligible.

The rangeland management actions for Alternative A would not increase the size of livestock grazing allotments; therefore any impacts on grazing improvements, such as added fuel tanks, would also be negligible.

Impacts from land tenure adjustments on public safety would be negligible because BLM cannot accept lands that are contaminated from hazardous materials and wastes. There would be no impact to existing right-holders either, as BLM would maintain land use authorizations for private landowners and rights-of-way holders.

#### 4.2.4.5 Mitigation

Mitigation measures are specified in authorized use permits and are incorporated within the management actions. These measures would include but not be limited to restricting authorized land uses, restricting annual visitor use days, requiring personal protective equipment, and taking corrective action(s) as required by Federal, State, and local regulations.

### 4.2.5 Impacts from HAZMAT and Public Health & Safety for Alternatives B, C, D, E, F, and G

#### 4.2.5.1 CCMA Asbestos Exposure and Human Health Risk

It is important to note that the risk assessment of the range of alternatives presents quantitative estimates of excess cancer risk over a lifetime in a population based on the defined exposure scenarios and EPA risk assessment data collected for the CCMA Asbestos Exposure and Human Health Risks Assessment (2008). The scenarios have been designed to represent current and future exposures for recreational visitors of CCMA. The numbers do not predict individual exposures or individual health outcomes. The asbestos concentrations used by BLM in the CCMA RMP/EIS are based only on asbestos fibers known as phase contrast microscopy equivalent (PCME) fibers because they are the fibers whose shape and size have been most closely linked to asbestos disease.

Based on EPA risk assessment data collected for the CCMA Asbestos Exposure and Human Health Risks Assessment (2008), Alternatives B and C would result in similar risks to human health and safety as under Alternative A. Alternatives D and E would both have similar risk to human health because they both allow for motorized access and non-motorized recreation in the Serpentine ACEC. Alternative F would reduce human health risk from exposure to asbestos more than Alternatives A-E because it would prohibit motorized access in the Serpentine ACEC. However, only Alternative G would truly minimize human health risks from exposure to asbestos in CCMA because it would prohibit public entry into the ACEC, thereby eliminating CCMA visitor exposure to airborne asbestos entirely.

This is described in Tables 4.2-2, 4.2-3, 4.2-4, and 4.2-5 (below), which compare risk to human health by each of the alternatives using the IRIS model for risk assessment. A comparison of risk to human health by each of the alternatives using the OEHHA model for risk assessment is also included in Tables 4.2-6, 4.2-7, 4.2-8, and 4.2-9 (below). Shaded values are those above 1 x $10^{-4}$ (1 excess lifetime cancer per 10,000 exposed individuals), the upper end of the EPA risk range.

**Table 4.2-2 IRIS Risk Summaries**

| | 1 day | | 5 day | | 12 day | |
|---|---|---|---|---|---|---|
| | mean | 95%UCL | mean | 95%UCL | mean | 95%UCL |
| Scenario # | Alternative A | | | | | |
| 1-weekend riding | 6.E-05 | 1.E-04 | 3.E-04 | 6.E-04 | 7.E-04 | 2.E-03 |
| 2-day use riding | 3.E-05 | 6.E-05 | 2.E-04 | 3.E-04 | 4.E-04 | 7.E-04 |
| 3-dayuse hiking | 6.E-06 | 1.E-05 | 3.E-05 | 6.E-05 | 8.E-05 | 1.E-04 |
| 4-weekend hunting | 2.E-05 | 5.E-05 | 8.E-05 | 3.E-04 | 2.E-04 | 6.E-04 |
| | Alternative B | | | | | |
| 1-weekend riding | 3.E-05 | 5.E-05 | 1.E-04 | 2.E-04 | 2.E-04 | 6.E-04 |
| 2-day use riding | 2.E-05 | 4.E-05 | 1.E-04 | 2.E-04 | 3.E-04 | 5.E-04 |
| 3-dayuse hiking | 1.E-05 | 2.E-05 | 6.E-05 | 1.E-04 | 1.E-04 | 3.E-04 |
| 4-weekend hunting | 1.E-05 | 2.E-05 | 6.E-05 | 1.E-04 | 1.E-04 | 3.E-04 |
| | Alternative C | | | | | |
| 1-weekend riding | 3.E-05 | 4.E-05 | 1.E-04 | 2.E-04 | 3.E-04 | 5.E-04 |
| 2-day use riding | 2.E-05 | 3.E-05 | 1.E-04 | 2.E-04 | 3.E-04 | 4.E-04 |

**Table 4.2-2 IRIS Risk Summaries**

| Scenario # | 1 day | | 5 day | | 12 day | |
|---|---|---|---|---|---|---|
| | mean | 95%UCL | mean | 95%UCL | mean | 95%UCL |
| 3-dayuse hiking | 9.E-06 | 2.E-05 | 5.E-05 | 9.E-05 | 1.E-04 | 2.E-04 |
| 4-weekend hunting | 9.E-06 | 2.E-05 | 5.E-05 | 9.E-05 | 1.E-04 | 2.E-04 |
| | Alternative D | | | | | |
| 1-weekend riding | 9.E-06 | 2.E-05 | 5.E-05 | 8.E-05 | 1.E-04 | 2.E-04 |
| 2-day use riding | 9.E-06 | 2.E-05 | 5.E-05 | 8.E-05 | 1.E-04 | 2.E-04 |
| 3-dayuse hiking | 9.E-06 | 2.E-05 | 5.E-05 | 9.E-05 | 1.E-04 | 2.E-04 |
| 4-weekend hunting | 9.E-06 | 2.E-05 | 5.E-05 | 9.E-05 | 1.E-04 | 2.E-04 |
| | Alternative E | | | | | |
| 1-weekend riding | -- | -- | -- | -- | -- | -- |
| 2-day use riding | -- | -- | -- | -- | -- | -- |
| 3-dayuse hiking | 1.E-05 | 2.E-05 | 6.E-05 | 1.E-04 | 1.E-04 | 3.E-04 |
| 4-weekend hunting | 1.E-05 | 2.E-05 | 6.E-05 | 1.E-04 | 1.E-04 | 3.E-04 |
| | Alternative F | | | | | |
| 1-weekend riding | -- | -- | -- | -- | -- | -- |
| 2-day use riding | -- | -- | -- | -- | -- | -- |
| 3-dayuse hiking | 2.E-06 | 2.E-06 | 8.E-06 | 9.E-06 | 2.E-05 | 2.E-05 |
| 4-weekend hunting | 8.E-07 | 9.E-07 | 4.E-06 | 5.E-06 | 1.E-05 | 1.E-05 |

**Note:** Numbers shaded in gray are outside the EPA's acceptable risk range described in Section 4.2.4.1.

Scientific notation in the tables above reads as follows:

EPA's acceptable risk range = 1.E-04 to 1.E-06 *or* 1 X $10^{-4}$ (1 in 10,000) to 1 X $10^{-6}$ (1 in 1,000,000)

**Table 4.2-3 1-day IRIS Risk Summary of Alternatives**

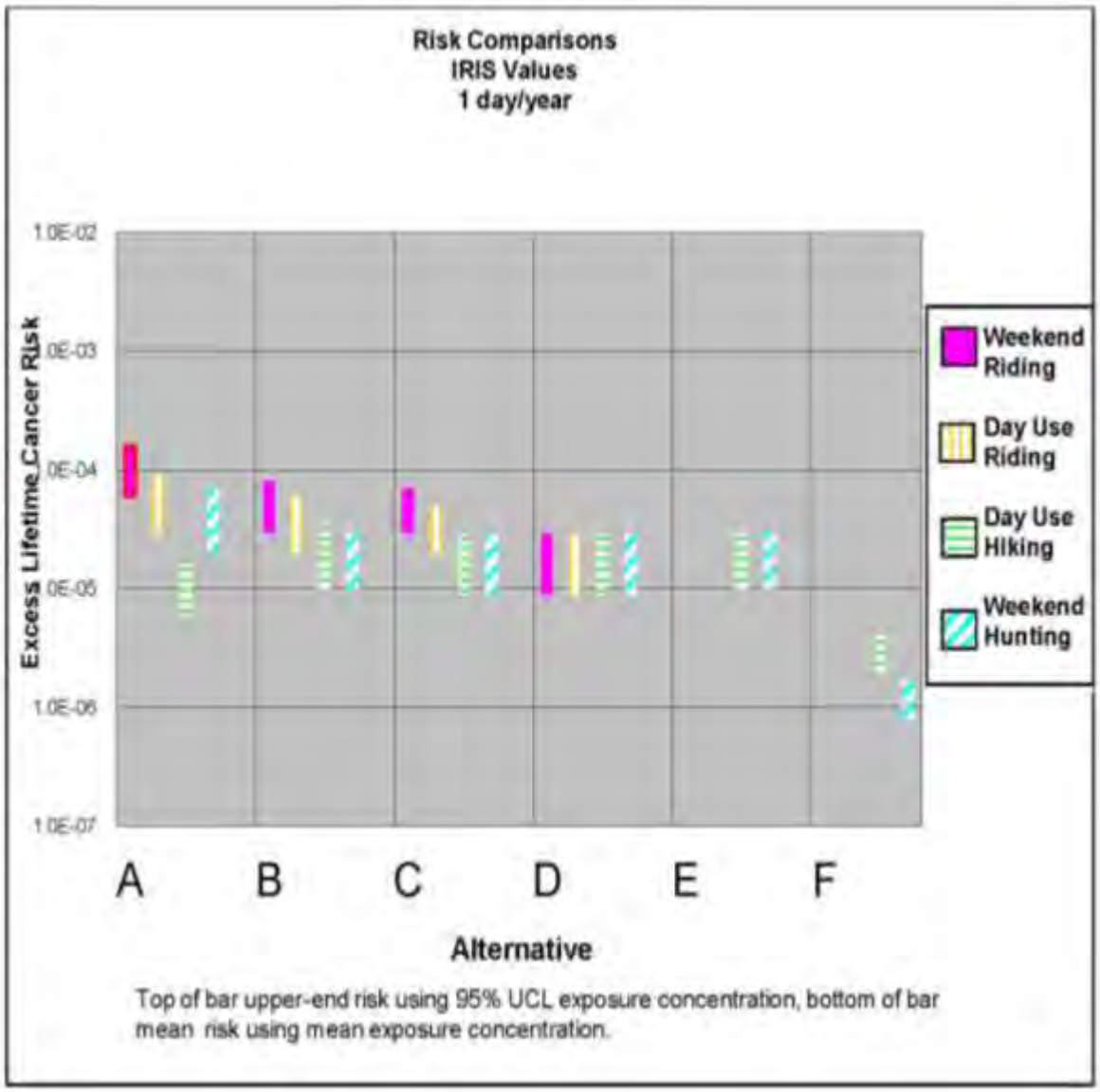


**Table 4.2-4 5-day IRIS Risk Summary of Alternatives**

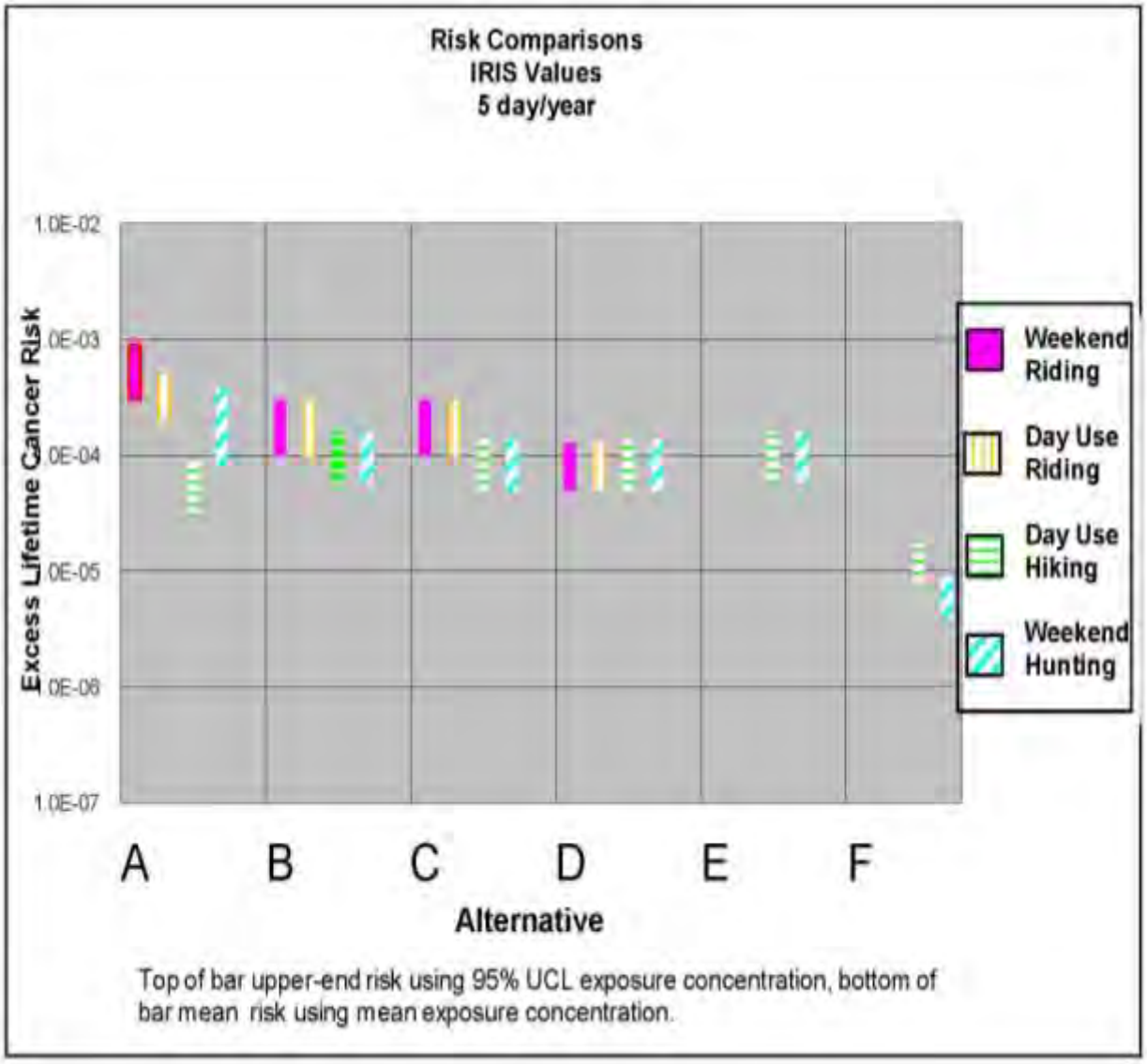


**Table 4.2-5 12-day IRIS Risk Summary of Alternatives**

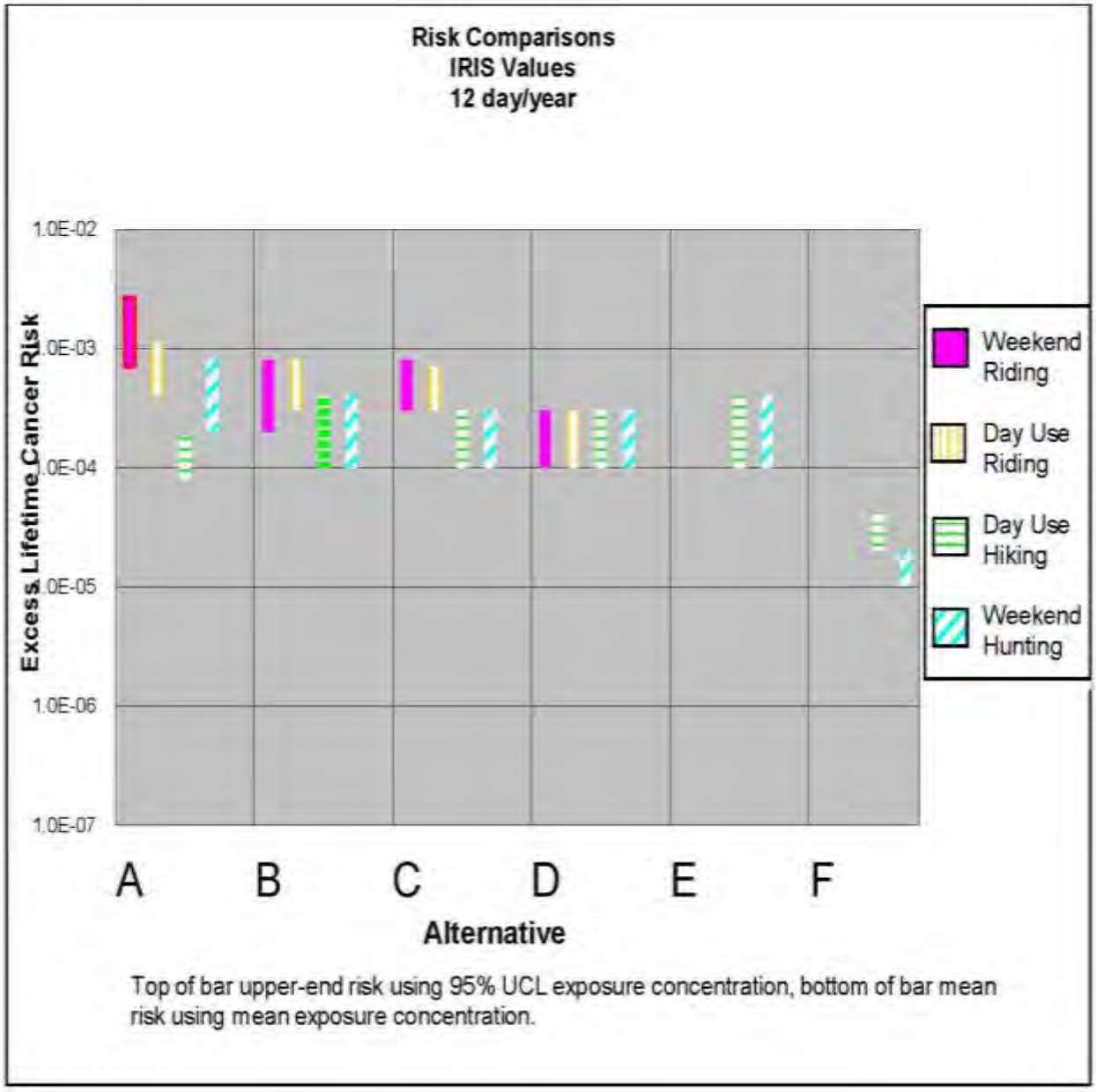


**Table 4.2-6 OEHHA Risk Summaries**

| | 1 day | | 5 day | | 12 day | |
|---|---|---|---|---|---|---|
| | mean | 95%UCL | mean | 95%UCL | mean | 95%UCL |
| Scenario # | Alternative A | | | | | |
| 1-weekend riding | 5.E-04 | 1.E-03 | 2.E-03 | 5.E-03 | 6.E-03 | 1.E-02 |
| 2-day use riding | 3.E-04 | 5.E-04 | 1.E-03 | 2.E-03 | 3.E-03 | 6.E-03 |
| 3-dayuse hiking | 5.E-05 | 9.E-05 | 3.E-04 | 5.E-04 | 6.E-04 | 1.E-03 |
| 4-weekend hunting | 1.E-04 | 4.E-04 | 7.E-04 | 2.E-03 | 2.E-03 | 5.E-03 |
| | Alternative B | | | | | |
| 1-weekend riding | 2.E-04 | 4.E-04 | 1.E-03 | 2.E-03 | 3.E-03 | 5.E-03 |
| 2-day use riding | 2.E-04 | 4.E-04 | 1.E-03 | 2.E-03 | 3.E-03 | 5.E-03 |
| 3-dayuse hiking | 1.E-04 | 2.E-04 | 5.E-04 | 9.E-04 | 1.E-03 | 2.E-03 |
| 4-weekend hunting | 1.E-04 | 2.E-04 | 5.E-04 | 9.E-04 | 1.E-03 | 2.E-03 |
| | Alternative C | | | | | |
| 1-weekend riding | 2.E-04 | 4.E-04 | 1.E-03 | 2.E-03 | 3.E-03 | 5.E-03 |
| 2-day use riding | 2.E-04 | 3.E-04 | 9.E-04 | 2.E-03 | 2.E-03 | 4.E-03 |
| 3-dayuse hiking | 8.E-05 | 1.E-04 | 4.E-04 | 7.E-04 | 1.E-03 | 2.E-03 |
| 4-weekend hunting | 8.E-05 | 1.E-04 | 4.E-04 | 7.E-04 | 1.E-03 | 2.E-03 |
| | Alternative D | | | | | |
| 1-weekend riding | 8.E-05 | 1.E-04 | 4.E-04 | 7.E-04 | 9.E-04 | 2.E-03 |
| 2-day use riding | 8.E-05 | 1.E-04 | 4.E-04 | 7.E-04 | 9.E-04 | 2.E-03 |
| 3-dayuse hiking | 8.E-05 | 1.E-04 | 4.E-04 | 7.E-04 | 1.E-03 | 2.E-03 |
| 4-weekend hunting | 8.E-05 | 1.E-04 | 4.E-04 | 7.E-04 | 1.E-03 | 2.E-03 |
| | Alternative E | | | | | |
| 1-weekend riding | -- | -- | -- | -- | -- | -- |

**Table 4.2-6 OEHHA Risk Summaries**

| Scenario # | 1 day | | 5 day | | 12 day | |
|---|---|---|---|---|---|---|
| | mean | 95%UCL | mean | 95%UCL | mean | 95%UCL |
| 2-day use riding | -- | -- | -- | -- | -- | -- |
| 3-dayuse hiking | 1.E-04 | 2.E-04 | 5.E-04 | 9.E-04 | 1.E-03 | 2.E-03 |
| 4-weekend hunting | 1.E-04 | 2.E-04 | 5.E-04 | 9.E-04 | 1.E-03 | 2.E-03 |
| | Alternative F | | | | | |
| 1-weekend riding | -- | -- | -- | -- | -- | -- |
| 2-day use riding | -- | -- | -- | -- | -- | -- |
| 3-dayuse hiking | 1.E-05 | 2.E-05 | 7.E-05 | 8.E-05 | 2.E-04 | 2.E-04 |
| 4-weekend hunting | 7.E-06 | 8.E-06 | 3.E-05 | 4.E-05 | 8.E-05 | 9.E-05 |

**Note:** Numbers shaded in gray are outside the EPA's acceptable risk range described in Section 4.2.4.1.

Scientific notation in the tables above reads as follows:

EPA's acceptable risk range = 1.E-04 to 1.E-06 *or* 1 X $10^{-4}$ (1 in 10,000) to 1 X $10^{-6}$ (1 in 1,000,000)

**Table 4.2-7 1-day OEHHA Risk Summary of Alternatives**

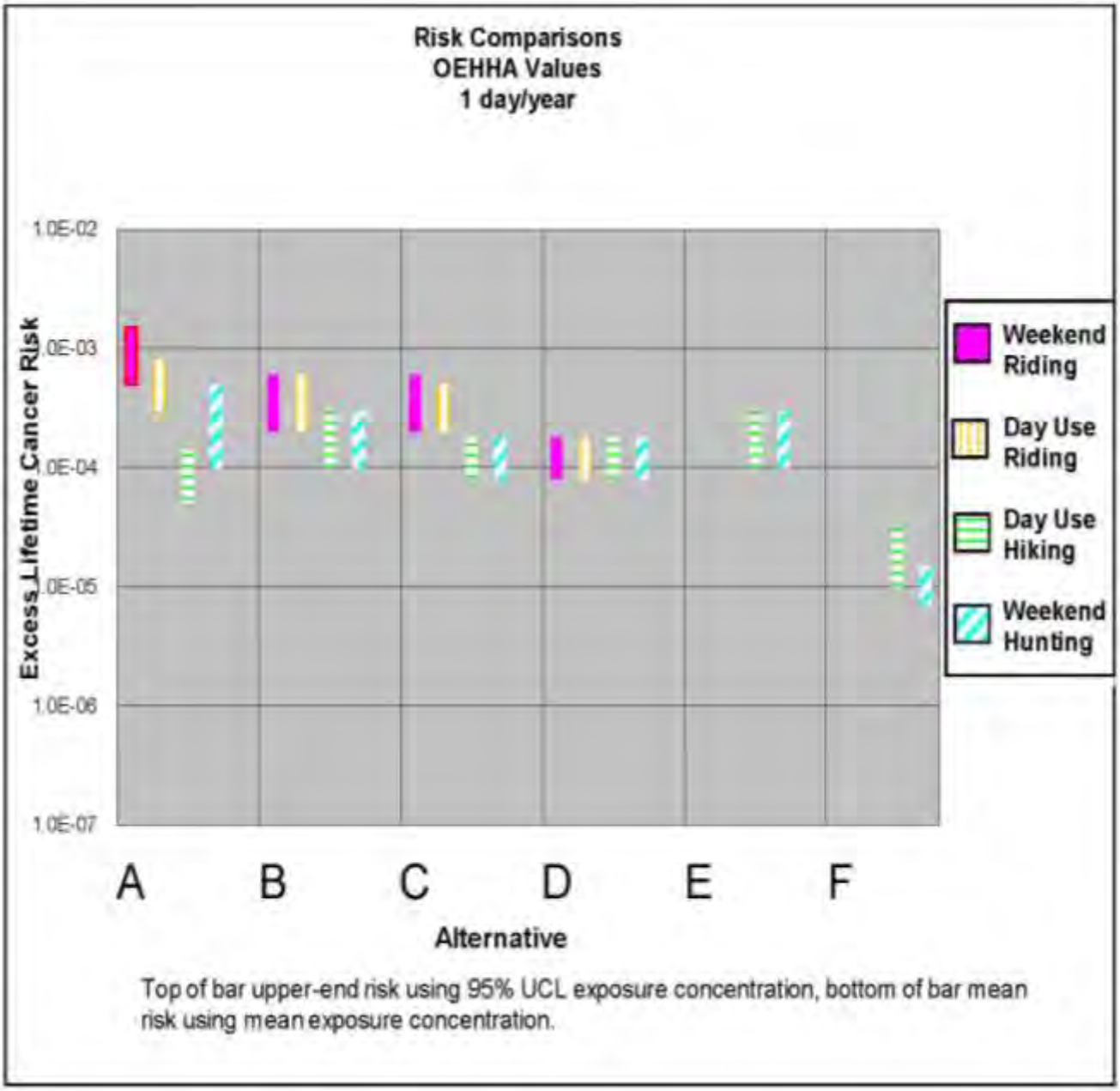


**Table 4.2-8 5-day OEHHA Risk Summary of Alternatives**

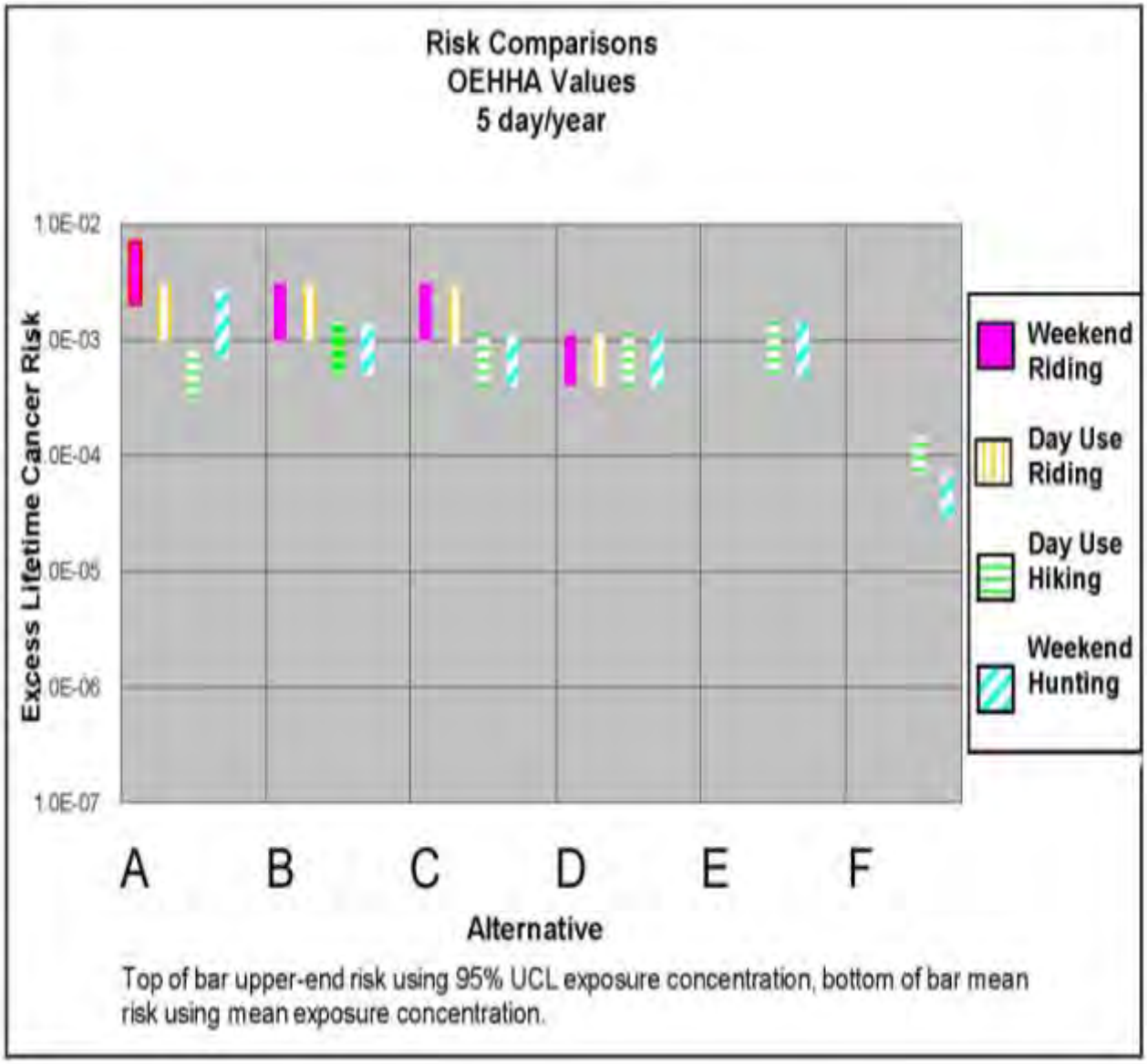
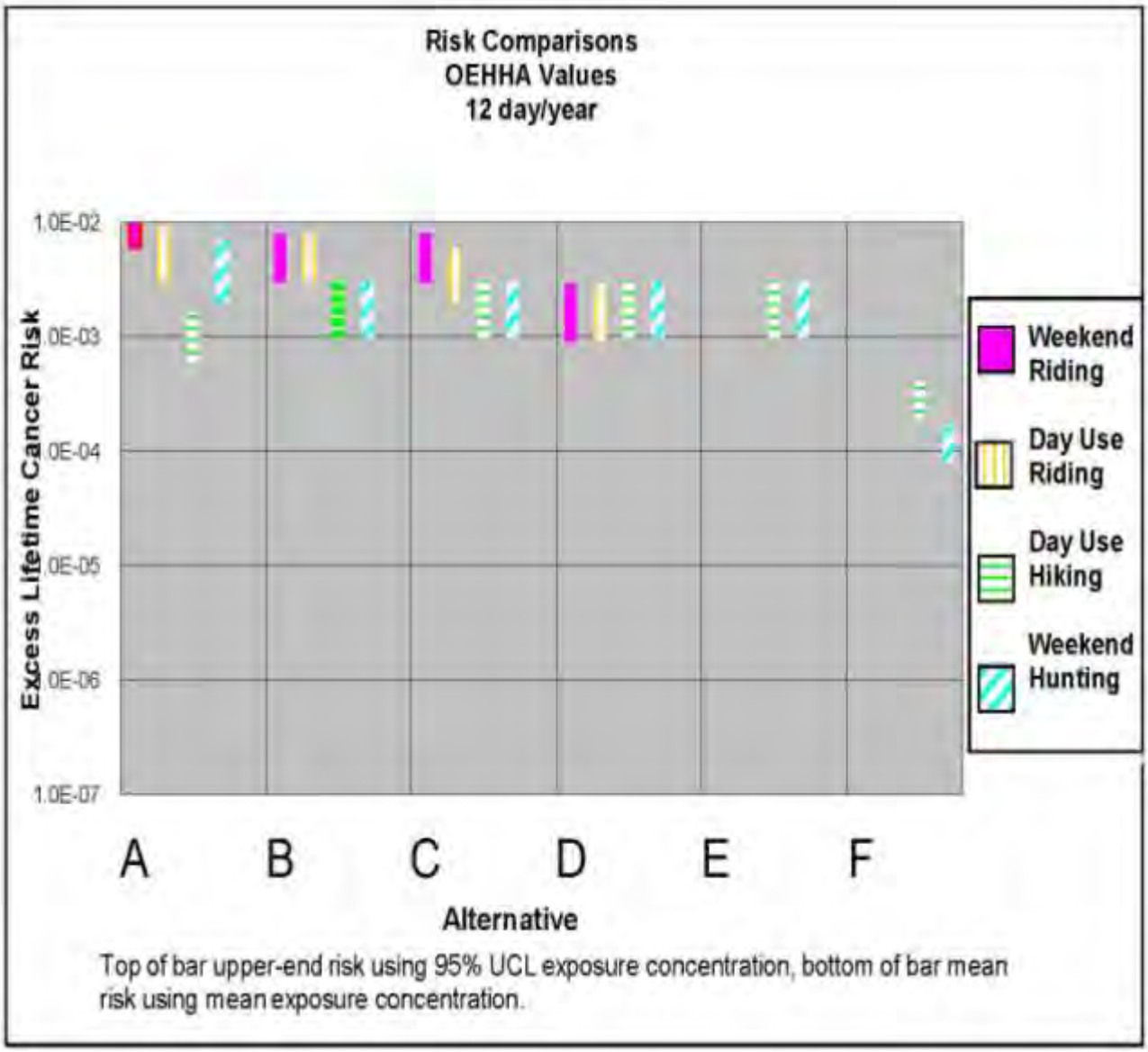


**Table 4.2-9 12-day OEHHA Risk Summary of Alternatives**



## 4.2.6 Other Impacts from HAZMAT for Alternatives B and C

### 4.2.6.1 Impacts from Other Management Actions

Impacts from hazardous materials use under other management actions are common to all Alternatives and are described under subsection 4.2.2, "Overview of Impacts" and Alternative A (above). Alternatives B through G would benefit the overall public safety and the environment by maintaining an inventory of hazardous materials and by seeking cost avoidance and/or cost recovery from the legally responsible parties. Compared to Alternative A, the management actions to identify and maintain an inventory of hazardous materials sites and eliminate or mitigate them as soon as possible would be an overall benefit to the environment and public safety.

While the impacts from permitted activities like livestock grazing, communications sites, and energy and development would be similar under all alternatives, the potential and the location could be different. Alternatives B and C have the greatest flexibility as to the type and location of high-impact activities and, as such, provides the most potential for activities that could result in the release of hazardous materials. Permitted uses such as mining, telecommunications, or wind development would require compliance with all Federal, State, and local regulations. However, these activities could have more severe impacts on BLM-managed lands if not mitigated, monitored, or implemented properly, especially in the Serpentine ACEC.

### 4.2.6.2 Mitigation

Mitigation measures are included in the management actions in Chapter 2. BLM would eliminate or mitigate as soon as possible potential environmental and public safety impacts from exposure to airborne asbestos emissions, illegally dumped hazardous materials, and waste and from abandoned mine sites. Additionally, BLM would seek cost avoidance and/or cost recovery from the legally responsible parties to mitigate BLM funding impacts for cleanup costs of contaminated public lands.

Under Alternative B, mitigation measures to reduce risk to public health and safety include restricting authorized land uses, restricting annual visitor use days, making improvement to major routes, voluntary use of personal protective equipment, requiring visitors to sign waivers of liability, and taking other corrective action(s) to comply with Federal, State, and local regulations.

**Access by Permit Only & Limited Annual Visitor Use Days/Year**

The EPA Risk Assessment Guidelines for Superfund (RAGS) recommends that risks be calculated using the reasonable maximum exposure (RME) that is expected to occur at a site under both current and future land-use conditions. Based on national recreational survey data and statements made by CCMA users, EPA and BLM estimated an RME for the CCMA of 5 visitor use per year. Some users indicated that they rode for longer periods and more frequently, so the risk analysis also considers a "high estimate" of 12 visits per year. To provide a low estimate of exposures and to facilitate the evaluation of the range of alternatives, 1 visit per year was also incorporated into the CCMA RMP/EIS risk assessment.

Since cancer risk from asbestos is a function of exposure concentration, duration of exposure, and time from first exposure, assessments of human health risks under each alternative are based on estimates of continuous lifetime exposure. Therefore, authorizations of access into the Serpentine ACEC by permit only to limit the number of visitor use days/year to less than 12 days for non-motorized recreation and

less than 5 days for motorized activities would have major long-term benefits on human health and safety because the total number of authorized visitor use days/year for any individual would be within the acceptable risk range for exposure to carcinogens.

**Waivers of Liability and Indemnification of Risk**

During public scoping, authorization of access into the Serpentine ACEC based on signed waivers of liability (i.e. indemnification of risk), was identified as a potential mitigation measure to inform visitors of the health risk associated with exposure to asbestos to determine their own willingness to accept the risk of exposure to asbestos in CCMA. In other words, this measure would allow individuals to "ride at their own risk", and reflects the preferred approach identified by the majority of the public scoping comments. However, developing a waiver of liability, or establishing indemnification of risk, would have no beneficial impacts on public health and safety because neither approach would actually reduce exposure to airborne asbestos or improve overall protection of human health and the environment Therefore, the potential for waivers of liability or indemnification of risk as "stand-alone" mitigation measures for human health and safety do not satisfy the purpose and need for the CCMA RMP/EIS. Furthermore, these actions would likely have major long-term adverse impacts on human health and the environment due to the perception that exposure to airborne asbestos fibers above the acceptable risk range established under the EPA Superfund Act is permissible and authorized by the Federal government.

**Vehicle Wash Rack**

The installation of vehicle wash racks is a mitigation measure proposed under Alternatives A, B, C, and D to reduce asbestos exposure by preventing the potential for "take home" or "track out" of serpentine soils that contain asbestos on vehicles and clothing, in order to minimize subsequent exposure to asbestos fibers from CCMA. If managed properly, installing vehicle wash racks would provide a major long-term benefit to public health and safety by reducing the potential for "track out" of asbestos laden soils and subsequent exposure to asbestos fibers from CCMA. However, cost, effectiveness, and CCMA visitors' willingness to use vehicle wash racks would limit the potential benefits of this mitigation measure. Furthermore, the construction and operation of vehicle wash racks requires reliable sources of water, but it is unclear whether the resources would be available to support the visitor use levels under the range of alternatives.

**Enforcement of speed limits on major routes (15-25 mph)**

In April 2005, the California Department of Toxic Substances Control completed a report titled, "Study of Airborne Asbestos from a Serpentine Road in Garden Valley, California". The objectives of the study were to measure asbestos concentrations on the road segment under traffic patterns that represent typical driving speeds and vehicle frequency. Therefore, DTSC collected air samples based on a 25 mile per hour (mph) speed limit, and a 10 mph speed limit to compare asbestos emissions on the road. The results of these air samples were calculated in a risk assessment, and as could be expected, the lowest estimated risk is associated with NOA concentrations at the farthest distance from the road, the fewest vehicles, the lowest speeds. Nevertheless, even under low speeds, asbestos emissions were still measureable and the human health risk from exposure to airborne asbestos fibers persists.

Based on the results of the DTSC study, establishing speed limits on major routes in CCMA would have some long-term beneficial impacts on vehicle traffic and visitor safety by reducing potential for accidents and head-on collisions. However, reliance upon speed limits to mitigate human health risks from exposure

to asbestos would have negligible long-term benefits because of the persistence of airborne asbestos emissions from vehicular traffic and fugitive dust on roadways.

**Age Requirements and Restrictions on Vehicle Types**

Under Alternative C motorized access in the Serpentine ACEC would be limited to full-size vehicles and motorcycles on designated routes for visitors 18 years of age or older, which would have major long-term benefits on the risk of exposure to asbestos for children and visitors under age 18.

On the other hand, there would be no reduction in risk to visitors by restricting the use of vehicles types, such as ATVs or UTVs, because the levels of exposure to airborne asbestos fibers and the associated risks to human health would be the same as existing conditions for motorcycles and full-size vehicles on routes and trails in the Serpentine ACEC.

## 4.2.7 Other Impacts from HAZMAT for Alternatives D and E

### 4.2.7.1 Impacts from Other Management Actions

Alternative D would also include the age requirement for visitors in the Serpentine ACEC to be $\leq$ 18 years old, which would have major long-term benefits on the risk of exposure to asbestos for children and visitors under age 18.

Alternatives D and E would restrict authorization of new communications sites and other rights-of-ways in the Serpentine ACEC to existing facilities. Alternative E would also authorize access into the Serpentine ACEC by permit only for $\leq$ 12 days for non-motorized recreation, and $\leq$ 5 days for motorized activities.

### 4.2.7.2 Mitigation

Mitigation measures are included in the management actions in Chapter 2. These are described above under Alternatives B and C.

## 4.2.8 Other Impacts from HAZMAT for Alternatives F and G

### 4.2.8.1 Impacts from Other Management Actions

Alternative F would restrict authorization of new communications sites and other rights-of-ways in the Serpentine ACEC to existing facilities, and Alternative G would prohibit new rights-of-ways in the ACEC. Both alternatives would stipulate human health and safety mitigation measures in new and/or existing land use authorizations. These restrictions and stipulations would have a moderate long-term beneficial impact on human health and safety.

### 4.2.8.2 Mitigation

Mitigation measures are included in the management actions in Chapter 2. These are described above under Alternatives B and C.

### 4.2.9 Cumulative Effects

In a July 2004, the United States Center for Diseases Control and Prevention reported that temporal patterns of pneumoconiosis mortality during 1968—2000 indicate an overall decrease in pneumoconiosis mortality. Pneumoconioses are diseases caused by the inhalation and deposition of mineral dusts in the lungs, resulting in pulmonary fibrosis and other parenchymal changes. The CDC report describes known pneumoconioses, which include "coal workers' pneumoconiosis (CWP), silicosis, asbestosis, mixed dust pneumoconiosis, graphitosis, and talcosis", and explains that no effective treatments for these diseases are available. Despite the marked decrease in some pneumoconioses, the CDC study concludes that "asbestosis increased steadily" from 1968-2000, and is "now the most frequently recorded pneumoconiosis on death certificates" (CDC 2004). The CDC acknowledges that the findings in this report are subject to limitations.

The overall effect of these limitations are unclear, and "as with any data based solely on death certificate information, cause of death information is subject to potential errors associated with disease diagnosis, recording, and coding." Furthermore, substantial increases in asbestos-related litigation through the 1990's raised awareness of asbestosis, "likely leading to its more frequent diagnosis and recording on death certificates." Despite these limitations, CDC asserts the data is useful as a "historical perspective on pneumoconiosis mortality", and "can be used to assess the effectiveness of preventive measures". The CDC study was based on a mortality surveillance system for respiratory diseases of occupational interest maintained by the National Institute for Occupational Safety and Health (NIOSH).

According to the report, "the data are drawn from annual National Center for Health Statistics (NCHS) multiple-cause-of-death mortality files, which include all deaths in the United States since 1968. For this report, pneumoconiosis deaths were identified during 1968--2000, the most recent year for which complete data are available, and include any death certificates for which an International Classification of Diseases (ICD) code* for CWP, silicosis, asbestosis, or unspecified/other pneumoconiosis was listed as either the underlying or contributing cause of death." The CDC also provides on-line resources and information regarding public health and safety that describes asbestos exposure as the leading cause of malignant mesothelioma.

#### 4.2.9.1 Impacts from HAZMAT for Alternative A, B, C, and D

The presence of airborne asbestos dust, a known carcinogen, poses a potential human health risk in the serpentine portion of the CCMA. Studies have proven that the vast majority of airborne asbestos dust in the Clear Creek area is generated by human activities, primarily vehicle use. Continued OHV use on unpaved routes, trails, and barrens would generate asbestos emissions, and visitor use and exposure to asbestos in the ACEC would have long-term negative cumulative effect on individuals excess lifetime cancer risks (ELCR).

Alternatives A, B, C would have long-term adverse cumulative effects on public health and safety from airborne asbestos emissions because visitor use would be similar to current levels. Potential health risks and air quality impacts from airborne asbestos emissions associated with OHV recreation use would still include an elevated risk of contracting serious and/or life-threatening asbestos-related diseases from exposure to asbestos fibers. Any reductions in impacts to human health would come primarily from mitigation and administrative measures. Extending dry season vehicle restrictions would contribute to reduced impacts to human health.

Furthermore, airborne asbestos emissions and public exposure would be reduced by dust suppression with water trucks, on approximately 25 miles of major routes in CCMA. A public vehicle wash rack for removing dust, mud and other asbestos-containing materials from vehicles could substantially reduce the cumulative impacts on public health and safety from off-site transport of asbestos by OHV user vehicles and subsequent exposure.

Under these alternatives, surface disturbing activities would only be permitted during periods when air concentrations of asbestos fall below OSHA action levels for a given activity. All BLM road maintenance and grading activities would be conducted in compliance with MBUAPCD ATCM for airborne asbestos, to prevent visible emissions during these operations. Education programs related to asbestos exposure and hazards would be expanded, and any new risk assessments would be incorporated into informational materials. Closure of all remaining mine areas and restricting vehicle access to these areas would further reduce public exposure to hazardous contaminants and transport of hazardous metals to streams and corresponding off-site transport.

Nonetheless, exposure to concentrations of asbestos similar to those analyzed by EPA in the CCMA Asbestos Exposure and Human Health Risk Assessment would have a long-term negative cumulative impact on public health and safety due to the elevated risk of asbestos related diseases and cancer.

#### 4.2.9.2 Impacts from HAZMAT for Alternatives E, F, and G

Under Alternatives E, F, and G, closure of routes and barrens to motorized access and OHV recreation would contribute to an overall reduction in asbestos dust generation and its transport by wind off-site, and would contribute to lower levels of asbestos transported by water and reduced impacts to beneficial uses.

Alternatives E, F, and G would have long-term beneficial cumulative impacts on public health and safety compared to other alternatives because visitor use would be much lower than current levels and additional mitigation measures would be implemented to further reduce human health risks. Nonetheless, potential health risks and air quality impacts from airborne asbestos emissions associated with motorized and non-motorized recreation use would still include an elevated risk of contracting serious and/or life-threatening asbestos-related diseases from exposure to asbestos fibers. Any reductions in impacts to human health would come primarily from mitigation and administrative measures.

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# 4.3 Travel and Transportation Management

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for travel management are to (1) continue to maintain roads for resource management purposes; (2) continue to support local counties and the State of California in providing a network of roads for movement of people, goods, and services across public lands; (3) manage motorized access use to protect resource values, promote public safety, provide responsible motorized access use opportunities where appropriate and minimize conflicts among various user groups.

## 4.3.1 Introduction

Travel management is the process of planning for and managing access and transportation systems on the public lands. Travel management planning should address all resource values and uses and accompanying modes and conditions of travel on public lands, and impacts to resources associated with the travel network. These include travel and transportation access needs for all the BLM-administered programs and resource management activities, including activities and access associated with mineral and energy development, rights-of-way and utility corridors, livestock management, wildlife and vegetation management, fire, lands and realty, and recreation.

All routes in the Planning Area are assigned one of four travel management designations: (1) open to motorized or mechanized cross-country travel, (2) limited to designated routes, (3) closed to motorized and mechanized travel, or (4) closed to all public use.

Roads and trails for each alternative are depicted in Map A through G in Appendix I.

## 4.3.2 Overview of Impacts

### 4.3.2.1 Impacts from Travel Management Actions

This subsection provides an overview of impacts on this resource. The background and overall impact assessment is provided here and, as needed, further analysis, such as the location or severity of the impact, is provided under each alternative.

**Vehicle Use Area and Route Designations**

Vehicle use area designations (i.e., open, limited, or closed) under the range of alternatives are based on 26.1 miles of county roads and 215.9 miles of existing designated open routes, with designated routes (open, closed) and mileage varying by alternative.

Impacts from travel restrictions include changes in the amount and type of traffic, construction of new roads/trails, and abandonment of existing roads/trails. The development and construction of new routes and the abandonment and restoration of existing routes would also have minor negative, indirect impacts on private property owners and other existing rights-holders that would be required to obtain rights-of-ways to travel across BLM public lands on authorized on specific routes. Similarly, changes in the level and types of traffic on roads accessing CCMA could result in minor negative, indirect impacts on local

and State governments that manage the road system if additional maintenance or patrol becomes necessary.

Appropriate capacity and modes of access is an important feature of travel management planning. Too little route capacity may result in overcrowding, and lack of roads or access could result in the inability of the public to enjoy certain areas of the CCMA public lands. Areas where there is no public access or where access could be improved include Condon Zone, Cantua Zone, Tucker Zone and Joaquin Ridge, directly south of the CCMA. Traditional access to Joaquin Ridge has been through the CCMA along Spanish Lake Road.

Redundant routes are routes that no longer serve their intended purpose and/or exceed State soil loss standards. Redundant routes can result in deterioration of visual or biological resources, or cause an additional maintenance load on the managing agency. Closure of these routes can result in beneficial impacts on water and biological resources and visual quality; however, the potential added burden on the remaining open routes may result in negative impacts such as soil erosion or compaction, loss of vegetative cover, or traffic congestion on the remaining route network.

**Route Management**

Some level of use restriction would be necessary to varying degrees under all alternatives. This may include temporary closure of roads due to the presence of unstable soils or rare or endangered plant species, or during severe weather conditions and seasonal closures. While some users may prefer to use the BLM's open routes year-round, these temporary closures could provide beneficial long-term impacts to the routes, natural surroundings, and public health and safety.

Indirect impacts, including the need for added sign maintenance or patrol in order to institute these restrictions, could be an added burden on BLM or local law enforcement agencies.

**Dust Suppression on OHV Routes and Trails**

Multiple products are available for dust suppression on trails. See Appendix V. Each of these products requires multiple applications per year, especially in areas sustaining high mechanical wear, such as OHV routes and trails. Rain and snow further shorten the application intervals due to run-off. There is no production-grade application device available for a single track trail situation, especially when dealing with the narrow, off-camber and steep grade trails endemic to CCMA. An application device would have to be fabricated for motorcycle or hand application and would likely be unfeasible from a cost/benefit perspective, especially when labor is considered.

Only a limited amount of dust suppressant (~3 gal=24lbs) would be able to be transported at a time due to weight limitations. This would greatly limit productivity with frequent refill trips. Trails would need to be closed during application and drying periods, and barrens would need constant application if continually disturbed by vehicle use.

Overall, application of suppressant would likely have major adverse impacts on OHV recreation, but major long-term benefits for general vehicle use in the ACEC because these products provide a hardened, "capping" action that is only suitable for major routes and is not preferable to motorcycle or ATV users.

Other trail hardening techniques, such as base-rock, would be extremely costly and difficult to apply. Weight would be an issue for transportation. The trails with a grade above 6-7% would not hold the gravel, with the majority of the material ending up down-watershed. Mechanical erosion would also further exacerbate this condition. Soil run-off and fugitive dust would need to be periodically capped with a reapplication as well.

**Motorized Vehicle Use Conflicts**

User conflicts can occur in areas where there is heavy non-motorized and motorized use within the same travel ways. While there are no management actions defined to address this issue, the change in recreational opportunities throughout the Planning Area, as provided under Alternatives B, C, D, E, F and G would lessen the potential for these conflicts, primarily due to decreased motorized recreation opportunities. Alternatives D, E, F and G offer the most restrictions to motorized recreation and it is these Alternatives which offer the greatest potential for lessening any conflicts with non-motorized user groups.

#### 4.3.2.2 Impacts from Other Management Actions

**Biological Resources**

Biological resources management can aid in reducing soil erosion and reducing dust, and also can generally improve local ecological conditions, all of which can help stabilize roads and trails, thereby also reducing maintenance costs. There also may be secondary effects of improved user enjoyment. Conversely, in areas where water and biological restoration projects are conducted, roads may need to be temporarily or permanently closed in order for these projects to be successful. This may be burdensome on public lands users in areas of popular road use. Alternatives C, D, E, F and G offer the greatest opportunity to enhance water and biological resources. These Alternatives limit to varying degrees the amount of travel within the management area, with Alternative G eliminating all but specially permitted access, thus offering the greatest benefits to resources.

**Recreation**

The type, intensity, and location of recreation activity affect the need and use of routes in the Planning Area. Access is driven by recreation demands and management objectives. Each Alternative addresses a different type, intensity and location within the Management Area while taking into account human health and safety. These limitations on recreation will directly impact transportation routes and access within the Management Area.

**Livestock Grazing**

No new routes are foresee-ably needed in support of the HFO grazing program in the management area. The proposed new access at Condon Peak Zone from Los Gatos Creek Road would be implemented to primarily support recreation access, with grazing support a secondary benefit.

**Energy and Minerals**

Major energy and mineral exploration in the management area stopped in 1996 with the KCAC Asbestos Mine and would see no impacts under all alternatives.

## 4.3.3 Impacts to Travel Management for Alternative A

### 4.3.3.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

Alternative A, the "No Action" alternative, would maintain existing management policies and procedures. There would be no new routes constructed and/or existing routes abandoned. Vehicle/OHV use in the resource area would be limited to designated routes and barrens. The BLM would continue to designate open up to 270 miles of motorized roads and trails where deemed appropriate through proper planning actions.

The public lands managed within CCMA would remain open to motorized vehicle use on existing routes, except where closed by closure notices, and/or by activity-level planning decisions. OHV regulations would still apply to route use by the general public. Under this alternative, plans addressing recreational activities for specific areas and access issues would be developed and implemented. These actions would provide major long-term benefits for travel management and a variety of motorized visitor uses in CCMA.

**Route Management**

Alternative A would continue those practices set forth in the 2006 Record of Decision for the CCMA RMP Amendment and Route Designation. These actions would provide major long-term benefits for travel management and a variety of motorized visitor uses in CCMA.

**Motorized Vehicle Use Conflicts**

Under this alternative, minor user conflicts would continue to be an issue in areas where there is non-motorized and motorized use within the same travel ways, as well as in areas with heavy pressure for multiple uses and resource value concerns. Minor conflicts would also continue between the three types of OHV user groups.

### 4.3.3.2 Impacts from Other Management Actions

**Biological Resources**

Alternative A would provide adequate environmental protection to biological resources, as all activities and improvements to roads and access would be required to comply with established road construction and route maintenance standards. Actions that may affect special status species would be subject to consultation with the US Fish and Wildlife Service, and BLM would incorporate conservation recommendations from the associated Biological Opinion(s), Many measures mitigating transportation and access on designated routes and trails in CCMA have already been implemented and would only result in minor short-term impacts to resources in the Planning Area.

**Recreation**

The type, intensity, and location of recreational activities affect the need and use of roads in the Planning Area. Alternative A offers a variety of high and low-impact recreation. Many of the recreational

opportunities that are allowed or promoted under Alternative A require some mode of vehicular access. Because this Alternative offers the largest amount of open or limited access routes in the management area, this would result in the most major long-term benefits to public transportation among the range of alternatives.

**Livestock Grazing**

Over time, rangeland use may introduce new roads into the Planning Area. These would likely be for administrative purposes only and would not have any substantial effect on transportation and access within the Planning Area.

**Energy and Minerals**

Energy and mineral development consists of hobby gem and mineral collection within the ACEC. Therefore, energy and mineral development is expected to have negligible impact on the transit network in the Planning Area.

#### 4.3.3.3 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Mitigation includes closing routes, limiting access, or instituting use restrictions in specified areas as needed. Mitigation measures included under other resource programs will also lessen the impacts of roads and access on natural resources like water quality and vegetation.

### 4.3.4 Impacts to Travel Management Common to Alternatives B, C, D, E, F and G

#### 4.3.4.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

All Alternatives allow for some type of a transportation network, with varying levels of access under each. Each alternative takes into account human health and safety, based on EPA calculated exposure levels, and attempts to meter traffic, access and duration of exposure based on the limits set forth in the CCMA Asbestos Exposure and Human Health Risk Assessment (2008).

All alternatives also consider new development of both motorized and non-motorized transportation and access within those Zones outside the ACEC.

**Route Management**

All alternatives include some level of restriction of public use of roads and trails during periods of inclement weather and would continue BMPs described in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented below in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition,

monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

**Motorized Vehicle Use Conflicts**

User conflicts can occur in areas where there is heavy non-motorized and motorized use within the same travel ways. With Alternative B, it is anticipated that motorized vehicle traffic on roads and trails remaining open may increase incrementally over time because the use season would be shortened from Alternative A. Alternative C would see increased congestion, especially on the single track, since the trail mileage for the same group of users would be reduced by nearly 100 miles. These actions could result in increased conflicts with non-motorized traffic due to increased user density. Conflicts also may increase as a result of road closures under Alternatives D, E, and F because the same amount of users would be forced to use fewer roads. Alternative G would see no conflicts, as users would not be present.

#### 4.3.4.2 Impacts from Other Management Actions

**Biological Resources**

All Alternatives would provide adequate environmental protection for biological resources. All activities and improvements to roads and access would be required to comply with the Biological Opinion criteria. In the long run, most of these mitigating actions have been implemented and would result in no foreseeable impacts to maintaining adequate routes in the Planning Area.

**Recreation**

The type, intensity, and location of recreational activities affect the demand for roads in the Planning Area. Generally, Alternatives B, C, D and E promote some form of recreation supported by a route network within the ACEC. Additional areas outside of the ACEC with designated routes become increasingly important as mileage is restricted within the ACEC, especially for those areas traditionally accessed through the ACEC. Alternatives F and G restrict ACEC access to pedestrian or prohibit it altogether, respectively. Motorized access would be severely limited or eliminated under these alternatives, which would have major long-term adverse effects on motorized recreation in CCMA. Hobby gem and mineral collection would also be adversely impacted under Alternatives F and G because access within the ACEC under Alternative F would be limited to foot traffic, and no public access under Alternative G would eliminate rockhounding opportunities entirely.

**Livestock Grazing**

Over time, rangeland use may introduce new roads into the Planning Area. These would likely be for administrative purposes only and would not have any substantial effect on transportation and access within the Planning Area.

**Energy and Minerals**

Energy and mineral development consists of hobby gem and mineral collection within the ACEC. Therefore, energy and mineral development is expected to have negligible impact on the transit network in the Planning Area.

**Lands and Realty**

Under Alternatives B-G, there are potential adverse impacts to existing rights-holders and CCMA private land owners that use routes crossing public lands from requirements to obtain a formal right-of-way (ROW) pursuant to FLPMA and pay annual rental fees. The intensity of those adverse impacts varies based on the alternatives. Alternatives A through D would be considered minor because County roads would be used for primary access to private inholdings. Whereas, Alternatives E, F, and G would have moderate short-term adverse impacts because these alternatives would effectively close all County roads and require all landowners to get ROW from BLM for travel on routes in the ACEC. BLM may consider undue hardship on landowners and negotiate rental rates in accordance with BLM guidance. Often times this can mitigate the financial impact.

#### 4.3.4.3 Mitigation

Mitigation measures are included in the management actions in Chapter 2 and Appendix V. Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed.

Mitigation under other management actions will also lessen the impacts of roads and access on natural resources like water quality and vegetation. Alternative G would provide the most restrictions when it comes to roads and minimizing their impact on ecological resources. Alternatives E and F offer slightly less protection of these resources, Alternatives C and D offer a moderate amount of protection and Alternative B offers the least when compared to the No Action Alternative.

### 4.3.5 Impacts to Travel Management for Alternative B

#### 4.3.5.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

Alternatives A and B provide the most amount of open or limited access routes in the Management Area. The route networks are identical and are only different by temporal/seasonal access restrictions. Alternative B would designate the CCMA a 'Limited' OHV use area and reaffirm the route and barren network designated under the 2006 CCMA ROD. Access points would be limited to the main entrance to Clear Creek Canyon from Coalinga Road and the county road through the former town of Idria. The Salinas Ramblers Motorcycle Club would also continue to have access via R7, which ends at their property boundary.

The Dry Season Use Restriction would extend from April 15$^{th}$ through December 1$^{st}$, which would further reduce the visitor use season by 12 weeks and limit access to CCMA more than 60% of the year. Wet Season Use Restrictions would continue using established or improved methods as they become available. Under this alternative, visitors will be limited in their use by days/year based on the EPA and BLM risk assessment models and activity-based air sampling data gathered during the 'wet season', which is the time of year CCMA is open to the public.

**Route Management**

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in the Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

**Motorized Vehicle Use Conflicts**

Same as Impacts and Mitigation Common to Alternatives B, C, D, E, F, and G (Sections 4.3.4.1 and 4.3.4.3).

#### 4.3.5.2 Impacts from Other Management Actions

Same as Alternative A.

#### 4.3.5.3 Mitigation

Alternative B includes mitigation that is as also specified for Alternative A. Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative B would also close or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species, and would not allow vehicle use within riparian areas except at designated crossing.

### 4.3.6 Impacts to Travel Management for Alternative C

#### 4.3.6.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

The BLM would implement Best Management Practices (BMPs) to reduce off-site water quality impacts for roads and trails that no longer serve their original purpose, or exceed State soil loss standards.

Alternative C designated routes would consist of the County roads and dry season route network with year-round access. County Roads would not be maintained, and BLM anticipates that certain sections of Clear Creek Road (R1) would become impassable over the life of this Plan. An additional 150 miles of single track trails would be designated for motorcycle use only. Testing would be necessary to determine those products most effective and durable for dust suppression. OHV use in the Serpentine ACEC would be limited to visitors over 18 years of age. Remote automated weather stations would be established to effectively monitor soil moisture conditions to determine the need for dry and/or wet weather closures.

These actions would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in secondary effects of off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

**Route Management**

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

**Motorized Vehicle Use Conflicts**

Same as Impacts and Mitigation Common to Alternatives B, C, D, E, F, and G (Sections 4.3.4.1 and 4.3.4.3).

Minor user conflicts may occur in areas where motorized access is allowed

#### 4.3.6.2 Impacts from Other Management Actions

Same as Alternatives A and B.

#### 4.3.6.3 Mitigation

Mitigation measures under Alternative C include closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative C would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

### 4.3.7 Impacts to Travel Management for Alternative D

#### 4.3.7.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

Alternative D would designate routes for full sized vehicles comprised of the County roads and major BLM roads for year-round access. Routes would be limited to full size vehicles within the ACEC. Cooperation would continue between the BLM and San Benito County to maintain County roads for public access through the ACEC to Joaquin Ridge. Remote automated weather stations would be established to effectively monitor soil moisture conditions to determine the need for dry and/or wet weather closures.

Motorized access to the Condon Zone would be through a newly developed recreation site and staging area off of Coalinga-Los Gatos Road. OHV opportunities would be provided within the Condon Zone. The Cantua and Tucker Zones would also be developed with new recreation sites, access roads and OHV routes on the public lands within these zones.

These actions would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in indirect adverse impacts from off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

It is important to note that new route development, especially in the Cantua and Condon Zones, would likely result in the discovery of asbestos bearing serpentine inclusions and would present further health and safety issues at any points of crossing. The San Benito River Zone is a fragmented area that presents many difficulties for a motorized route network because the majority of the public lands in this Zone are non-contiguous and broken by private property. Connecting this Zone to any other routes outside of the Serpentine ACEC within the neighboring Condon Zone would not be possible without crossing private lands. These considerations make this zone an unlikely candidate for any further routes.

**Route Management**

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

**Motorized Vehicle Use Conflicts**

Minor user conflicts may occur in areas where motorized access is allowed between traditional motorized use and the new OHV user groups in the peripheral Management Zones.

#### 4.3.7.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

**Recreation and Access**

Under Alternative D, OHV recreation activities would be allowed on designated open routes in the Condon Zone, which could result in adverse impacts on riparian areas from streambed disruption or trampling of riparian vegetation, and not meeting the goal of maintaining or enhancing water quality. Motorized recreation access would be authorized on approximately 60 miles of route network following inventory resource screening, and route designation criteria outlined in Appendix II. Additional roads and parking for vehicles would be allowed near Coalinga-Los Gatos Road, San Carlos Bolsa, and Tucker and Wright Mountain(s), and increased development and/or expansion of recreation facilities such as campgrounds throughout the Planning Area would be pursued. Compared to other action alternatives, Alternative D would allow the most motorized recreation outside the ACEC and the most development of recreation facilities in the CCMA, which has the potential to create moderate adverse impacts to water

resources through increased erosion from roads, trails, and recreation facility developments, introduction of contaminants to water bodies during development of new facilities, and increased potential for riparian habitat destruction through the development of new roads and increased visitor numbers in these areas. This alternative would have a negative impact on BLM's goal of maintaining or enhancing water quality in CCMA watersheds.

Under Alternative D, closure or restoration of roads would only occur in the Serpentine ACEC on designated closed routes with stream crossings, or other areas with high potential for sedimentation of waterways. These actions have the potential to create moderate to major beneficial impacts to water resources through decreased soil erosion, vehicle-related contaminant introduction to water bodies, and enhanced watershed functions. Like Alternative C, this alternative does not specifically prohibit vehicles from major routes and stream crossings in the ACEC, which would result in more adverse impacts to water resources than Alternatives E, F, and G.

#### 4.3.7.3 Mitigation

Reference 4.3.4.1 and 4.3.4.3 and/or Appendix V.

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative D would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

### 4.3.8 Impacts to Travel Management for Alternative E

#### 4.3.8.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

Alternative E would restrict public access to T153 and Spanish Lake Road (Route R-11) year-round within the ACEC. All public rights-of-way would be vacated on County roads within the ACEC. The County roads from Clear Creek entrance to Jade Mill would be maintained, as would the County road from Idria to its connection with T153. Access would be restricted during extreme weather conditions based on soil moisture monitoring and/or established procedures for seasonal use restrictions. Gates would be installed at all entrance points to control public access. Motorized access throughout the rest of the ACEC would be authorized for existing rights-holders, private property in-holders, scientific studies, research and education from accredited institutions and individuals and on a case-by-case basis. The Condon and Tucker Zones would be maintained for non-motorized activities. The Cantua Zone would be analyzed for construction of a motorized route network. If implemented, this route would provide primary hunting and hiking access, and new recreation facilities would be constructed to support non-motorized recreation opportunities. Existing RMOs would be maintained within the Condon Zone.

These actions would result in a permanent net loss of open or limited access routes in the Planning Area. While there are many ecological benefits to this, this loss of opportunity is considered an adverse impact to the transportation network in the Planning Area as it may cause additional crowding of the remaining roads which can result in secondary effects of off-road driving and creation of unofficial, user-inspired routes that ultimately will need to be closed or maintained.

**Route Management**

This alternative includes a level of restriction of public use of roads and trails during periods of inclement weather and would continue those BMPs set forth in Appendix V.

In addition, the designated route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

**Motorized Vehicle Use Conflicts**

Minor user conflicts may occur in areas where motorized access is allowed between traditional motorized use and the new OHV user groups in the peripheral Management Zones.

#### 4.3.8.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

#### 4.3.8.3 Mitigation

Reference 4.3.4.1 and 4.3.4.3 and/or Appendix V.

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative E would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

### 4.3.9 Impacts to Travel Management for Alternative F

#### 4.3.9.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

Alternative F would restrict public access in the ACEC to pedestrian traffic and/or written motorized access authorizations. All existing rights-of-way would be maintained, and gates would be constructed at entrance points to control vehicle access into the ACEC. Clear Creek Road would be decommissioned and restored to provide habitat and control erosion. Non-motorized recreation opportunities would be

allowed for the general public within the ACEC, but permits would limit access to less than 12 visitor days. Written authorizations would also be required for scientific research and education groups to access the Serpentine ACEC, SBMRNA, and Joaquin Rocks. Access would be restricted during extreme weather conditions based on soil moisture monitoring and/or established procedures for seasonal use restrictions. New transportation facilities would be considered in the Cantua and Tucker Zones to support non-motorized recreation opportunities. Existing RMOs would be maintained within the Condon Zone, with a new staging area and motorized access established along Coalinga-Los Gatos Road.

**Route Management**

This alternative includes a complete restriction on motorized use of roads and trails in the Serpentine ACEC. BLM would continue to implement the BMPs set forth in Appendix V for routes in the ACEC that would continue to be used for administrative purposes and authorized access for landowners and existing rights-of-way holders.

In addition, the administrative route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

**Motorized Vehicle Use Conflicts**

Minor user conflicts may occur in areas where motorized access is allowed between traditional motorized use and the new OHV user groups in the peripheral Management Zones.

#### 4.3.9.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

#### 4.3.9.3 Mitigation

Reference 4.3.4.1 and 4.3.4.3 and/or Appendix V.

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative F would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

### 4.3.10 Impacts to Travel Management for Alternative G

#### 4.3.10.1 Impacts from Travel Management Actions

**Vehicle Use Area and Route Designations**

Alternative G would prohibit all public access inside the ACEC. All public rights-of-way would be terminated on County Roads and gates would be constructed at entrance points to control vehicle access into the ACEC. Access would be authorized into the ACEC for existing rights-holders, private property in-holders, scientific studies, research and education from accredited institutions and individuals and on a case-by-case basis. Access authorizations would stipulate health and safety requirements and, where deemed appropriate, would require compliance with the Hollister Field Office Health and Safety Plan for the ACEC. Cantua and Tucker Mtn. zones would be managed for non-motorized recreation and Condon Peak zone would be limited to full-sized vehicles and ATVs on designated routes with a new staging area established along Los Gatos Creek Road.

**Route Management**

This alternative includes a complete restriction on motorized use of roads and trails in the Serpentine ACEC. BLM would continue to implement the BMPs set forth in Appendix V for routes in the ACEC that would continue to be used for administrative purposes and authorized access for landowners and existing rights-of-way holders.

In addition, the administrative route network would be improved to mitigate asbestos dust emissions utilizing a combination of paving/asphalt, base rock, chip seal, surfactants and copolymer emulsion soil stabilizers. A comparison of these mitigation measures, including initial cost and maintenance estimates is presented above in Table 3.3-1, and was used to determine feasibility of implementing these measures. In addition, monitoring would be necessary to determine the effectiveness of these dust suppression methods in reducing asbestos emissions and the associated human health risk of exposure to airborne asbestos fibers in CCMA.

**Motorized Vehicle Use Conflicts**

All public access within the ACEC is prohibited, therefore no conflicts are predicted. Minor user conflicts may occur in areas where motorized access is allowed within the Condon Zone.

#### 4.3.10.2 Impacts from Other Management Actions

Same as Alternative A, B, and C for fire management, livestock grazing, and energy and minerals.

#### 4.3.10.3 Mitigation

Mitigation includes closing roads, limiting access, or instituting use restrictions in specified areas as needed. Alternative G would implement BMPs to reduce off-site water quality impacts from roads and trails newly closed that no longer serve their original purpose, or exceed state soil loss standards; and mitigate or relocate travel routes that cross populations, critical habitat, or potential habitat of special status species.

### 4.3.11 Cumulative Effects

Federal agencies' management of travel management (i.e. motorized public access) and OHV use on federal lands is guided by policies and procedures to control and direct the use of OHV on federal lands in a manner that protects the resources of those lands, promotes the safety of all users, and minimizes conflicts among land uses. These policies and procedures also direct each federal land management agency to develop and issue regulations that designate specific areas and trails on public lands as open or closed with respect to OHV use.

Specifically, Executive Order No. 11644 (Feb. 8, 1972) (as amended by Exec. Order No. 11989, (May 24, 1977) provides the authority for federal land managers to close areas or trails if OHVs are causing considerable adverse effects. The Forest Service and BLM initially implemented these executive orders by designating areas as open, which allows cross-country OHV use; limited, which allows OHV use on a specific route authorized by an agency; or closed, which prohibits OHV use. More recently, these agencies have begun to reevaluate the procedures they use to make OHV designations because of the significant increase in popularity of OHV use through the 1990's.

As reported in the Government Accountability Office's June 2009 Report to the Subcommittee on National Parks, Forests, and Public Lands titled *Enhanced Planning Could Assist Agencies in Managing Increase Use of Off-Highway Vehicles*, "the environmental impacts of OHV use, both direct and indirect, have been studied and documented over the past several decades. In fact, in 2004, the Forest Service Chief identified unmanaged motorized recreation as one of the top four threats to national forests, estimating that there were more than 14,000 miles of user-created trails, which can lead to longlasting damage. Potential environmental impacts associated with OHV use include damage to soil, vegetation, riparian areas or wetlands, water quality, and air quality, as well as noise, wildlife habitat fragmentation, and the spread of invasive species. For example, studies on the impacts of OHV use indicate that soil damage can increase erosion and runoff, as well as decrease the soil's ability to support vegetation. Additionally, research has shown that habitat fragmentation from OHV use alters the distribution of wildlife species across the landscape and affects many behaviors such as feeding, courtship, breeding, and migration; habitat fragmentation can also negatively affect wildlife beyond the actual amount of surface area disturbed by roads. In 2007, the U.S. Geological Survey reported that as a result of OHV use, the size and abundance of native plants may be reduced, which in turn may permit invasive or nonnative plants to spread and dominate the plant community, thus diminishing overall biodiversity. Another potential impact of OHV use is damage to cultural resources, including archaeologically significant sites such as Native American grave sites, historic battlefields, fossilized remains, and ruins of ancient civilizations."

As a result the Forest Service issued a travel management regulation in 2005 to standardize the designation process to identify roads, trails, and areas that will be open to motorized travel. They developed a schedule to complete the route designations and to develop the required motor vehicle use maps by the end of calendar 2009. As of March 2009, the Forest Service had completed travel management planning for 53 million acres, or about 28 percent of its lands.

Like the Forest Service, BLM has also begun to reevaluate the procedures it uses to make OHV designations. Over the past 10 years, BLM has issued increasingly detailed guidance on how its field offices should address travel management in their resource management plans.5 In accordance with the executive orders, BLM regulations require that all its lands be given an area designation of either open, limited, or closed with respect to motorized travel and that these designations be based on protecting

resources, promoting the safety of users, and minimizing conflicts between users. As of March 2009, BLM had designated about 32 percent of its lands as open to motorized travel, 48 percent as limited, and 4 percent as closed; 16 percent are not yet designated. BLM headquarters officials have estimated that in about 10 years they will complete updating resource management plans to include travel planning.

While updating a resource management plan, BLM field offices are to inventory and evaluate OHV routes and area designations (such as open, limited, and closed), seek public input, and make changes as appropriate. For example, when the Hollister Field Office finalized its Record of Decision for the CCMA RMP Amendment and Route Designation in 2006, the plan changed the policy from "OHV use limited to existing routes" to "OHV use limited to designated routes". The management actions approved by BLM in the Record of Decision (2006) also reduced the miles of routes and trails open for OHV use from over 440 miles to 270 miles, and the acres of barrens open for OHV use from over 2,800 acres to 478 acres.

Alternative A would have major long-term cumulative benefits for public and administrative access to BLM-administered lands in the Planning Area because it would continue to allow all forms of motorized and non-motorized recreation activities on designated routes and barrens in CCMA. Even though Alternatives B, C, and D would also authorize OHV recreation and motorized access for hunting and rockhounding on public lands, these alternatives would only have minor long-term cumulative benefits because of increasing restrictions on visitor use and vehicle types, or reductions in the miles of designated routes and barrens in the CCMA.

All of the other alternatives considered in this RMP/EIS would have long-term negative cumulative impacts on motorized access to BLM-administered lands and OHV recreation opportunities at existing vehicle recreation areas within a 2-4 hour drive of the Planning Area. This is because any alternative resulting increased restrictions to motorized use in CCMA would likely result in increased use of other OHV recreation areas managed by Private, County, State and other Federal agencies.

In most areas commutable from the greater CCMA area, it is unlikely that the County, State, or local OHV areas within the Planning Area would grow significantly because they are already operating under regulatory limitations and budget constraints at existing use levels. As use of these areas increases, these impacts could become more problematic. These effects are addressed in more detail under Section 4.1 "Recreation."

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# 4.4 Biological Resources – Vegetation

For ease of use, the management goals from Chapter 2.4 are reiterated here:

- The goals for vegetation resources are to (1) restore, maintain, or improve ecological conditions, natural diversity, and associated watersheds of high value, high-risk, native plant communities and unique plant assemblages and (2) restore degraded landscapes and plant communities.

## 4.4.1 Introduction

Within the CCMA, many vegetation types are correlated with soil type. Likewise impacts to vegetation are closely related to impacts to soils. The Area of Critical Environmental Concern (ACEC) consists of the serpentine soil group and the San Benito River, Condon Peak/White Creek, Cantua, and Tucker Mountain Zones consist of the nonserpentine soil group. Vegetation types may be grouped into upland or riparian. Riparian vegetation is generally more sensitive to impacts than upland vegetation.

**For the purpose of analysis**: Vegetation types are grouped and analyzed as "serpentine riparian," "serpentine upland," "nonserpentine riparian," and "nonserpentine upland." Analysis of impacts to vegetation resources is focused upon the location and intensity of the activity with respect to the general soil type, serpentine or nonserpentine, which supports the corresponding vegetation type, riparian or upland.

Decisions relating to vegetation management will be within the context of the Standards and Guidelines for Rangeland Health in Central California (hereinafter referred to as the Standards and Guidelines). Vegetation structure and composition are key components of rangeland health. The management goals are achieved by 1) maintaining or improving current ecological values and processes, productivity, and biological diversity, 2) rehabilitating areas affected by wildland fire and other surface-disturbing activities to stabilize soils and promote growth of desired plant communities, and 3) preventing the introduction and proliferation of noxious weeds. Table 4.4-1 through Table 4.4-12 provides an overview of the management actions that would affect vegetation and how disturbance as dictated by the alternatives would impact vegetation.

**Table 4.4-1 Summary of vegetation resource management actions for: Vegetation disturbance by non-motorized recreation.**

| Alternative | **Impact:** Vegetation disturbance by non-motorized recreation | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **A** | Continued non-motorized recreation within both riparian and upland serpentine plant communities. Limited non-motorized recreation within both riparian and upland nonserpentine plant communities. | Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and riparian vegetation. |
| **B** | Reduced non-motorized recreation within both riparian and upland serpentine plant communities. Limited non-motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts. |
| **C** | Same as Alternative B. | Same as Alternative B. |

| Alternative | **Impact:** Vegetation disturbance by non-motorized recreation | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **D** | Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. Increased non-motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative B. |
| **E** | Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative B. |
| **F** | Same as Alternative E. | Same as Alternative B. |
| **G** | No non-motorized recreation within riparian and upland serpentine plant communities. Non-motorized recreation impacts upon nonserpentine plant communities similar to Alt. D. | Same as Alternative B. |

**Table 4.4-2 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Vegetation disturbance by non-motorized recreation.**

| Vegetation by soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Predicted vegetation loss →** | **A > B ~ C ~ D > E > F ~ G** | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (detrimental), ↑↑↑ = major increase (detrimental). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

**Table 4.4-3 Summary of vegetation resource management actions for: Vegetation disturbance by motorized recreation.**

| Alternative | **Impact:** Vegetation disturbance by motorized recreation | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **A** | Continued intensive motorized recreation within both riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities. | Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation. |
| **B** | Reduced motorized recreation within both riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. Greatly increased motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative B. |
| **E** | Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine plant communities. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative B. |
| **F** | No motorized recreation within riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative B. |
| **G** | No motorized recreation within riparian and upland serpentine plant communities. Limited motorized recreation within both riparian and upland nonserpentine plant communities. | Same as Alternative B. |

**Table 4.4-4 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Vegetation disturbance by motorized recreation.**

| Vegetation by soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine riparian | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| Serpentine upland | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| Nonserpentine riparian | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| Nonserpentine upland | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| Predicted vegetation loss → | A > B ~ C ~ D > E > F ~ G | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (detrimental), ↑↑↑ = major increase (detrimental). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

**Table 4.4-5 Summary of vegetation resource management actions for: Vegetation disturbance by energy and mineral exploration.**

| Alternative | **Impact:** Vegetation disturbance by energy and mineral exploration | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **A** | Continued energy and mineral exploration within both riparian and upland plant communities of serpentine and nonserpentine areas. | Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation. |
| **B** | Same as Alternative A. | Same as Alternative A, plus: Mitigate or relocate proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A. | Same as Alternative B. |
| **E** | Energy and mineral exploration limited to both riparian and upland plant communities of nonserpentine areas outside of the ACEC. | Same as Alternative B. |
| **F** | Same as Alternative E. | Same as Alternative B. |
| **G** | Same as Alternative E. | Same as Alternative B. |

**Table 4.4-6 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Vegetation disturbance by energy and mineral exploration.**

| Vegetation by soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine riparian | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| Serpentine upland | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| Nonserpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Nonserpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Predicted vegetation loss → | A ~ B ~ C ~ D > E ~ F ~ G | | | | | | |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

**Table 4.4-7 Summary of vegetation resource management actions for: Noxious weed invasion.**

| Alternative | **Impact:** Noxious weed invasion | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **A** | Continued movement of weed seed on vehicles from both riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Continued movement of weed seed on livestock from both riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. | No management actions specified. |
| **B** | Reduced movement of weed seed on vehicles from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. | Prevent and control noxious weed invasion. Develop an integrated pest management plan. Prioritize noxious weed eradication based on the BLM and California State list. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Greatly increased movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. | Same as Alternative B. |

| Alternative | **Impact:** Noxious weed invasion | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **E** | Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. | Same as Alternative B. |
| **F** | No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities. Weed seed movement on livestock limited to only within riparian and upland nonserpentine plant communities outside of the ACEC. | Same as Alternative B. |
| **G** | No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities into riparian and upland serpentine plant communities. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities. No weed seed movement on livestock within the CCMA. | Same as Alternative B. |

**Table 4.4-8 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Noxious weed invasion.**

| Vegetation by soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Predicted vegetation loss →** | **A > B ~ C ~ D > E > F ~ G** | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (detrimental), ↑↑↑ = major increase (detrimental). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

**Table 4.4-9 Summary of vegetation resource management actions for: Livestock grazing.**

| Alternative | **Impact:** Livestock grazing | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **A** | Continued grazing within riparian and upland serpentine plant communities and riparian and upland nonserpentine plant communities. | Provide a mosaic of vegetative communities and adequate plant cover to protect soil, watershed, and wildlife. Rangeland health monitoring is required. |
| **B** | Same as Alternative A | Same as Alternative A, plus: Allow nonnative, naturalized plant species to be used in revegetation materials consistent with rangeland health standards. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A | Same as Alternative B. |
| **E** | Same as Alternative A | Same as Alternative B. |
| **F** | Livestock grazing limited to only upland and riparian nonserpentine plant communities outside of the ACEC. | Same as Alternative B. |
| **G** | No livestock grazing within the CCMA | Same as Alternative B. |

**Table 4.4-10 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Livestock grazing.**

| Soil by vegetation type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Predicted vegetation loss →** | **A ~ B ~ C ~ D ~ E ~ F > G** | | | | | | |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

**Table 4.4-11 Summary of Vegetation Resource Management Actions for: Plant community restoration and fire management.**

| Alternative | **Impact:** Plant community restoration and fire management | **Management action:** Maintain vegetation integrity and diversity |
|---|---|---|
| **A** | Continued plant community restoration within disturbed riparian and upland serpentine plant communities and disturbed riparian and upland nonserpentine plant communities. Utilization of control burns for fuels reduction and habitat improvement. | Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Restore closed routes and degraded lands. Utilization of control burns. |
| **B** | Same as Alternative A. | Same as Alternative A, plus: Rehabilitate vegetation using local genotypes of native species for revegetation materials. Allow noninvasive, nonnative species to be used in revegetation materials. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A. | Same as Alternative B. |
| **E** | Same as Alternative A. | Same as Alternative B. |
| **F** | Same as Alternative A. | Same as Alternative B. |
| **G** | Same as Alternative A. | Same as Alternative B. |

**Table 4.4-12 Vegetation disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Plant community restoration and fire management.**

| Soil by vegetation type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Serpentine upland** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Predicted vegetation loss →** | **A ~ B ~ C ~ D ~ E ~ F ~ G** | | | | | | |

↔ = no change (existing condition). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as A is approximately equal to B.

## 4.4.2 Overview of Impacts to Vegetation

This subsection provides an overview of impacts that occur under all alternatives. The background and overall impact assessment is provided here and, as needed, further analysis is provided for each alternative.

### 4.4.2.1 Vegetation Resources and Disturbance by Non-motorized Recreation

Non-motorized recreation activities including camping, hiking, hunting, and rockhounding can cause minor adverse impacts to vegetation resources. Of these activities, camping poses the greatest impact to

vegetation resources since camping sites are repeatedly used. Repeated use of campsites can result in localized vegetation damage and removal (adverse). This is particularly true for serpentine riparian vegetation within the ACEC. The many level stream terraces adjacent to Clear Creek and other riparian areas within the CCMA were heavily used historically as OHV staging areas and camp sites. Although most of those terraces are now closed, some stream terraces remain open and continue to be used as campsites. Most campsites with the CCMA are located at designated campgrounds and staging areas, however, there are several small, popular informal campsites scattered throughout the CCMA. Foot traffic activities such as hiking, hunting, and rockhounding tend to be dispersed and not result in measurable adverse impacts to vegetation resources. Most hiking and hunting activities tend to occur primarily outside of the ACEC which are more vegetated and support more game animals, whereas most rockhounding activities are focused within the ACEC where there is a wide variety of rare minerals that appeal to collectors.

#### 4.4.2.2 Vegetation Resources and Disturbance by Motorized Recreation

OHV recreation activities and motorized vehicle access for recreation can cause direct removal or damage to vegetation (adverse). Vegetation removal exposes soil and accelerates erosion (adverse). Currently, the majority of OHV activities within the CCMA are located within the Serpentine Area of Critical Environmental Concern. The ACEC contains sensitive vegetation resources. Due to the stressful conditions imposed by serpentine soils, vegetation within the ACEC is relatively sparse and very slow to recover following disturbance. Nonserpentine soils outside of the ACEC are comparatively more fertile and support a greater density of vegetation which recovers more rapidly following disturbance. Vegetation compliance monitoring is conducted by an interdisciplinary team of HFO specialists using Rangeland Health Standards and Guidelines. The Standards and Guidelines apply to all land uses and not only livestock grazing. Variance from the Standards and Guidelines indicate that land health may be compromised and corrective management action may be required.

#### 4.4.2.3 Vegetation Resources and Disturbance by Energy and Mineral Exploration

Energy and mineral development can result in long-term damage to- or permanent loss of vegetation (adverse). Like vehicle travel impacts, construction can cause direct removal of or damage to vegetation. Vegetation disturbance from construction is typically more intense compared to OHV (light vehicle) impacts due to the use of heavy equipment. Generally, the significance of vegetation loss depends on the type of impact, amount of area disturbed, plant community types affected, and capacity for the disturbed area to recover. These factors determine whether impacts to vegetation are short- or long-term. Impacts to vegetation from transmission lines and staging areas would be temporary, whereas impacts from building construction and open pit mining may be regarded as permanent as both vegetation and soil are removed down to bedrock.

Overall, the CCMA has moderate potential for mineral development. The New Idria serpentine mass (ACEC) is highly-mineralized and was historically, commercially mined for magnesite, chromite, cinnabar, and asbestos. The Gem mine, a privately-owned inholding within the CCMA, continues to mine and market benitoite. Most other mineral development within the CCMA has ceased due to depletion of near-surface marketable minerals and changing mineral markets and mineral regulation (i.e. asbestos ban in U.S.). The CCMA has moderate potential for energy development. Oil and gas development potential is very low as the New Idria serpentine mass (ACEC) which comprises 40% of the CCMA land area has no potential for fossil fuel resources. The remainder of the CCMA contains sedimentary formations which have not yielded significant oil and gas resources within the local area. Wind energy development has some potential as the CCMA contains some of the highest points in the Diablo Range. Under all alternatives, the San Benito Mountain Research Natural Area is withdrawn from energy and mineral development.

#### 4.4.2.4 Vegetation Resources and Disturbance by Noxious Weed Invasion

Noxious and invasive weeds compete with desirable plant species for light, space, water, and nutrients (adverse). Invasive weeds may have detrimental effects on: 1) plant community structure and function, 2) wildlife habitat, 3) rare, threatened, and endangered special status species habitat, 4) forage production, 5) recreation, and 6) aesthetic quality. Invasive weed species may also increase the risk of wildfire because they are typically composed of fine fuels and become flammable as they age.

Land use activities that disturb or remove native plant cover may have a moderate impact on the spread of noxious and invasive weeds throughout the CCMA. Activities that reduce native plant productivity, vigor, or cover and results in soil disturbance reduce the competitive ability of the native plant species. Reduction of native species competitive ability, combined with soil disturbance, results in land becoming susceptible to invasion by noxious weeds. Land use activities that remove native vegetation and disperse invasive species seed include livestock grazing, oil and mineral exploration or other construction activities, and motorized vehicle travel. The duration and intensity of adverse impacts to vegetation resources from noxious and invasive weeds would depend on weed species, terrain, soils, climate, and area of occupation. An integrated pest management (IPM) approach including prescribed fire, mechanical, chemical, and biological treatments, and public outreach are beneficial to reducing the spread of noxious, invasive weeds.

An IPM for noxious weed abatement would be beneficial to improving native plant community structure and function. A weed IPM is a systematic approach that integrates all information and management tactics to prevent the introduction, establishment, and spread of noxious weeds. An effective IPM noxious weed program includes best management practices for weed abatement, including removal, adaptive management, post-treatment rehabilitation, and public outreach. An IPM program recognizes the specificity of noxious weed species and designs a specific abatement program for each. Weed control may include a combination of manual or mechanical removal, herbicides, or prescribed fire. The application of each will follow BLM procedures. Post-treatment management is essential to prevent the re-colonization of noxious weeds. Post-treatment may include methods such as soil stabilization and native plant establishment. Public outreach provides the public with information on the ecological and economic concerns of noxious weeds and ways to prevent the introduction, establishment, and spread of weeds. An IPM program is an effective, low-risk means of responding to noxious weed problems.

#### 4.4.2.5 Vegetation Resources and Disturbance by Livestock Grazing Impacts

Livestock grazing has the potential to affect plant community structure, function, and composition on the 14 grazing allotments located at least partially within the CCMA. Inappropriate livestock management may result in the overgrazing of forage and browse plants and adverse impacts to soils (adverse). Proper livestock grazing, however, may improve forage production, reduce fine fuel loads, and control invasive species (beneficial). Vegetation structure, composition, and function are important components of rangeland health monitoring. Rangeland health monitoring is conducted by an interdisciplinary team of HFO experts using the BLM-approved monitoring approach. Variance from one or more of the standards may indicate that rangeland health has been compromised and corrective management action may be required in the form of revised vegetation management.

#### 4.4.2.6 Vegetation Resources and Disturbance by Plant Community Restoration and Fire Management Impacts

Vegetation restoration is an important tool for restoring or improving function of degraded ecosystems (beneficial). Restoration has many different levels based on the initial condition of the ecosystem and the

desired final condition of the ecosystem. Restoration of drastically-disturbed lands, such as mines and serpentine barrens may include erosion control and/or revegetation with native plant species which typically requires intensive soil amendment. Restoration of lands invaded by noxious, invasive species typically includes eradication of the invasive species, followed by establishment of native vegetation. The IPM plan for some noxious, invasive species includes prescribed fire. Restoration of climax plant communities such as decadent chaparral also involves prescribed fire. Although initial short-term restoration impacts may be detrimental to the ecosystem, the overall long-term effects are beneficial.

Fire can either be beneficial or detrimental to vegetation, depending on factors such as its severity, terrain, weather, fuel type and condition, and post-fire rehabilitation. Wildland fire is any non-structure fire occurring in rangeland or forest ecosystems; it includes prescribed fire, wildland fire use, and wildfire. Wildland fire that accomplishes resource management objectives is referred to as prescribed fire. Prescribed fires are typically fires planned and ignited by resource managers, although some result from other uncontrolled ignition sources and are subsequently used to achieve management purpose under carefully controlled conditions with minimal suppression costs known as wildland fire use (WFU). Wildfires are unplanned and undesirable fires that result from natural ignition, unauthorized human-caused fire, escaped WFU, or escaped prescribed fire. WFU is not approved for use in the CCMA. Prescribed fire may be used to achieve beneficial management objectives such as increasing forage production, improving wildlife habitat, or controlling noxious, invasive weeds. Many times, wildfire may have detrimental effects on vegetation because livestock forage, wildlife habitat, and special status plant species and their habitats are burned. Soil erosion and weed invasion may be accelerated after a wildfire because the native vegetation has been removed. Vegetation recovery may be short- or long-term, depending on soils, terrain, climate, and lost plant community attributes. Some special status species and habitats may never recover from wildfire. Post-fire rehabilitation is usually necessary to return the area into a productive plant community that meets resource management objectives.

Fuels management is critical in the Planning Area to reduce the risk of fire to life and property, reduce the risk of catastrophic fire, create plant community diversity, and reduce fire intensity to protect natural and cultural resources. Prescribed fire is the main tool used by the HFO to manage fuels, however, non-fire fuels management tools are useful in areas where prescribed fire is not appropriate, such as in the wildland urban interface and in critical habitats. Non-fire management tools include mechanical and biological fuels and herbicides. Mechanical fuels treatment is the most common non-fire fuels management tool. The treatment involves the use of chain saws, chippers, weed eaters, mowers, and a masticator mounted on an all-terrain vehicle to manipulate woody fuels. Woody plant material may be piled and burned as a follow-up treatment. Control by biological fuels occurs in the form of cattle grazing to manage the amount and distribution of fine fuels. Herbicides are used on a limited basis to control unwanted vegetation that eludes prescribed fire or mechanical treatments. Plant debris may be left on site to provide soil organic matter and reduce soil erosion.

## 4.4.3 Impacts and Mitigation for Alternative A

### 4.4.3.1 Vegetation Disturbance by Non-motorized Recreation

Under Alternative A, non-motorized recreation will continue both within and outside of the ACEC. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping. As a result, both serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities will continue to be disturbed.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and riparian vegetation.

#### 4.4.3.2 Vegetation Disturbance by Motorized Recreation

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, serpentine riparian and upland plant communities within the ACEC, which is generally sparse and slow to recover from disturbance, will continue to be disturbed. Highway-licensed and green sticker vehicle recreation will also continue within nonserpentine riparian and upland plant communities outside of the ACEC. Vehicle disturbance will continue to result in vegetation loss, resulting in accelerated erosion rates and sedimentation of local watersheds.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation.

#### 4.4.3.3 Vegetation Disturbance by Energy and Mineral Exploration

Under Alternative A, energy and mineral exploration will continue both within and outside of the ACEC, resulting in impacts to both serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Maintain sustained yield of vegetation for consumptive and non- consumptive uses. Protect sensitive riparian and upland vegetation.

#### 4.4.3.4 Noxious Weed Invasion

Under Alternative A, there will continue to be movement of weed seed on vehicles, humans (foot traffic), and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative A does not specify management actions for controlling noxious weeds.

#### 4.4.3.5 Livestock Grazing

Under Alternative A, livestock grazing will continue both within and outside of the ACEC, resulting in impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities.

Alternative A management actions include: Provide a mosaic of vegetative communities and adequate plant cover to protect soil, watershed, and wildlife. Rangeland health monitoring is required.

#### 4.4.3.6 Plant Community Restoration and Fire Management

Under Alternative A, restoration of closed routes and degraded lands will continue both within and outside of the ACEC, resulting in impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities. Control burns will continue to be used for fuels reduction and habitat improvement.

Alternative A management actions include: Provide a mosaic of vegetative communities to protect soil, watershed, and wildlife. Restore closed routes and degraded lands. Utilization of control burns.

#### 4.4.3.7 Mitigation

The mitigation measures incorporated into vegetation resource management actions described in Chapter 2 would have moderate long-term beneficial impacts on biological resources and water quality in CCMA.

### 4.4.4 Impacts and Mitigation for Alternative B

#### 4.4.4.1 Vegetation Disturbance by Non-motorized Recreation

Under Alternative B, non-motorized recreation will continue both within and outside of the ACEC. Visitor use within the ACEC will be limited to ≤ 12 days. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping, but will be reduced relative to Alternative A due to visitor use limitations. As a result, there would be a minor decrease (beneficial) of non-motorized recreation impacts to serpentine riparian and upland plant communities as compared to Alternative A. Non-motorized recreation location and intensity outside of the ACEC would be unchanged and therefore non-motorized recreation impacts to nonserpentine riparian and upland plant communities would be unchanged compared to Alternative A

Management actions are the same as Alternative A, with the following additional management action: Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

#### 4.4.4.2 Vegetation Disturbance by Motorized Recreation

Under Alternative B, motorized recreation of each visitor within the ACEC would be limited to ≤ 12 days per year and motorized vehicle use would be restricted to outside of the proposed Dry Season Use Restriction period of April 15th through December 1st (extended 45 days compared to the current Dry Season Use Restriction period). As a result, vehicle recreation impacts to serpentine riparian and upland plant communities within the ACEC would be reduced (beneficial) as compared to Alternative A. Vehicle recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be unchanged as compared to Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

#### 4.4.4.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative B vegetation disturbance impacts would be the same as Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

#### 4.4.4.4 Noxious Weed Invasion

Under Alternative B, there would be a reduction (beneficial), but continued movement of weed seed on vehicles (as compared to Alternative A) from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC, coincident with greater restrictions in vehicle use. As a result, there would be less exotic species invasion into serpentine riparian and upland plant communities within the ACEC (beneficial). There would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative B management actions include: Prevent and control noxious weed invasion. Develop an integrated pest management plan. Prioritize noxious weed eradication based on the BLM and California State list.

#### 4.4.4.5 Livestock Grazing

Alternative B vegetation disturbance impacts would be the same as Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Allow nonnative, naturalized plant species to be used in revegetation materials consistent with rangeland health standards.

#### 4.4.4.6 Plant Community Restoration and Fire Management

Alternative B vegetation disturbance impacts would be the same as Alternative A.

Management actions are the same as Alternative A, with the following additional management action: Rehabilitate vegetation using local genotypes of native species for revegetation materials. Allow noninvasive, nonnative species to be used in revegetation materials.

#### 4.4.4.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D include best management practices outlined in Appendix V.

### 4.4.5 Impacts and Mitigation for Alternative C

#### 4.4.5.1 Vegetation Disturbance by Non-motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B with visitor use restrictions. As a result, impacts to serpentine riparian and upland plant communities and nonserpentine riparian and upland plant communities would be unchanged as compared to alternative B.

Alternative C management actions would be the same as Alternative B.

#### 4.4.5.2 Vegetation Disturbance by Motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B. Motorized recreation would be subject to the same restrictions as Alternative B with the added restriction of only highway-licensed vehicles being permitted on county roads and the dry season route network and green-sticker motorcycle use being permitted only on single track trails. This is the same general use pattern for vehicle type on

route type (full-sized vehicles on roads; motorcycles on single-track trails) that currently exists, so the level of motorized recreation impacts to serpentine riparian and upland plant communities would be expected to be about the same as Alternative B. Like Alternative B, motorized recreation location and intensity outside of the ACEC would be unchanged and therefore, motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be unchanged.

Alternative C management actions would be the same as Alternative B.

#### 4.4.5.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative C management actions would be the same as Alternative B.

#### 4.4.5.4 Noxious Weed Invasion

Alternative C vegetation disturbance impacts would be the same as Alternative B.

Alternative C management actions would be the same as Alternative B.

#### 4.4.5.5 Livestock Grazing

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative C management actions would be the same as Alternative B.

#### 4.4.5.6 Plant Community Restoration and Fire Management

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative C management actions would be the same as Alternative B.

### 4.4.5.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D include best management practices outlined in Appendix V.

## 4.4.6 Impacts and Mitigation for Alternative D

#### 4.4.6.1 Vegetation Disturbance by Non-motorized Recreation

Alternative D represents a major shift in non-motorized recreation activities from inside to outside of the ACEC as new staging areas and campgrounds are established outside of the ACEC. With increased motorized recreation staging outside of the ACEC, there will be a major increase in OHV users camping outside of the ACEC (adverse). Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction of non-motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC as compared to Alternative C (beneficial) and a major increase of non-motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC (adverse) as compared to Alternative C.

Alternative D management actions would be the same as Alternative B.

#### 4.4.6.2 Vegetation Disturbance by Motorized Recreation

Alternative D represents a major shift in the location of motorized recreation from inside to outside of the ACEC. Under Alternative D, motorized recreation within the ACEC would be restricted to only highway-licensed vehicles on county roads and the dry season route network. All green sticker vehicle recreation would be relocated to outside of the ACEC. New staging areas and routes would be constructed through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for both motorized and non-motorized recreation. The result would be an even greater reduction of motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC (beneficial) as compared to Alternative C, and a major increase of motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC (adverse) as compared to Alternative C.

Alternative D management actions would be the same as Alternative B.

#### 4.4.6.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative D vegetation disturbance impacts would be the same as Alternative A.

Alternative D management actions would be the same as Alternative B.

#### 4.4.6.4 Noxious Weed Invasion

Under Alternative D, there would be a further reduced (beneficial), but continued movement of weed seed on vehicles (relative to Alternatives B and C) from nonserpentine riparian and upland plant communities into serpentine riparian and upland plant communities, coincident with even greater vehicle use restrictions within the ACEC. As a result, there would be even less exotic species invasion into serpentine riparian and upland plant communities within the ACEC. There would likely be greatly increased (adverse) movement of weed seed on vehicles used within nonserpentine riparian and upland plant communities outside of the ACEC, coincident with greater anticipated vehicle use in those areas. Under Alternative D, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative D management actions would be the same as Alternative B.

#### 4.4.6.5 Livestock Grazing

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative D management actions would be the same as Alternative B.

#### 4.4.6.6 Plant Community Restoration and Fire Management

Alternative C vegetation disturbance impacts would be the same as Alternative A.

Alternative D management actions would be the same as Alternative B.

#### 4.4.6.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D include best management practices outlined in Appendix V.

### 4.4.7 Impacts and Mitigation for Alternative E

#### 4.4.7.1 Vegetation Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative E would be further reduced (beneficial) as visitor use continued to be limited within the ACEC and less new routes are constructed outside of the ACEC as compared to Alternative D. Camping impacts would be reduced (beneficial) as compared to Alternative D as it is expected that there would be fewer OHV users and hunters. Under Alternative E, non-motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC would be similar to Alternative D. Non-motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

Alternative E management actions would be the same as Alternative B.

#### 4.4.7.2 Vegetation Disturbance by Motorized Recreation

Under Alternative E, motorized recreation within the ACEC would be similar to Alternative D with highway-licensed vehicles restricted to a scenic route network composed of T153 and R11 south of its intersection with T153. T153 and R11 south of its intersection with T153 primarily follow hill slopes some distance from streams (except for at upper Sawmill Creek). Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Due to the closure of R1, R11 north of the intersection with T153, and R15, which parallel and impact perennial streams within the ACEC, motorized recreation impacts to serpentine riparian plant communities within the ACEC would be reduced (beneficial) as compared to Alternative D and reduced even more than impacts to serpentine upland plant communities. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

Alternative E management actions would be the same as Alternative B.

#### 4.4.7.3 Vegetation Disturbance by Energy and Mineral Exploration

Under Alternative E, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine upland and riparian plant communities within the ACEC from energy and mineral exploration would cease (beneficial). Energy and mineral exploration impacts to nonserpentine riparian and upland plant communities outside of the ACEC would continue.

Alternative E management actions would be the same as Alternative B.

#### 4.4.7.4 Noxious Weed Invasion

Under Alternative E, movement of weed seed on vehicles from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would be similar to Alternative D. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities outside of the ACEC would be limited. Under Alternative E, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC.

Alternative E management actions would be the same as Alternative B.

#### 4.4.7.5 Livestock Grazing

Alternative E vegetation disturbance impacts would be the same as Alternative A.

Alternative E management actions would be the same as Alternative B.

#### 4.4.7.6 Plant Community Restoration and Fire Management

Alternative E vegetation disturbance impacts would be the same as Alternative A.

Alternative E management actions would be the same as Alternative B.

### 4.4.7.7 Mitigation

Mitigation measures included in the management actions under Alternative E in Chapter 2 and Best Management Practices outlined in Appendix V would have major long-term benefits for soils and vegetation resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

## 4.4.8 Impacts and Mitigation for Alternative F

#### 4.4.8.1 Vegetation Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative F would be similar to Alternative E for use both within and outside of the ACEC. As such, non-motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC and nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternative E.

Alternative F management actions would be the same as Alternative B.

#### 4.4.8.2 Vegetation Disturbance by Motorized Recreation

Under Alternative F, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would be decommissioned. As a result, there would be a major reduction (beneficial) of motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC as compared to Alternative A. Motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative

D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

Alternative F management actions would be the same as Alternative B.

#### 4.4.8.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative F vegetation disturbance impacts would be the same as Alternative E.

Alternative F management actions would be the same as Alternative B.

#### 4.4.8.4 Noxious Weed Invasion

Under Alternative F, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would cease, due to vehicle use not being permitted within the ACEC. As a result noxious weed invasion into serpentine riparian and upland plant communities within the ACEC would be drastically reduced (beneficial). Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities outside of the ACEC would be limited. Under Alternative F, there would be continued movement of weed seed on humans (foot traffic) from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC. Movement of weed seed on livestock from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would cease (beneficial) due to livestock grazing not being permitted within the ACEC.

Alternative F management actions would be the same as Alternative B.

#### 4.4.8.5 Livestock Grazing

Under Alternative F, livestock grazing would only be permitted outside of the ACEC. As a result, impacts to serpentine riparian and upland plant communities within the ACEC from grazing would cease (beneficial). Grazing impacts to nonserpentine riparian and upland vegetation outside of the ACEC would continue.

Alternative F management actions would be the same as Alternative B.

#### 4.4.8.6 Plant Community Restoration and Fire Management

Alternative F vegetation disturbance impacts would be the same as Alternative A.

Alternative F management actions would be the same as Alternative B.

### 4.4.9 Impacts and Mitigation for Alternative G

#### 4.4.9.1 Vegetation Disturbance by Non-motorized Recreation

Under Alternative G, non-motorized recreation within the ACEC would not be permitted. As a result, impacts to serpentine riparian and upland plant communities from non-motorized recreation within the ACEC would cease (beneficial). Similar to Alternative F, non-motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. As such, non-motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternative F.

Alternative G management actions would be the same as Alternative B.

#### 4.4.9.2 Vegetation Disturbance by Motorized Recreation

Under Alternative G, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would not be decommissioned. As a result, motorized recreation impacts to serpentine riparian and upland plant communities within the ACEC would be reduced slightly less than Alternative F due to the fact that Clear Creek Road would not be decommissioned. Vehicle use outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since impacts to vegetation from the construction of these few new routes are expected to be short term and impacts to vegetation from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternatives E and F.

Alternative G management actions would be the same as Alternative B.

#### 4.4.9.3 Vegetation Disturbance by Energy and Mineral Exploration

Alternative G vegetation disturbance impacts would be the same as Alternative A.

Alternative G management actions would be the same as Alternative B.

#### 4.4.9.4 Noxious Weed Invasion

Under Alternative G, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities outside of the ACEC into serpentine riparian and upland plant communities within the ACEC would cease (beneficial), due to vehicle use not being permitted within the ACEC, similar to Alternative F. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities outside of the ACEC would be limited. Under Alternative G, there would be continued movement of weed seed on humans (foot traffic) within nonserpentine riparian and upland plant communities outside of the ACEC. No livestock grazing would be permitted within the CCMA, therefore, weed seed movement by livestock within the CCMA would cease.

Alternative G management actions would be the same as Alternative B.

#### 4.4.9.5 Livestock Grazing

Under Alternative G, livestock grazing would not be permitted within the CCMA. As a result, impacts to serpentine and nonserpentine riparian and upland vegetation would cease (beneficial). Excessive mulch buildup may occur in nonserpentine grasslands. As a result, native herbaceous species within the grasslands may be adversely impacted through greater competition from invasive species and greater risk of catastrophic fire, due to increased fuel loads.

Alternative G management actions would be the same as Alternative B.

#### 4.4.9.6 Plant Community Restoration and Fire Management

Alternative G vegetation disturbance impacts would be the same as Alternative A.

Alternative G management actions would be the same as Alternative B.

### 4.4.10 Cumulative Effects

In general, the major beneficial cumulative impacts of selecting alternatives that result in overall reductions to vegetation disturbance would be increased vegetation cover, which would provide increased protective cover for soils from erosion and improve habitat quality for wildlife within the region.

At present, the noxious invasive species yellow starthistle (*Centaurea solstitialis*) is found within Clear Creek Canyon from the confluence of Clear Creek with San Benito River up to Staging Area 1. The primary agents for long-distance seed dispersal of invasive species are road maintenance equipment and the undercarriage of motor vehicles. Yellow starthistle thrives on disturbed sites. As a result, there is potential under the range of alternatives for yellow starthistle to spread to additional areas within the CCMA and displace native vegetation and wildlife habitat. The displacement of native vegetation and wildlife habitat would be considered a negative cumulative impact. However, BLM is in the process of developing a comprehensive weed management program for the CCMA and surrounding area, which would contribute to mitigating these impacts.

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# 4.5 Biological Resources – Fish & Wildlife

For ease of plan reference, the management goals from Chapter 2 are reiterated here:

- The goal for management of fish and wildlife is to provide diverse, structured, resilient, and connected habitat on a landscape level to support viable and sustainable populations of wildlife, fish, and other aquatic organisms.

## 4.5.1 Introduction

This section describes the effects and potential impacts of implementing each of the alternatives presented in Chapter 2 on those resources identified in Chapter 3. With respect to wildlife habitat, Alternative A would continue the management direction outlined in the 1984 Hollister Resource Management Plan (RMP) as amended. The 1984 Hollister RMP does not address the potential changes and impacts on natural resources within the Planning Area, such as significant population growth, increased recreation uses, and acquisition of additional Bureau of Land Management (BLM)-managed lands. Alternatives B, C, and D would also continue management of wildlife habitat, but would also provide for conservation of natural resources, emphasizing habitat enhancement to increase commodity production (i.e., game species), and public access to BLM lands.

## 4.5.2 Overview of Impacts

This subsection provides an overview of impacts that occur under all alternatives, divided into those management actions that occur within this resource program and those management actions that fall under other resource programs. The background and overall impact assessment is provided here, and further analysis, as needed, such as the location of severity of the impact, is provided for each alternative.

### 4.5.2.1 Wildlife Habitat Management Actions

**Habitat Maintenance, Protection, or Improvement**

The overarching goal of managing for wildlife is to maintain and improve habitat. Strategies for habitat improvement and maintenance include simple protection (administrative closure, exclusion fencing), stabilization (streambank armoring), and restoration (revegetation and reintroduction).

Goals that promote water quality and vegetative resources would tend to also promote wildlife habitat. Impacts from management actions on water resources, vegetation, or special-status species can also have direct effects on wildlife habitat. These actions include watershed, riparian, or vegetation restoration efforts; plant collection; and commercial woodcutting. In general, watershed improvement, riparian revegetation, and other restoration and stabilization efforts would benefit wildlife because healthy water and plant communities are essential to wildlife habitat. Narrow conflicts do occasionally arise. An example of such a conflict is the discovery that giant kangaroo rats, an endangered species, promote the spread of nonnative grassland species, causing a potential conflict between kangaroo rat management and native plant restoration. Such instances are generally uncommon.

Collection of wildflowers, seeds, seedlings, rhizomes, stolons, roots, and whole plants for commercial and non-commercial purposes could have detrimental effects on native plant populations, especially on special status species. The impacts of collecting whole plants or plant parts would have short- or long-term implications, depending on plant species, reproductive strategies, type of tissues removed, and vigor.

Commercial woodcutting could degrade plant communities and watersheds by compacting soils, decreasing soil-water infiltration, increasing soil erosion, encouraging weed proliferation, and decreasing aesthetic quality. Conversely, woodcutting may be used to remove unwanted trees to achieve specific management needs, such as increasing forage production or decreasing wildland fire risk. Additionally, commercial woodcutting can alter the types of habitat available for wildlife species. For example, the primary succession or pioneer plant community that occurs after commercial woodcutting has a different species composition with a limited overstory stratum and an increased herbaceous layer. This type of habitat would be attractive to the deer population but would provide limited habitat for avian species because of the limited tree cover.

#### 4.5.2.2 Other Management Actions

Impacts on wildlife habitat from other management actions include direct habitat loss, direct mortality, habitat fragmentation, habitat modification, and other nuisances such as noise, encounters with humans and dogs. Impacts would vary depending upon the type of surface disturbance and location within the landscape. Activities within the Planning Area that may affect habitat include woodcutting and plant collection; oil and gas development; new construction activities, such as road construction and utility projects; recreational activities; and grazing.

BLM has established procedures and policies that assess the effects of existing and proposed projects on BLM-managed lands. BLM would be responsible for analyzing potential impacts to ensure that activities do not cause significant adverse effects on the habitats that support various wildlife species.

**Fire Management**

High-intensity fires, such as wildfires, can devastate vegetation communities that provide habitat for wildlife species. Reducing the risk of high-intensity wildfires by reducing the fuels available for fire would improve vegetation communities and habitat for wildlife species. Wildland fire management includes using prescribed fire and non-fire fuel treatments to modify vegetation communities to achieve beneficial uses of wildland resources.

Prescribed fire could be used to reduce the amount of hazardous fuels, improve plant species diversity, increase livestock and game forage production, abate noxious and invasive weeds, and improve wildlife habitat. Prescribed fire would be used particularly in chaparral vegetation to reduce hazardous fuel, improve wildlife habitat, and enhance watersheds. Prescribed burning can also reduce the density of inedible nonnative plants such as yellow star thistle that displace native plants, such as perennial grasses, that provide high-quality forage for mule deer. A yellow star thistle control program is in its fifth year at CCMA and future projects are in the planning stage. A prescribed burn to restore early-seral forage to areas currently dominated by old-growth chamise (*Adenostoma fasciculatum*) is planned for Condon Peak (Condon Zone).

Non-fire fuels management tools include mechanical and biological controls. Mechanical fuels treatment is the most common and includes using chain saws, chippers, weed-eaters, mowers, and a masticator mounted on an all-terrain vehicle. Woody plant material may be piled and burned as a follow-up treatment. Biological controls such as cattle grazing manage the amount and distribution of fire fuels.

Fuels reduction treatments would reduce the excessive amounts of built-up fuel and decrease the risk of high-intensity wildfires. Such treatments would also reduce the influence of woody vegetation on the associated herbaceous understory. Herbaceous plant cover and density would increase after fuels treatment. This increase would benefit grazing animals, but could be adverse to animals that use the

woody habitat, since the latter would need to relocate. After the fuels treatment, woody plants would return and could regain dominance in some areas, depending on the climate and post-fire strategies.

Fire and non-fire treatments would result in short-term adverse impacts on habitat, including vegetation trampling and soil compaction or erosion. Over the long-term, however, the use of prescribed fire and non-fire fuels management would improve wildlife habitat, increase habitat diversity by controlling non-native and noxious weed species, and increase forage production in areas of tule elk and mule deer populations.

**Livestock Grazing**

Grazing throughout an allotment is not uniform because of differences in terrain, forage quantity and quality, weather, and water availability. Livestock may affect sensitive plant communities, wildlife habitat, or special status species habitat through grazing and trampling. Rangeland improvements such as roads or fences can impede the movement of wildlife and potentially result in direct mortality. Alternatively, certain levels of grazing have been found to be beneficial to maintaining habitat for wildlife.

Sensitive habitat management and protection within grazing allotments will be accomplished in Allotment Grazing Plans. The Hollister Field Office (HFO) would work with grazing lessees to minimize potential impacts by placing salt licks, watering facilities, and supplemental feeding sites away from sensitive habitats. Appropriate levels of livestock grazing would be attained through implementation of seasons of use, fencing, strategic placement of watering and salting sites, and animal numbers.

**Energy and Mineral Development**

Energy and mineral development has the potential to impact habitat that supports wildlife species by clearing vegetation, increasing the potential for soil erosion, altering topography, and increasing the potential to introduce non-native and noxious weed species. New roads and additional vehicles in these areas may lead to increased animal disturbance and direct contact between wildlife and humans. Activities that cause impacts on wildlife habitat such as placement of new energy and mineral development sites within the landscape, or new access roads, would be evaluated for potential impacts on wildlife species and their habitat.

Only up to approximately 10 oil and gas wells are expected to be developed over the next 15 to 20 years, with a total disturbance of 74 acres. For wind energy projects, according to the BLM's 2005 Wind Energy Development Programmatic Environmental Impact Statement, the impacted areas would represent no more than five to 10 percent of the entire project area.

**Recreation and Access**

Motorized vehicle access and other high-impact recreational activities have the potential to impact wildlife and damage their habitat. Access or travel on non-approved routes damages those areas that are intended to remain undisturbed by the public. Potential impacts may include direct mortality from vehicles, damage to habitat from vehicles, and nuisances to wildlife and habitat. Indirect effects include the introduction of nonnative seeds to natural areas and alteration in abundance of certain species (such as raccoons or ravens) due to increased garbage and litter.

## 4.5.3 Impacts and Mitigation for Alternative A, B, C, and D

### 4.5.3.1 Wildlife Habitat Management Actions

**Habitat Maintenance, Protection, or Improvement**

In keeping with the goals and objectives outlined in the 1984 RMP, Alternative A would maintain or improve certain key habitat types. Prescribed burns to maintain uneven-aged brushfields would continue, habitat would be maintained and enhanced for upland game species, and sensitive areas would be protected by fencing, barricades, and/or authorized seasons of use to exclude access by livestock and vehicles.

Alternative A would require the management of native plant populations and communities for a sustained yield for consumptive and non-consumptive uses. Additionally, the management actions affecting water quality would serve to improve or protect water resources from siltation and sedimentation resulting from road and trail development and maintenance. These actions would have beneficial effects on wildlife habitat.

No specific management action for vegetation collection is specified under Alternative A. The lack of management actions controlling the collection of vegetation could result in short- or long-term adverse impacts on habitat.

Under Alternative A, the existing woodcutting permits would continue to be considered on a case-by-case basis. Issuance of a permit would require the implementation of current best management practices to minimize impacts on vegetation and to limit soil erosion, and would require buffer setbacks from stream and riparian areas. This would not result in substantial or long-term adverse impacts on habitat.

Under alternatives B-D, active management to improve wildlife populations would occur, including control of nonnative species, preservation of woody habitat such as downed trees, removal of manmade barriers, active maintenance of wildlife-specific water developments such as guzzlers, and restoration of native fish and wildlife species. Alternatives B-D also include protection of raptor nests from disturbance. Research on raptor behavior has identified a range of buffer distances from nests and perch sites sufficient to reduce by 90% the direct disturbance from human activities. Two hundred (200) meters (=1/8 mile) is a conservative distance that would be sufficient to encompass the behavioral responses of raptors present at CCMA (Craig 2002 and references therein). In order to provide additional protection to T&E raptors, a doubling of this distance to 400 meters (1/4 mile) will unequivocally afford sufficient protection to reduce the potential of harassment to near zero. All of these actions would have moderate long-term beneficial effects on wildlife habitat because of the increase in suitable areas for wildlife in CCMA.

### 4.5.3.2 Other Management Actions

**Fire and Prescribed Burns**

Alternative A would continue to use prescribed fires to maintain uneven-aged chaparral brushland habitat, and would provide a diversity of vegetation communities to support wildlife species. Chaparral habitat is prone to intense burning; it has dense growth, and plant species within the environment typically have dry evergreen leaves. As a result, the chaparral plant species have adapted to survive repeated fires. Fire within chaparral habitat spreads rapidly and extensively if the occurrence of fire has been minimal.

Prescribed burning to reduce chaparral would occur in Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and Goat Mountain areas. Approximately 21000 acres would be burned in

the Tucker management zone and 14000 in the Condon Peak zone. Prescribed burning would be use to improve wildlife habitat in SBMRNA under the direction of a botanist. Prescribed burning would also be conducted to control yellow star thistle and medusahead grass. Areas burned in the Natural Area will not be reseeded to avoid importing nonnative competitors.

While these measures for prescribed fires would have short-term adverse impacts on habitat including trampling of vegetation and soil erosion, there is a long-term benefit of protecting these areas from severe wildland fire and restoring habitat that has been be degraded by invasive nonnative plant species.

Alternatives B-D would incorporate all the beneficial impacts of alternative A. Prescribed burning in the Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and Goat Mountain would be reduced. Burning in the SBMRNA would be conducted to maintain the "naturalness" of the area. Although the benefits of wildland fire on wildlife habitats would be reduced if prescribed burns are not conducted, the overall impact on wildlife habitat relative to existing conditions would be neutral.

**Livestock Grazing**

Alternative A-E includes 22,140 acres of allotted grazing lands in CCMA. This alternative would ensure that livestock watering developments will be managed to provide safe drinking water for wildlife. This action is a beneficial impact on water availability for wildlife needs. Alternative F would allocate grazing on 20,154 acres, and exclude grazing on 1,986 acres of public lands within the Serpentine ACEC. Although water availability will be reduced under alternatives F and G relative to alternatives A-E, the overall effect relative to a baseline, non-human-occupied landscape is neutral. Some benefit might accrue to wildlife populations that compete with cattle, e.g. elk, which destroy fences and reduce forage.

Alternative G would prohibit grazing altogether in CCMA and therefore reduce overall grazed acres to 0. Relative to alternative F, water availability would be substantially reduced but the baseline effect would still be considered neutral. Wildlife that competes with cattle would substantially benefit from such a large area being excluded from grazing. However, grazing has been found to have the beneficial effects of reducing nonnative annual grasses which outcompete native vegetation with concomitant effects on wildlife; therefore, reduction in grazing on a large scale could have unknown potential negative effects on wildlife.

**Energy and Mineral Development**

Alternative A would withdraw Clear Creek Canyon and the SBMRNA from energy and mineral development, with concomitant reduction in negative wildlife habitat impacts. Elsewhere energy and mineral exploration and development would proceed on a case-by-case basis. Energy and mineral development can result in short-term to permanent loss of vegetation and adverse impacts on local water quality. While development would require certain mitigation measures, some of the disturbance would be unavoidable. However, the overall strategy for minerals development is to proceed under principles of balanced multiple-use management, which would minimize impacts to wildlife habitat.

Alternatives B-C would exclude the San Benito Mountain WSA from wind energy development, with a corollary reduction in wildlife habitat impacts.

Alternatives D would prohibit leasing in the ACEC and withdraw ACEC from locatable mineral entry, with a further reduction in impacts to wildlife habitat relative to alternatives A-C.

Alternative G would pursue mineral withdrawal throughout CCMA and exclude wind development from CCMA, reducing impacts to wildlife habitat from energy and mineral activities to a minimum.

**Recreation and Access**

*Recreational use:*--Alternative A would continue the allowable "limited" use of existing roads for motorized vehicles at CCMA. High-impact recreational activities such as motorized recreational touring can cause direct removal or crushing of vegetation as well as soil compaction and increased erosion, which lead to impacts on water quality. Impacts would be reduced by limiting vehicle access to roads and barrens and prohibiting camping in SBMRNA. Shooting would be prohibited in Clear Creek Canyon, with a potential beneficial effect on wildlife. Dry season restrictions would also be enforced, resulting in reduced impacts to wildlife.

Under alternative B, night visitation to the Serpentine ACEC would be prohibited, leading to a substantial reduction in overall wildlife habitats and specific reductions in disturbance to nocturnal species. In addition, special recreation permits for events would be prohibited, reducing impacts to wildlife habitat.

Alternative C would limit OHV use to adults over 18 years old and designate 150 miles of trails for motorcycle use only. The reduction in visitor use commensurate with that portion of the OHV user population under 18 would result in a substantial reduction in impacts to wildlife habitat compared to the first two alternatives.

Alternatives D would limit shooting in CCMA due to limited access in the ACEC or increased use outside the ACEC, which would result in reduced disturbance to wildlife from noise and illegal hunting, reduction in litter (targets and casings), and a general reduction in impacts to wildlife habitat from shooting.

Among the range of alternatives, Alternative G provides for the least amount of public recreation in CCMA and the most beneficial impacts to wildlife within the ACEC. In areas outside the ACEC, impacts will be limited to those that arise from hunting and non-motorized recreation activities, which are predicted to have minimal impacts on wildlife other than transitory disturbance.

*Visitor services:*--Alternative A would develop access for hunters into Condon Peak and San Carlos Bolsa, with a concomitant minor increase in wildlife disturbance and habitat impacts.

Alternatives B-D would emphasize protection of natural resources, including temporary closing of recreation sites to protect wildlife habitat. Impacts to wildlife habitat would be neutral or beneficial.

*Interpretation and Education:*--Alternative A would provide for enhanced education on appropriate OHV use in CCMA, resulting in reductions to wildlife impacts from inappropriate and illegal OHV operation.

Alternatives B-D would also provide educational materials relevant to appropriate use of public lands, and would have a neutral or beneficial effect on wildlife habitat relative to alternative A.

**Lands and Realty**

Alternative A would retain lands of significant recreation or habitat value, and dispose of, acquire, or exchange lands to ensure more efficient management. Acquisition of lands with high biological resource value would have a long-term beneficial impact on wildlife habitat. However, acquisition is highly dependent on availability of suitable lands and funding, and therefore assessment of actual impacts would be speculative.

Alternative B would prioritize acquisitions with a high value for biological resources. Alternative C would rank acquisitions for multiple resources. Alternative D would list by priority acquisition of lands with a high recreation potential. Alternative B would likely be the most beneficial for wildlife habitat. Acquisition is highly dependent on availability of suitable lands and funding, however, and therefore assessment of actual impacts would be speculative.

Alternatives B and C would make approximately 3,300 acres available for disposal in the Tucker, Condon, and San Benito River zones. Impacts on wildlife habitat from disposal of public lands would be negative and long-term based on the potential for these lands to be privately developed. Adverse impacts in the San Benito River and Condon zones would be minor because of the relatively small size of the parcels. Impacts in the Tucker zone would be moderate or major based on the amount of lands that would be available for disposal and potential modification of habitat that is part of an on-going elk preservation program between the California DFG and private land owners in the area.

#### 4.5.3.3 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Potential impacts on wildlife species and their habitat from mineral and energy production, recreation, livestock grazing, wildfires, and woodcutting may be identified through Rangeland Health Monitoring. Additional mitigation measures, to be determined on a case-by-case basis, may be required to avoid, reduce, or minimize potential environmental impacts. Measures would include maintenance of watersheds and riparian areas, use of fencing and rock barriers around sensitive areas, and use of stipulations from the BLM's 1993 Oil and Gas Management Plan.

### 4.5.4 Impacts and Mitigation Common to Alternatives E, F, and G

#### 4.5.4.1 Wildlife Habitat Management Actions

**Habitat Maintenance, Protection, or Improvement**

Under Alternatives E-F, active management to improve wildlife populations would occur, including control of nonnative species, preservation of woody habitat such as downed trees, removal of manmade barriers, active maintenance of wildlife-specific water developments such as guzzlers, and restoration of native fish and wildlife species. Alternatives E, F, and G also include protection of raptor nests from disturbance. Research on raptor behavior has identified a range of buffer distances from nests and perch sites sufficient to reduce by 90% the direct disturbance from human activities. Two hundred (200) meters (=1/8 mile) is a conservative distance that would be sufficient to encompass the behavioral responses of raptors present at CCMA (Craig 2002 and references therein). In order to provide additional protection to T&E raptors, a doubling of this distance to 400 meters (1/4 mile) will unequivocally afford sufficient protection to reduce the potential of harassment to near zero. All of these actions would have moderate long-term beneficial effects on wildlife habitat because of the increase in suitable areas for wildlife in CCMA.

#### 4.5.4.2 Other Management Actions

**Water and Biological Resources - Vegetation**

Under Alternatives E, F and G, common management actions are listed that aim to protect water quality in the Planning Area. Compared to Alternative A, the actions common to Alternatives E, F and G represent a more defined and proactive approach to protecting water quality in the Planning Area.

Alternatives E, F and G would also aim to maintain or improve plant community ecological values, process, and productivity, and biological diversity. Rehabilitation of areas disturbed by wildland fires, mineral or energy extraction, grazing, recreation, or other activities would stabilize soils and promote the development of desirable plant communities. Additional detail is provided under each alternative.

**Fire Management**

Fire management actions under Alternatives E-G would have the same beneficial impacts of alternative A even though prescribed burning in the Condon Peak, Byles Canyon, San Carlos Bolsa, Sampson Peak and Goat Mountain would be reduced. Burning in the SBMRNA would be conducted to maintain the "naturalness" of the area. Although the benefits of wildland fire on wildlife habitats would be reduced if prescribed burns are not conducted, the overall impact on wildlife habitat relative to existing conditions would be neutral because of the historic low frequency of prescribed fire and mechanical fuels treatments within the ACEC/RNA.

**Livestock Grazing**

Where livestock grazing is found to limit achievement of multiple-use objectives, actions to control grazing intensity, duration, timing, and deferment would be required to meet physiological requirements of key plant species or other resource objectives. If new information demonstrates that livestock grazing is not compatible with conservation or preservation of threatened and endangered or sensitive species, livestock grazing would not be available on these areas. Spring developments to provide water for livestock and wildlife would usually be fenced to prevent trampling. Livestock grazing would be used as appropriate for habitat improvement, fuels reduction, or other resource management objectives.

**Energy and Mineral Development**

Alternatives D-F would prohibit leasing in the ACEC and withdraw 30,000 acres of public lands from locatable mineral entry, resulting in a further reduction adverse in impacts to wildlife habitat relative to alternatives A-C.

Alternative G would pursue mineral withdrawal throughout CCMA and exclude wind development from CCMA, reducing impacts to wildlife habitat from energy and mineral activities to a minimum.

**Recreation and Access**

Alternative D-F would limit shooting in CCMA due to limited access in the ACEC or increased use outside the ACEC, which would result in reduced disturbance to wildlife from noise and illegal hunting, reduction in litter (targets and casings), and a general reduction in impacts to wildlife habitat from shooting.

Among the range of alternatives, Alternative G provides for the least amount of public recreation in CCMA and the most beneficial impacts to wildlife within the ACEC. In areas outside the ACEC, impacts will be limited to those that arise from hunting and non-motorized recreation activities, which are predicted to have minimal impacts on wildlife other than transitory disturbance.

*Visitor services:* Alternatives E-G would provide enhanced access to Condon, Tucker and Cantua management zones for hunting and other recreation consistent with protection of natural values. The resulting net increase, if any, in visitorship is unknown. Increased visitorship and development of facilities would be expected to lead to some increase in impacts to wildlife from direct disturbance and habitat degradation. Alternative G would exclude all visitors from CCMA, with concomitant benefits to wildlife.

*Interpretation and Education:* Alternative E-G would provide educational materials relevant to appropriate use of public lands, and would have a neutral or beneficial effect on wildlife habitat relative to alternative A.

**Lands and Realty**

Priorities for acquisitions under Alternatives E, F, and G would have similar benefits on wildlife habitat as Alternative B with a high value for biological resources. However, Alternatives E and G would make approximately 3,300 acres available for disposal in the Tucker, Condon, and San Benito River zones. Impacts on wildlife habitat from disposal of public lands would be negative and long-term based on the potential for these lands to be privately developed. Adverse impacts in the San Benito River and Condon zones would be minor because of the relatively small size of the parcels. Impacts in the Tucker zone would be moderate or major based on the amount of lands that would be available for disposal and potential modification of habitat that is part of an on-going elk preservation program between the California DFG and private land owners in the area.

#### 4.5.4.3 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Potential impacts on wildlife species and their habitat from mineral and energy production, recreation, livestock grazing, wildfires, and woodcutting may be identified through Rangeland Health Monitoring. Additional mitigation measures are required to avoid, reduce, or minimize potential environmental impacts. Common to Alternatives E, F, and G are measures to use fire to improve wildlife habitat, to limit the use of fire retardant drops to prevent damage to vernal pools, to relocate man-made barriers that substantially impede migration outside of wildlife travel corridors, to reduce or rehabilitate redundant and damaging routes, and to use "no surface occupancy" stipulations.

### 4.5.5 Cumulative Effects

Cumulative impacts may include unauthorized fires, livestock grazing above animal unit months, motorized access in sensitive habitat or outside of approved routes, and non-compliance with hunting regulations. The severity of cumulative effects would depend upon the species present within the area, the existing conditions of the habitat within the surrounding area, the type of activity proposed to occur, monitoring and reclamation efforts, and existing or proposed management goals and objectives. Public education, adequate planning, mitigation, and monitoring may reduce the significance of the impacts on wildlife species and their habitat.

Impacts on wildlife would result from increasing levels of human use and development throughout the region, regardless of management actions within the Planning Area. Therefore, the cumulative effects of CCMA management on biological resources would be similar under all alternatives. However, the overall emphasis on limited use and improvement of biological resources under Alternatives E, F, and G would provide more beneficial cumulative effects than Alternatives A through D.

#### 4.5.5.1 Impacts and Mitigation for Alternatives A, B, C, and D

Alternatives A, B, C, and D would contribute to enhancing the long-term protection of the sensitive habitat and special status species that occur throughout the CCMA. This would be accomplished by eliminating unregulated use, implementing Best Management Practices, completing significant road repairs and improvements, reducing the number of stream crossings and miles of routes in riparian areas by 50 percent, and reducing soil disturbing activities by reducing the number of miles of unpaved roads and substantially reducing the acres of barren play areas. Considering estimates that nearly half the

sediment delivered to streams within the CCMA come from stream and swale crossings, this reduction in the number of crossings should result in substantial reductions in sediment delivery and benefit riparian vegetation communities and sensitive species habitat.

A key component of the long term reduction in sediment yields benefiting riparian areas is the rehabilitation and restoration of closed routes to a natural condition, so that they trend towards undisturbed soil erosion and sediment delivery rates. Over 150 miles of roads and trails would be closed and restored over a 5-year period. Closure and restoration of barrens would benefit riparian vegetation and increase the acreage of barrens which would be able to support vegetation and special status species. Route and barren closures in high erosion sub-watersheds, including Upper Clear Creek Canyon, south fork of Clear Creek, and Larious Canyon would contribute to reductions in sediment delivery and impacts to sensitive species habitat. A portion of R008 contributing significant amounts of sediment to the sub-watershed, riparian areas, and sensitive habitat would be closed. In addition, the designation of routes and areas and the enforcement of these designations should result in less off route travel and route proliferation.

Under Alternatives B and C, stream terraces in lower Clear Creek Canyon would continue to experience impacts related to day-use activities. Fencing and barriers protect most sensitive resources in these areas. However, the continued erosion of topsoil in high vehicle use areas would have direct long-term adverse impacts on the productive soil horizons and inhibit natural re-vegetation of some areas.

Under Alternative C and D, there would be a substantial reduction in routes and trails affecting wildlife habitat in the Serpentine ACEC compared to existing conditions. This reduction would have indirect long-term benefits due to the increased protection given to these habitats.

#### 4.5.5.2 Impacts and Mitigation for Alternatives E, F, and G

Impacts to vegetation and wildlife habitats may be caused through sedimentation, erosion, loss of soil, crushing, habitat destruction, removal and use for fuel. These alternatives would have a beneficial effect, to differing degrees, upon wildlife and wildlife habitat, as altered habitat and impacted vehicle routes and barrens are returned to the land base, creating an increase in wildlife habitat. Fragmentation of small species' habitats would be decreased as altered habitat and impacted routes become restored and illegal off route travel is curtailed. There would be a lowered potential for vehicle incursions with small animals and of harassment of all species by people through route designation and enforcement of travel on approved routes. Impacts to species found within the riparian areas are expected to decrease as restrictions on use of routes, trails and barrens increase. The reduction of miles of roadway and vehicle types on routes would also yield cumulative benefits, as riparian vegetation impacts are expected to diminish as erosion and sediment flows diminish.

Any future inventoried routes will be screened through resource evaluation criteria for the presence of known or potential sensitive resources, proximity to sensitive resources, and an analysis of potential impacts of routes from non-compliant use. Where conflicts exist with resource condition objectives and protection of sensitive resources, routes would be modified or closed. As a result, these alternatives would have long-term beneficial cumulative impacts to biological resources.

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# 4.6 Biological Resources – Special Status Species

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goals for management of special status species are to (1) protect and/or improve habitat necessary to recover populations of sensitive or special status species, and (2) manage Bureau of Land Management (BLM) land to maintain, restore, or enhance populations and habitat of special status fish, wildlife, and plant species.

## 4.6.1 Introduction

This section describes the effects and potential impacts of implementing each of the alternatives presented in Chapter 2 on those resources identified in Chapter 3.6. Impacts to vegetation (Chapter 4.4; Biological Resources - Vegetation), wildlife habitat (Chapter 4.5; Biological Resources – Wildlife Habitat), and soils (Chapter 4.8; Soil Resources) are similar to impacts to both plant and animal special status species.

The term 'special status species' is used in this section to refer to all species listed with U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the State of California, and to special status species listed with BLM.

Alternative A would continue the management direction outlined in the 1984 Hollister Resource Management Plan (RMP) as amended. The 1984 Hollister RMP does not address those species that have been listed as threatened, endangered, species of concern, or rare with the USFWS, NOAA Fisheries, or the State of California, or those that have been listed as species of concern with BLM. Alternatives B through G provide added focus for improvement and protection of special status species habitat, and also provide specific management direction for the Clear Creek Management Area.

Impacts to special status plant species are strongly associated with impacts to vegetation (Chapter 4.4; Biological Resources – Vegetation; Tables 4.4-1 through 4.4-12) and soils (Chapter 4.8; Soil Resources; Tables 4.8-1 through 4.8-10). Like vegetation, special status plant species often have a high affinity for particular soil types, such as serpentine.

San Benito evening primrose, a federally-listed Threatened plant species which is a local serpentine endemic within the CCMA is singled out and analyzed separately from all other special status plant species due to its high list status and the large number of management actions which are specific to it. The majority of San Benito evening primrose populations and potential habitat occur on serpentine stream terraces (serpentine riparian) within the ACEC. One population and some potential habitat occur at the margins of moist meadows in uplands (serpentine upland) within the ACEC. A few San Benito evening primrose populations occur on serpentine alluvial stream terraces outside of the ACEC (nonserpentine riparian). Potential habitat occurs on the margins of moist meadows on nutrient-poor shale (nonserpentine) in the uplands just outside of the ACEC (nonserpentine upland). Although San Benito evening primrose occupied and potential habitat occurs within "serpentine riparian" habitat, some occupied and potential habitat also occurs within "serpentine upland," "nonserpentine riparian," and "nonserpentine upland" habitat. As a result, impacts to all four habitat groups are analyzed.

**For the purpose of analysis**: San Benito evening primrose is analyzed separately from all of the other special status plant species. Analysis of impacts to special status plant species is focused upon the location and intensity of the activity with respect to the general soil (serpentine or nonserpentine) and vegetation (riparian or upland) type, which provides habitat for the special status species group.

Tables 4.6-1 through Table 4.6-12 provide an overview of the management actions that would affect San Benito evening primrose and how disturbance as dictated by the alternatives would impact the species.

Tables 4.6-13 through Table 4.6-24 provide an overview of the management actions that would affect all other special status plant species and how disturbance as dictated by the alternatives would impact the species.

**Table 4.6-1 Summary of San Benito evening primrose management actions for: San Benito evening primrose habitat disturbance by non-motorized recreation.**

| Alternative | **Impact:** San Benito evening primrose habitat disturbance by non-motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued non-motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited non-motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Reduced non-motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited non-motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. Increased non-motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Same as Alternative B. |

| Alternative | **Impact:** San Benito evening primrose habitat disturbance by non-motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **E** | Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Same as Alternative B. |
| **F** | Same as Alternative E. | Same as Alternative B. |
| **G** | No non-motorized recreation within riparian and upland serpentine San Benito evening primrose habitat. Non-motorized recreation impacts upon nonserpentine San Benito evening primrose habitat similar to Alt. D. | Same as Alternative B. |

**Table 4.6-2 San Benito evening primrose habitat disturbance levels as predicted to change for: San Benito evening primrose habitat disturbance by non-motorized recreation.**

| San Benito evening primrose habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Predicted habitat disturbance →** | **A > B ~ C ~ D > E > F ~ G** | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse), Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

**Table 4.6-3 Summary of San Benito evening primrose management actions for: San Benito evening primrose habitat disturbance by motorized recreation.**

| Alternative | **Impact:** San Benito evening primrose habitat disturbance by motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued intensive motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Reduced motorized recreation within both riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. Greatly increased motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Same as Alternative B. |
| **E** | Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine San Benito evening primrose habitat. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Same as Alternative B. |
| **F** | No motorized recreation within riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland San Benito evening primrose habitat. | Same as Alternative B. |

| Alternative | **Impact:** San Benito evening primrose habitat disturbance by motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **G** | No motorized recreation within riparian and upland serpentine San Benito evening primrose habitat. Limited motorized recreation within both riparian and upland nonserpentine San Benito evening primrose habitat. | Same as Alternative B. |

**Table 4.6-4 San Benito evening primrose habitat disturbance levels as predicted to change for: San Benito evening primrose habitat disturbance by motorized recreation .**

| San Benito evening primrose habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Predicted habitat disturbance →** | **A > B ~ C ~ D > E > F ~ G** | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse), Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

**Table 4.6-5 Summary of San Benito evening primrose management actions for: San Benito evening primrose habitat disturbance by energy and mineral exploration.**

| Alternative | **Impact:** San Benito evening primrose habitat disturbance by energy and mineral exploration | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued energy and mineral exploration within both riparian and upland San Benito evening primrose habitat of serpentine and nonserpentine areas. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Same as Alternative A. | Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A. | Same as Alternative B. |
| **E** | Energy and mineral exploration limited to both riparian and upland nonserpentine San Benito evening primrose habitat outside of the ACEC. | Same as Alternative B. |
| **F** | Same as Alternative E. | Same as Alternative B. |
| **G** | Same as Alternative E. | Same as Alternative B. |

**Table 4.6-6 San Benito evening primrose habitat disturbance levels as predicted to change for: San Benito evening primrose habitat disturbance by energy and mineral exploration.**

| San Benito evening primrose habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |

| | |
|---|---|
| **Predicted habitat disturbance →** | **A ~ B ~ C ~ D > E ~ F ~ G** |
| **Predicted habitat disturbance →** | **A ~ B ~ C ~ D > E ~ F ~ G** |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted habitat disturbance within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

**Table 4.6-7 Summary of San Benito evening primrose management actions for: Noxious weed invasion.**

| **Alternative** | **Impact:** Noxious weed invasion | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued movement of weed seed on vehicles from both riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from both riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Reduced movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. | Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative B. | Same as Alternative B. |

| **Alternative** | **Impact:** Noxious weed invasion | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **D** | Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Greatly increased movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat | Same as Alternative B. |
| **E** | Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. | Same as Alternative B. |
| **F** | No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Weed seed movement on livestock limited to only within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat (outside of the ACEC). | Same as Alternative B. |

| Alternative | **Impact:** Noxious weed invasion | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **G** | No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and San Benito evening primrose habitat into riparian and upland serpentine plant communities and San Benito evening primrose habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. No weed seed movement on livestock within the CCMA. | Same as Alternative B. |

**Table 4.6-8 San Benito evening primrose habitat disturbance levels as predicted to change for: Noxious weed invasion.**

| San Benito evening primrose habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Predicted habitat disturbance →** | **A > B ~ C ~ D > E > F ~ G** | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

**Table 4.6-9 Summary of San Benito evening primrose management actions for: Livestock grazing.**

| Alternative | **Impact:** Livestock grazing | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued grazing within riparian and upland serpentine plant communities and San Benito evening primrose habitat and riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Same as Alternative A | Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A | Same as Alternative B. |
| **E** | Same as Alternative A | Same as Alternative B. |
| **F** | Livestock grazing limited to uplands and nonserpentine plant communities outside of the Serpentine ACEC. | Same as Alternative B. |
| **G** | No livestock grazing within the CCMA. | Same as Alternative B. |

**Table 4.6-10 San Benito evening primrose habitat disturbance levels as predicted to change for: Livestock grazing.**

| San Benito evening primrose habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ |
| Serpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ |
| Nonserpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ |
| Nonserpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ |
| Predicted habitat disturbance → | A ~ B ~ C ~ D ~ E > F > G | | | | | | |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

**Table 4.6-11 Summary of San Benito evening primrose management actions for: Plant community restoration and fire management.**

| Alternative | **Impact:** Plant community restoration and fire management | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued plant community restoration within disturbed riparian and upland serpentine plant communities and San Benito evening primrose habitat and disturbed riparian and upland nonserpentine plant communities and San Benito evening primrose habitat. Utilization of control burns for fuels reduction and habitat improvement. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor all populations for compliance with respect to the existing Compliance Monitoring Plan. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Same as Alternative A. | Same as Alternative A, plus: Monitor all populations for compliance with respect to a revised Compliance Monitoring Plan. Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A. | Same as Alternative B. |
| **E** | Same as Alternative A. | Same as Alternative B. |
| **F** | Same as Alternative A. | Same as Alternative B. |
| **G** | Same as Alternative A. | Same as Alternative B. |

**Table 4.6-12 Type of effects on San Benito evening primrose habitat as predicted to change for: Impacts to San Benito evening primrose habitat from plant community restoration and fire management.**

| San Benito evening primrose habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Serpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Nonserpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Nonserpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Predicted habitat disturbance → | A ~ B ~ C ~ D ~ E ~ F ~ G | | | | | | |

↔ = no change (existing condition). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as: A is approximately equal to B.

**Table 4.6-13 Summary of special status plant species management actions for: Special status plant species habitat disturbance by non-motorized recreation.**

| Alternative | **Impact:** Special status plant species habitat disturbance by non-motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued non-motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited non-motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Reduced non-motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited non-motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative B. | Same as Alternative B. |

| Alternative | **Impact:** Special status plant species habitat disturbance by non-motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **D** | Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. Increased non-motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Same as Alternative B. |
| **E** | Further reduced non-motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. The magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian special status plant species habitat than serpentine upland special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Same as Alternative B. |
| **F** | Same as Alternative E. | Same as Alternative B. |
| **G** | No non-motorized recreation within riparian and upland serpentine special status plant species habitat. Non-motorized recreation impacts upon nonserpentine special status plant species habitat similar to Alt. D. | Same as Alternative B. |

**Table 4.6-14 Special status plant species habitat disturbance levels as predicted to change for: Special status plant species habitat disturbance by non-motorized recreation.**

| Special status plant species habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Predicted habitat disturbance →** | **A > B ~ C ~ D > E > F ~ G** | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

**Table 4.6-15 Summary of special status plant species management Actions for: Special status plant species habitat disturbance by motorized recreation.**

| **Alternative** | **Impact:** Special status plant species habitat disturbance by motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued intensive motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland special status plant species habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Reduced motorized recreation within both riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. Greatly increased motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Same as Alternative B. |
| **E** | Further reduced motorized recreation (relative to Alts. B and C) within both riparian and upland serpentine special status plant species habitat. Magnitude of reduction of motorized recreation impacts would be greater for serpentine riparian than serpentine upland special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Same as Alternative B. |
| **F** | No motorized recreation within riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland special status plant species habitat. | Same as Alternative B. |

| Alternative | **Impact:** Special status plant species habitat disturbance by motorized recreation | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **G** | No motorized recreation within riparian and upland serpentine special status plant species habitat. Limited motorized recreation within both riparian and upland nonserpentine special status plant species habitat. | Same as Alternative B. |

**Table 4.6-16 Special status plant species habitat disturbance levels as predicted to change for: Special status plant species habitat disturbance by motorized recreation.**

| Special status plant species habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| **Predicted habitat disturbance →** | **A > B ~ C ~ D > E > F ~ G** | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted habitat disturbance within the CCMA based upon Alternatives: A>B~C>D>E~F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

**Table 4.6-17 Summary of special status plant species management actions for: Special status plant species habitat disturbance by energy and mineral exploration.**

| Alternative | **Impact:** Special status plant species habitat disturbance by energy and mineral exploration | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued energy and mineral exploration within both riparian and upland special status plant habitat of serpentine and nonserpentine areas. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |

| Alternative | **Impact:** Special status plant species habitat disturbance by energy and mineral exploration | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **B** | Same as Alternative A. | Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A. | Same as Alternative B. |
| **E** | Energy and mineral exploration limited to both riparian and upland nonserpentine special status plant species habitat outside of the ACEC. | Same as Alternative B. |
| **F** | Same as Alternative E. | Same as Alternative B. |
| **G** | Same as Alternative E. | Same as Alternative B. |

**Table 4.6-18 Special status plant species habitat disturbance levels as predicted to change for: Special status plant species habitat disturbance by energy and mineral exploration.**

| Special status plant species habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Serpentine upland** | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine riparian** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Nonserpentine upland** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Predicted habitat disturbance →** | **A ~ B ~ C ~ D > E ~ F ~ G** | | | | | | |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted habitat disturbance within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

**Table 4.6-19 Summary of special status plant species management actions for: Noxious weed invasion.**

| Alternative | **Impact:** Noxious weed invasion | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued movement of weed seed on vehicles from both riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from both riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Reduced movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. | Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Greatly increased movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat | Same as Alternative B. |

| **Alternative** | **Impact:** Noxious weed invasion | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **E** | Further reduced movement of weed seed on vehicles (relative to Alts. B and C) from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Limited movement of weed seed on vehicles used within riparian and upland nonserpentine plant communities and special status plant species habitat. Continued movement of weed seed on livestock from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. | Same as Alternative B. |
| **F** | No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and special status plant species habitat. Weed seed movement on livestock limited to only within riparian and upland nonserpentine plant communities and special status plant species habitat outside of the ACEC. | Same as Alternative B. |
| **G** | No movement of weed seed on vehicles from riparian and upland nonserpentine plant communities and special status plant species habitat into riparian and upland serpentine plant communities and special status plant species habitat. Limited movement of weed seed on vehicles within riparian and upland nonserpentine plant communities and special status plant species habitat. No weed seed movement on livestock within the CCMA. | Same as Alternative B. |

**Table 4.6-20 Special status plant species habitat disturbance levels as predicted to change for: Noxious weed invasion.**

| Special status plant species habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine riparian | ↔ | ↓ | ↓ | ↓↓ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| Serpentine upland | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| Nonserpentine riparian | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| Nonserpentine upland | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| Predicted habitat disturbance → | A > B ~ C ~ D > E > F ~ G | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted vegetation loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as: B is approximately equal to C.

**Table 4.6-21 Summary of special status plant species management actions for: Livestock grazing.**

| Alternative | **Impact:** Livestock grazing | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued grazing within riparian and upland serpentine plant communities and special status plant species habitat and riparian and upland nonserpentine plant communities and special status plant species habitat. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Same as Alternative A | Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A | Same as Alternative B. |
| **E** | Same as Alternative A | Same as Alternative B. |
| **F** | Livestock grazing limited to uplands and nonserpentine plant communities outside of the Serpentine ACEC. | Same as Alternative B. |
| **G** | No livestock grazing within the CCMA. | Same as Alternative B. |

**Table 4.6-22 Special status plant species habitat disturbance levels as predicted to change for: Livestock grazing.**

| Special status plant species habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ |
| Serpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ |
| Nonserpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ |
| Nonserpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ |
| Predicted habitat disturbance → | A ~ B ~ C ~ D ~ E > F > G | | | | | | |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

**Table 4.6-23 Summary of special status plant species management actions for: Plant community restoration and fire management.**

| Alternative | **Impact:** Plant community restoration and fire management | **Management action:** Maintain habitat integrity and diversity |
|---|---|---|
| **A** | Continued plant community restoration within disturbed riparian and upland serpentine plant communities and special status plant species habitat and disturbed riparian and upland nonserpentine plant communities and special status plant species habitat. Utilization of control burns for fuels reduction and habitat improvement. | Establish appropriate levels of surface disturbance to protect significant RTE habitat and species. Plan development to avoid sensitive habitat. Maintain buffer zones around sensitive habitat features. Manage potential habitat for introductions. Rehabilitate potential habitat. Perform habitat vegetation manipulations. Monitor the effects of management activities on significant habitat areas. Initiate long-term ecological studies to determine habitat requirements and effects of human impacts. |
| **B** | Same as Alternative A. | Same as Alternative A, plus: Prohibit collection of special status species, except for scientific research of traditional Native American religious practices. |
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A. | Same as Alternative B. |
| **E** | Same as Alternative A. | Same as Alternative B. |
| **F** | Same as Alternative A. | Same as Alternative B. |
| **G** | Same as Alternative A. | Same as Alternative B. |

**Table 4.6-24 Special status plant species habitat disturbance levels as predicted to change for: Plant community restoration and fire management.**

| Special status plant species habitat | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Serpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Nonserpentine riparian | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Nonserpentine upland | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Predicted habitat disturbance → | A ~ B ~ C ~ D ~ E ~ F ~ G | | | | | | |

↔ = no change (existing condition). Predicted vegetation loss within the CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as: A is approximately equal to B.

## 4.6.2 Overview of Impacts to Special Status Plant Species

Impacts to special status plant species and their habitat would be similar to those impacts discussed in Section(s) 4.4 (Biological Resources – Vegetation) and 4.8 (Soil Resources). Impacts would vary depending upon the type of disturbance, location within the landscape, seasonal timing, and duration. Generally, the management actions for special status plant species aim to maintain or improve habitat and reduce potential impacts to special status species.

Impacts to special status plant species from management actions include direct mortality, direct habitat loss, habitat fragmentation, and habitat modification. Impacts would vary depending upon the type of surface disturbance and location within the landscape. Activities within the Planning Area that may cause adverse impacts include: Vehicle travel, energy and mineral exploration, noxious weed invasion, plant collection, livestock grazing, and fire management. Beneficial impacts may be provided by restoration and fire management, when conducted under controlled conditions (i.e. fuels reduction to improve special status species habitat).

BLM has established procedures and policies that assess the effects of existing and proposed projects on BLM-managed lands. BLM would be responsible for analyzing potential impacts to ensure that activities do not cause significant adverse effects on special status species habitat. BLM would be responsible for analyzing potential impacts to ensure that no significant adverse effects would occur to sensitive species habitat. In addition, BLM would consult with USFWS and NOAA Fisheries in accordance with Section 7 of the Endangered Species Act (ESA).

### 4.6.2.1 Special Status Plant Species and Disturbance by Non-motorized Recreation

Non-motorized recreation activities including camping, hiking, hunting, and rockhounding can cause adverse impacts to special status plant species and their habitat. Of these activities, camping poses the greatest impact to vegetation resources since camping sites are repeatedly used. Repeated use of campsites can result in localized vegetation damage and removal and soil compaction and erosion (adverse). This is particularly true for serpentine riparian habitat within the ACEC. The many level stream terraces adjacent to Clear Creek and other riparian areas within the CCMA were heavily used historically as OHV staging areas and camp sites. Most of the terraces are occupied and potential habitat for San Benito evening primrose. Although most of those terraces are now closed, some stream terraces remain open and continue to be used as campsites. Most campsites with the CCMA are located at designated campgrounds and staging areas, however, there are several small, popular informal campsites scattered throughout the CCMA. Foot traffic activities such as hiking, hunting, and rockhounding tend to be dispersed and not result in measurable adverse impacts to special status plant species. Most hiking and

hunting activities tend to occur primarily outside of the ACEC which are more vegetated and support more game animals, whereas most rockhounding activities are focused within the ACEC where there is a wide variety of rare minerals that appeal to collectors.

### 4.6.2.2 Special Status Plant Species and Disturbance by Motorized Recreation

OHV recreation activities and motorized vehicle access for recreation can cause direct removal of special status plants and/or damage their habitat (adverse). Habitat disturbance including vegetation removal exposes soil and accelerates erosion (adverse). Currently, the majority of OHV activities within the CCMA are located within the serpentine Area of Critical Environmental Concern (ACEC). Many special status plant species within the CCMA, including the San Benito evening primrose and rayless layia, are local serpentine endemics. Due to the stressful conditions imposed by serpentine soils, habitat within the ACEC is sparsely vegetated and very slow to recover following disturbance. Given the very limited distribution of some of the serpentine endemic species at the CCMA including San Benito evening primrose and rayless layia, even small impacts to their limited habitat can have large, adverse impacts to the species as a whole. Motorized recreation impacts to special status species and their habitat have been reduced by the CCMA route designation (2006) and fencing closed areas.

### 4.6.2.3 Special Status Plant Species and Disturbance by Energy and Mineral Exploration

Like vehicle travel impacts, construction can cause direct removal of special status plant species and/or damage their habitat (adverse). Habitat disturbance from construction is typically more intense compared to OHV (light vehicle) impacts due to the use of heavy equipment. As discussed in more detail in Section 4.4, the CCMA has moderate potential for mineral and energy development. Although the Serpentine ACEC was mined historically for metal ores and minerals, which adversely impacted special status plant species habitat, most mining has since ceased due to the depletion of near-surface marketable minerals and changing mineral markets and mineral regulation (i.e. asbestos ban in U.S.). Oil and gas development potential is very low as the New Idria serpentine mass (ACEC) which comprises 40% of the CCMA land area has no potential for fossil fuel resources. The remainder of the CCMA contains sedimentary formations which have not yielded significant oil and gas resources within the local area. Wind energy development has some potential as the CCMA contains some of the highest points in the Diablo Range. The BLM would be responsible for analyzing potential impacts from energy and mineral development impacts to ensure that activities do not cause significant adverse effects to special status species and their habitat.

### 4.6.2.4 Special Status Plant Species and Disturbance by Noxious Weed Invasion

Noxious and invasive weeds can invade special status plant species habitat and compete with special status plant species for light, space, water, and nutrients (adverse). Invasive weed species may also increase the risk of wildfire because they are typically composed of fine fuels and become flammable as they age (adverse). An integrated pest management (IPM) approach is utilized to control weeds within special status plant species habitat (i.e. yellow starthistle control within San Benito evening primrose habitat). The IPM includes prescribed fire, mechanical, chemical, and biological treatments, and public outreach in order to reduce the spread of noxious, invasive weeds. The IPM is discussed in more detail in Section 4.4 (Biological Resources – Vegetation).

### 4.6.2.5 Special Status Plant Species and Disturbance by Livestock Grazing

Livestock grazing has the potential to affect special status plant species in the 14 grazing allotments located at least partially within the CCMA. Inappropriate livestock management may result in overgrazing which may directly remove special status plant species and/or adversely impact special status

plant species habitat (adverse). Livestock grazing, however, can also benefit special status plant species by reducing competing native and invasive plant species (beneficial).

#### 4.6.2.6 Special Status Plant Species and Disturbance by Plant Community Restoration and Fire Management

Vegetation restoration is an important tool for restoring or improving function of degraded ecosystems (beneficial). Restoration has many different levels based on the initial condition of the ecosystem and the desired final condition of the ecosystem. Restoration of drastically-disturbed lands, such as mines and serpentine barrens may include erosion control and/or revegetation with native plant species which typically requires intensive soil amendment. Restoration of lands invaded by noxious, invasive species typically includes eradication of the invasive species, followed by establishment of native vegetation. The IPM plan for some noxious, invasive species includes prescribed fire. Restoration of climax plant communities such as decadent chaparral also involves prescribed fire. Although initial short-term restoration impacts may be detrimental to the ecosystem, the overall long-term effects are beneficial. Plant community restoration and fire management impacts are discussed in more detail in Section 4.4 (Biological Resources – Vegetation).

### 4.6.3 Impacts and Mitigation for Alternative A

#### 4.6.3.1 Habitat Disturbance by Non-motorized Recreation

Under Alternative A, non-motorized recreation will continue both within and outside of the ACEC. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping. As a result, San Benito evening primrose habitat and other special status plant species serpentine riparian and upland habitat, which generally has sparse vegetative cover and is slow to recover from disturbance, will continue to be disturbed. Nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat will also continue to be disturbed by non-motorized recreation.

#### 4.6.3.2 Habitat Disturbance by Motorized Recreation

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, San Benito evening primrose and other special status plant species serpentine riparian and upland habitat, which generally has sparse vegetative cover and is slow to recover from disturbance, will continue to be disturbed. Nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat will also continue to be disturbed by motorized recreation. Vehicle disturbance will continue to result in habitat disturbance and vegetation loss, resulting in accelerated erosion rates and sedimentation of local watersheds.

Alternative A includes special status plant species monitoring in order to prevent sharp declines in plant numbers and adverse impacts to occupied and potential habitat. Sensitive habitat upland and riparian habitat is protected.

#### 4.6.3.3 Habitat Disturbance by Energy and Mineral Exploration

Under Alternative A, energy and mineral exploration will continue both within and outside of the ACEC. Serpentine riparian and upland San Benito evening primrose habitat and other special status plant species

habitat as well as nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat will continue to be disturbed.

Alternative A includes special status plant species monitoring in order to prevent sharp declines in plant numbers and adverse impacts to occupied and potential habitat. Sensitive habitat upland and riparian habitat is protected.

#### 4.6.3.4 Noxious Weed Invasion

Under Alternative A, there will continue to movement of weed seed on vehicles and livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat within the ACEC.

Alternative A does not implicitly specify management actions for controlling noxious weeds within San Benito evening primrose or other special status plant species habitat, however, rehabilitation of special status species potential habitat and performing habitat vegetation manipulations within that potential habitat would include the control of noxious weeds as a form of habitat rehabilitation and vegetation manipulation. The control of noxious weed species is typically employed at the plant community level and as such, is addressed by Alternative B in Section 4.4 (Biological Resources – Vegetation).

#### 4.6.3.5 Livestock Grazing

Under Alternative A, livestock grazing will continue to be permitted within and outside of the ACEC, resulting in impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat, as well as nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat.

Alternative A includes special status plant species monitoring in order to prevent sharp declines in plant numbers and adverse impacts to occupied and potential habitat.

#### 4.6.3.6 Plant Community Restoration and Fire Management

Under Alternative A, restoration of San Benito evening primrose habitat and other special status plant species habitat will continue within and outside of the ACEC, resulting in impacts to serpentine riparian and upland and nonserpentine riparian and upland special status species habitat. Control burns will continue to be used for fuels reduction and habitat improvement.

Alternative A includes restoration of special status plant species habitat and utilization of control burns, which would have moderate long-term beneficial impacts on CCMA resources.

#### 4.6.3.7 Mitigation

Alternative A includes management actions and mitigation measures to prevent excessive vegetation loss including vegetation compliance monitoring. These mitigation measures would have moderate long-term beneficial impacts on these resources.

### 4.6.4 Impacts and Mitigation for Alternative B

#### 4.6.4.1 Habitat Disturbance by Non-motorized Recreation

Under Alternative B, non-motorized recreation will continue both within and outside of the ACEC. Visitor use within the ACEC will be limited to 12 days. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping, but will be reduced relative to Alternative A due to visitor use limitations. As a result, there would be a minor decrease (beneficial) of non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat as compared to Alternative A. Non-motorized recreation location and intensity outside of the ACEC would be unchanged and therefore non-motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat would be unchanged compared to Alternative A

Mitigation or relocation of proposed activities within 100 feet of riparian vegetation if the activities have the potential for negative impacts.

#### 4.6.4.2 Habitat Disturbance by Motorized Recreation

Under Alternative B, motorized recreation of each visitor within the ACEC would be limited to a certain number of days per year (based upon asbestos exposure limits) and vehicle use would be restricted to outside of the proposed Dry Season Use Restriction period of April 15th through December 1st (extended 45 days compared to the current Dry Season Use Restriction period). As a result, motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC would be reduced compared to Alternative A. Motorized recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be unchanged compared to Alternative A.

#### 4.6.4.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative A.

#### 4.6.4.4 Noxious Weed Invasion

Under Alternative B, there would be reduced, but continued movement of weed seed on vehicles (as compared to Alternative A) from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC, coincident with greater restrictions in vehicle use. As a result, there would be less exotic species invasion into nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC (beneficial). There would be continued movement of weed seed on livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat within the ACEC.

#### 4.6.4.5 Livestock Grazing

Same as Alternative A.

#### 4.6.4.6 Plant Community Restoration and Fire Management

Same as Alternative A.

#### 4.6.4.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives A, B, C, and D, including the CABE Monitoring Plan outlined in Appendix IV. These mitigation measures and others incorporated into vegetation resource management actions would all have moderate long-term beneficial impacts on biological resources in CCMA.

### 4.6.5 Impacts and Mitigation for Alternative C

#### 4.6.5.1 Habitat Disturbance by Non-motorized Recreation

Non-motorized recreation impacts for Alternative C would be similar to those for Alternative B with visitor use restrictions. As a result, non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat and nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat would be unchanged as compared to Alternative B.

#### 4.6.5.2 Habitat Disturbance by Motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B. Motorized recreation would be subject to the same restrictions as Alternative B with the added restriction of only highway-licensed vehicles being permitted on county roads and the dry season route network and green-sticker motorcycle use being permitted only on single track trails. This is the same general use pattern for vehicles on routes (full-sized vehicles on roads; motorcycles on single-track trails) that currently exists, so the level of motorized recreation impact to serpentine riparian and upland plant San Benito evening primrose habitat and other special status plant species habitat would be expected to be about the same as Alternative B. Like Alternative B, motorized recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be unchanged.

#### 4.6.5.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative A.

#### 4.6.5.4 Noxious Weed Invasion

Same as Alternative B.

#### 4.6.5.5 Livestock Grazing

Same as Alternative A.

#### 4.6.5.6 Plant Community Restoration and Fire Management

Same as Alternative A.

#### 4.6.5.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives A, B, C, and D, including the CABE Monitoring Plan outlined in Appendix IV. These mitigation measures and others incorporated into vegetation resource management actions would all have moderate long-term beneficial impacts on biological resources in CCMA.

## 4.6.6 Impacts and Mitigation for Alternative D

### 4.6.6.1 Habitat Disturbance by Non-motorized Recreation

Alternative D represents a major shift in non-motorized recreation activities from inside to outside of the ACEC as new staging areas and campgrounds are established outside of the ACEC. With increased motorized recreation staging outside of the ACEC, there will be a major increase (adverse) in OHV users camping outside of the ACEC. Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction (beneficial) of the disturbance of serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC as compared to Alternative C and a major increase (adverse) of the disturbance of nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat plant outside of the ACEC as compared to Alternative C.

### 4.6.6.2 Habitat Disturbance by Motorized Recreation

Alternative D represents a major shift in the location of motorized recreation from inside to outside of the ACEC. Under Alternative D, motorized recreation within the ACEC would be restricted to only highway-licensed vehicles on county roads and the dry season route network. All green sticker vehicle recreation would be relocated to outside of the ACEC. New staging areas and routes would be constructed through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for both motorized and non-motorized recreation. The result would be an even greater reduction (beneficial) of motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat within the ACEC as compared to Alternative C, and a major increase (adverse) of motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC as compared to Alternative C.

### 4.6.6.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative A.

### 4.6.6.4 Noxious Weed Invasion

Under Alternative D, there would be a further reduced (beneficial), but continued movement of weed seed on vehicles (relative to Alternatives B and C) from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat, coincident with even greater vehicle use restrictions within the ACEC. As a result, there would be even less exotic species invasion into serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC (beneficial). There would likely be greatly increased (adverse) movement of weed seed on vehicles used within nonserpentine riparian and upland

plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC, coincident with greater anticipated vehicle use in those areas. Under Alternative D, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status species habitat within the ACEC.

#### 4.6.6.5 Livestock Grazing

Same as Alternative A.

#### 4.6.6.6 Plant Community Restoration and Fire Management

Same as Alternative A.

#### 4.6.6.7 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives A, B, C, and D, including the CABE Monitoring Plan outlined in Appendix IV. These mitigation measures and others incorporated into vegetation resource management actions would all have moderate long-term beneficial impacts on biological resources in CCMA.

### 4.6.7 Impacts and Mitigation for Alternative E

#### 4.6.7.1 Habitat Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative E would be further reduced as visitor use continued to be limited within the ACEC and less new routes are constructed outside of the ACEC as compared to Alternative D. Camping impacts would be reduced as compared to Alternative D as it is expected that there would be fewer OHV users and hunters. Under Alternative E, non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC would be similar to Alternative D. Non-motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

#### 4.6.7.2 Habitat Disturbance by Motorized Recreation

Under Alternative E, motorized recreation within the ACEC would be similar to Alternative D with highway-licensed vehicles restricted to a scenic route network composed of T153 and R11 south of its intersection with T153. T153 and R11 south of its intersection with T153 primarily follow hill slopes some distance from streams (except for at upper Sawmill Creek). Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River Zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Due to the closure of R1, R11 north of the intersection with T153, and R15, which parallel and impact perennial streams within the ACEC, motorized recreation impacts to serpentine riparian San Benito evening primrose habitat and other special status plant species habitat within the

ACEC would be reduced (beneficial) as compared to Alternative D and reduced even more than impacts to serpentine upland San Benito evening primrose habitat and other special status plant species habitat. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

#### 4.6.7.3 Habitat Disturbance by Energy and Mineral Exploration

Under Alternative E, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine upland and riparian San Benito evening primrose and other special status plant species habitat within the ACEC from energy and mineral exploration would cease (beneficial). Energy and mineral exploration impacts to nonserpentine riparian and upland San Benito evening primrose and other special status plant species habitat outside of the ACEC would continue.

#### 4.6.7.4 Noxious Weed Invasion

Under Alternative E, movement of weed seed on vehicles from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat within the ACEC would be similar to Alternative D. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC would be limited. Under Alternative E, there would be continued movement of weed seed on humans (foot traffic) and livestock from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC.

#### 4.6.7.5 Livestock Grazing

Same as Alternative A.

#### 4.6.7.6 Plant Community Restoration and Fire Management

Same as Alternative A.

#### 4.6.7.7 Mitigation

Mitigation measures included with management actions under the range of alternatives in Chapter 2 and BMPs outlined in Appendix V would have major long-term benefits for soils and vegetation resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

### 4.6.8 Impacts and Mitigation for Alternative F

#### 4.6.8.1 Habitat Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative F would be similar to Alternative E for use both within and outside of the ACEC. As such, non-motorized recreation disturbance of serpentine riparian and upland

plant communities within the ACEC and nonserpentine riparian and upland plant communities outside of the ACEC would be similar to Alternative E.

Management Actions

Same as Alternative B.

#### 4.6.8.2 Habitat Disturbance by Motorized Recreation

Under Alternative F, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would be decommissioned. As a result, there would be a major reduction (beneficial) of motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC as compared to Alternative A. Decommissioning Clear Creek Road will restore serpentine terrace potential habitat currently occupied by the road bed, back to San Benito evening primrose and other special status plant species that typically occupy the serpentine terraces. The proposal to decommission Clear Creek Road is in accordance with the 2005 BO for the CCMA RMP and final EIS (1-8-05-F-20). Motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since vegetation impacts from the construction of the new routes outside of the ACEC are expected to be short term, and vegetation impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

#### 4.6.8.3 Habitat Disturbance by Energy and Mineral Exploration

Same as Alternative E.

#### 4.6.8.4 Noxious Weed Invasion

Under Alternative F, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC would cease, due to vehicle use not being permitted within the ACEC. As a result noxious weed invasion into serpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat within the ACEC would be drastically reduced (beneficial). Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status special habitat outside of the ACEC would be limited. Under Alternative F, there would be continued movement of weed seed on humans (foot traffic) from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC. With livestock grazing only being permitted outside of the ACEC under Alternative F, movement of weed seed on livestock would only occur within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat outside of the ACEC.

#### 4.6.8.5 Livestock Grazing

Under Alternative F, livestock grazing would only be permitted outside of the ACEC. As a result, impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC from grazing would cease. Grazing impacts to nonserpentine riparian and upland San Benito evening primrose and special status plant species habitat outside of the ACEC would continue.

#### 4.6.8.6 Plant Community Restoration and Fire Management

Same as Alternative A.

### 4.6.9 Impacts and Mitigation for Alternative G

#### 4.6.9.1 Habitat Disturbance by Non-motorized Recreation

Under Alternative G, non-motorized recreation within the ACEC would not be permitted. As a result, non-motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat within the ACEC would cease. Similar to Alternative F, non-motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. As such, non-motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be similar to Alternative F.

#### 4.6.9.2 Habitat Disturbance by Motorized Recreation

Under Alternative G, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would not be decommissioned. As a result, motorized recreation impacts to serpentine riparian and upland San Benito evening primrose habitat and special status plant species habitat within the ACEC would be reduced slightly less so than Alternative F due to the fact that Clear Creek Road would not be decommissioned. Additionally, not decommissioning Clear Creek Road would prevent serpentine terrace potential habitat currently occupied by the road bed from being restored back to San Benito evening primrose and other special status plant species that typically occupy the serpentine terraces. Vehicle use outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) through nonserpentine riparian and upland plant communities in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since impacts to vegetation from the construction of these few new routes are expected to be short term, and impacts to vegetation from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine riparian and upland San Benito evening primrose habitat and other special status plant species habitat outside of the ACEC would be similar to Alternatives E and F.

#### 4.6.9.3 Vegetation Disturbance by Energy and Mineral Exploration

Same as Alternative E.

#### 4.6.9.4 Noxious Weed Invasion

Under Alternative G, the movement of weed seed on vehicles from nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status species habitat outside of the ACEC into serpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat within the ACEC would cease (beneficial), due to vehicle use not being permitted within the ACEC, similar to Alternative F. Movement of weed seed on vehicles within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and special status plant species habitat outside of the ACEC would be limited. Under Alternative G, there would be continued movement of weed seed on humans (foot traffic) within nonserpentine riparian and upland plant communities, San Benito evening primrose habitat, and other special status plant species habitat outside of the ACEC. No livestock grazing would be permitted within the CCMA, therefore, weed seed movement by livestock within the CCMA would cease.

#### 4.6.9.5 Livestock Grazing

Under Alternative G, livestock grazing would not be permitted within the CCMA. As a result, impacts to serpentine and nonserpentine riparian and upland vegetation would cease. Excessive mulch buildup may occur in nonserpentine grasslands. As a result, special status plant species that occur within the grasslands, such as stinkbells, may be adversely impacted through greater competition from invasive species and greater risk of catastrophic fire, due to increased fuel loads (adverse).

#### 4.6.9.6 Plant Community Restoration and Fire Management

Same as Alternative E.

### 4.6.10 Special Status Animals Species

As with plants, impacts to special status animal species are strongly associated with impacts to soils (Chapter 4.8; Soil Resources; Tables 4.8-1 through 4.8-10) and vegetation (Chapter 4.4; Biological Resources – Vegetation; Tables 4.4-1 through 4.4-12). Specifically, erosion and sediment entry into creeks has the potential to directly degrade habitat for foothill yellow-legged frogs, southwestern pond turtles, and Monterey roach, and to indirectly impact two-striped garter snakes by reducing populations of native fish and amphibians. Woodcutting can directly affect habitat for birds, bats, and other mammal species. Other impacts are unique to animal species: noise and light pollution; vehicle strikes; harassment of adults and young; litter; and release of nonnative competitors and predators.

Tables 4.6-25 summaries the management actions that would affect special status animal species.

**Table 4.6-25 Summary of Special Status Species Management Actions for all Alternatives**

| Management Action | Short Description | Alternative | | | |
|---|---|---|---|---|---|
| | | A | B,C | D,E,F | G |
| **SSS-A1** | Regulate surface disturbance | ✓ | ✓ | ✓ | ✓ |
| **SSS -A2** | Monitor management effects | ✓ | ✓ | ✓ | ✓ |
| **SSS -A3** | Design roads to avoid habitat | ✓ | ✓ | ✓ | ✓ |
| **SSS -A4** | Provide on/offsite compensation | ✓ | ✓ | ✓ | ✓ |
| **SSS -A5** | Enforce seasonal restrictions | ✓ | ✓ | ✓ | ✓ |
| **SSS -A6** | Maintain buffers around habitat | ✓ | ✓ | ✓ | ✓ |
| **SSS -A7** | Manage/evaluate/consult for SSS | ✓ | ✓ | ✓ | ✓ |
| **SSS -A8** | Manage for CABE | ✓ | ✓ | ✓ | ✓ |
| **SSS -A9** | Monitor all populations of CABE | ✓ | ✓ | ✓ | ✓ |
| **SSS -A10** | Monitor water and soil | ✓ | ✓ | ✓ | ✓ |
| **SSS –A11**. | Rehabilitate/reseed for CABE | ✓ | ✓ | ✓ | ✓ |
| **SSS –A12** | Initiate ecological study of CABE | ✓ | ✓ | ✓ | ✓ |
| **SSS –A13** | Monitor known populations of SSS | ✓ | ✓ | ✓ | ✓ |
| **SSS –A14** | Protect CABE | ✓ | ✓ | ✓ | ✓ |
| **SSS –A15** | Monitor unprotected populations | ✓ | ✓ | ✓ | ✓ |
| **SSS –A16** | Inventory suitable SS plant habitat | ✓ | ✓ | ✓ | ✓ |
| **SSS –A17.** | Study effects of disturbances | ✓ | ✓ | ✓ | ✓ |
| **SSS –A18** | Compliance monitoring for CABE | ✓ | ✓ | ✓ | ✓ |
| **SSS –A19** | Revise compliance monitoring plan | ✓ | ✓ | ✓ | ✓ |
| **SSS –BC1** | Prohibit collection of SSS | | ✓ | | |
| **SSS –BC2** | Monitor/maintain SSS habitat | | ✓ | ✓ | ✓ |
| **SSS-DEF1** | Adopt the CABE Monitoring Plan | | | ✓ | ✓ |
| **SSS-DEF2** | Relocate activities in SSS habitat. | | | ✓ | ✓ |
| **SSS –G1** | Limit proposed surface activities | | | | ✓ |
| **SSS –G2** | Conduct restoration in closed areas | | | | ✓ |
| **SSS –G3** | Restoration of ecological processes. | | | | ✓ |

## 4.6.11 Overview of Impacts to Special Status Animal Species

**Special Status Animal Species and Disturbance by Vehicle Use**

Vehicle use, especially off-road, is known to disturb soils and cause shifts in seral state in vegetation. Therefore a multitude of impacts to many of CCMA's special status species can be predicted. Direct impacts to special status animal species include vehicle strikes and destruction of habitat.

Vehicles strikes cause direct mortality of wildlife, including special status species. Off-road vehicle use can lead to direct mortality of both terrestrial and aquatic species. Coast horned lizards are extremely cryptic and can be killed by vehicle use in barrens. Sandy soil habitats occupied by California legless lizards near riparian areas are prone to vehicle disturbance and, when disturbed, can rapidly dry out, causing legless lizards to die or abandon habitat. Southwestern pond turtles lay their eggs in sandy soils, and these too can be directly destroyed or can become unviable due to drying. Confining vehicle use to roads reduces the chances of direct mortality but significant mortality can still occur. Coast horned lizards, two-striped garter snakes, and southwestern pond turtles are particularly at risk because they tend

to bask on roads during daylight hours when use is highest; they are also relatively slow-moving and difficult to see and avoid. Even aquatic species such as foothill yellow-legged frogs frequently are found crossing roads. California legless lizards are at lower risk due to their tendency to remain underground. All of the special status mammal species are nocturnal, and face a somewhat lower risk due to lower vehicle use, but are still subject to mortality from vehicles operated at night.

Habitat destruction results primarily from off-road vehicle use and can cause significant, long term reduction in available habitat, especially for terrestrial mammals and reptiles, but also for riparian species through loss of riparian vegetation, alteration of stream banks, and sedimentation.

**Special Status Animal Species and Disturbance by Energy and Mineral Exploration Impacts**

Special status bats can be affected by any use of existing mine shafts for further mining purposes. New exploratory or extractive earth disturbance can destroy animal habitat on the surface and can lead to sediment deposition in creeks, altering habitat for aquatic species such as Monterey roach and foothill yellow legged frogs.

**Special Status Animal Species and Disturbance by Noxious Weed Invasion Impacts**

Coast horned lizards, California legless lizards and all three species of kangaroo rats all prefer open understory habitats and therefore can be negatively affected by nonnative vegetation such as yellow star thistle if the vegetation becomes dense enough. Nonnative riparian vegetation such as *Arundo* can degrade riparian habitat for foothill yellow-legged frogs, southwestern pond turtles, two-striped garter snakes, and Monterey roach.

**Special Status Animal Species and Disturbance by Livestock Grazing Impacts**

Overgrazing in riparian habitats can degrade habitat for foothill yellow-legged frogs, two-striped garter snakes, southwestern pond turtles and Monterey roach. Overgrazing in dry habitats can reduce *Atriplex* stands and other shrub habitats preferred by the three special status kangaroo rats. In oak woodlands, grazing can prevent new tree seedlings and therefore retard the replacement of mature oaks that provide nesting and roosting habitat for special status birds and bats.

**Special Status Animal Species and Disturbance by Commercial Woodcutting Impacts**

Commercial woodcutting has the potential to destroy or disturb nesting and roosting sites for special status birds and bats.

**Special Status Animal Species and Disturbance by Plant Community Restoration and Fire Management Impacts**

Plant restoration projects can have short term displacement and disturbance effects on special status animal species, but would tend to benefit native animals in the long term due to the return of native habitats. Fire management can also cause limited mortality and displacement of special status species, but can also increase habitat for particular species such as coast horned lizard and kangaroo rats which require open understory and bare ground habitats.

**Special Status Animal Species and Water Resources Management**

Any actions that affect water availability will likely impact special status species that occupy aquatic habitats such as the Monterey roach, foothill yellow-legged frog, southwestern pond turtle, and two-

striped garter snake as well as the two special status invertebrates that may be present in CCMA. Significant effects can result from alterations in flow regime. For example, pulsed releases from impoundments are known to negatively affect breeding foothill yellow-legged frogs.

**Special Status Animal Species and Disturbance by Hunting and Wildlife Viewing**

Hunting can have negative impacts on raptors including California condors and bald eagles due to ingestion of lead ammunition from carcasses and gut piles. The presence of hunters in wildlife habitat can temporarily disturb or displace raptor species, kangaroo rats, and ringtail. Wildlife viewing tends to be low impact but wildlife can also be subject to short-term disturbance from human presence.

### 4.6.11.1 Impacts and Management Actions for Alternative A

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, special status species will still be subject to direct mortality both on and off roads. Vehicle disturbance will continue to result in habitat disturbance and vegetation loss, resulting in accelerated erosion rates and sedimentation of local watersheds.

Management actions

Twenty-one management actions specific to special status species are common to all alternatives, including A. Six actions are specific to CABE and are addressed under the Special Status Plants section of this chapter. The remaining actions are tailored to reduce or mitigate the effects of vehicle use on habitat, and include avoidance of habitat through signings and fencing (including buffers); monitoring the effects of management actions on special status species; managing special status species through the interagency consultation process; and on- and off-site compensation. The combined effect of management actions will be to offset impacts to special status species such that catastrophic declines do not occur and all species continue to exist at CCMA.

### 4.6.11.2 Impacts and Management Actions for Alternatives B and C

**Special Animal Species and Disturbance by Vehicle Travel**

Alternatives B and C would impose temporal restrictions on vehicle use within the Serpentine ACEC as described under section 4.6.4.1 above. The accompanying reduction in vehicle strikes and habitat destruction would be quantitative, rather than qualitative, because the geographic distribution of effects (e.g. both off- and on-road travel) would remain the same as under Alternative A. Effects outside the Serpentine ACEC would be unchanged relative to alternative A.

The one management action specific to alternatives B and C is to prohibit collecting special status animals in CCMA without permission from BLM. Because all of the species named above are off-limits to collecting without special collecting permits from either CDFG or USFWS, the restriction would essentially provide BLM a role in decision making regarding take of special status species from CCMA and would likely lead to better information sharing, better management planning, and ultimately, enhanced conservation of special status species at CCMA.

One management action, SSS-BG1, provides for monitoring of all special status species at CCMA and is common to all alternatives except alternative A. Due to the demonstrable beneficial interaction between

monitoring and management, this provision would likely have a large and positive effect on special status species conservation at CCMA.

#### 4.6.11.3 Impacts and Management Actions for Alternatives E-F

**Special Animal Species and Disturbance by Vehicle Use**

Alternatives E-G represent incremental temporal and geographic restrictions in on- and off-road vehicle use as described under sections 4.6.7 and 4.6.8 above. The net effect of such restrictions are to greatly reduce the impacts to special status species from vehicular disturbance and impacts relative to alternatives A-C, and respect a significant state shift away from those alternatives. Under E-F, habitat preservation becomes a priority activity at CCMA, with major long-term beneficial impacts on special status species.

#### 4.6.11.4 Impacts and Management Actions for Alternatives G

**Special Animal Species and Disturbance by Vehicle Travel**

Under alternative G, vehicle use in the Serpentine ACEC would be prohibited as described in section 4.6.9 above. The response of special species populations and habitat are not wholly predictable, but it is expected that a more "natural" regime would eventually reassert itself at CCMA. Because management actions under alternative A were mostly designed to mitigate vehicle disturbance, they would not be implemented or would be implemented at a lower level. If such actions had beneficial effects above and beyond the simple mitigation of disturbance, a reduction in these collateral beneficial effects would be expected. In particular, ongoing restoration efforts might be reduced or halted, leaving habitats to essentially self-restore at a natural rate. Overall, a major beneficial effect on all special status species is predicted to occur under alternative G. SSS-G1 would further limit surface activities in the Serpentine ACEC, which would have long-term beneficial impacts on special status animal species.

### 4.6.12 Cumulative Effects

None of the special status animal species are confined to CCMA, and therefore effects on them at CCMA must be viewed in the larger scale of impacts to these species across their range. Coast horned lizards, California legless lizards, and two-striped garter snakes are all under threat from coastal development in historic habitats; therefore negative impacts at CCMA may have a disproportionate effect on the status of any of those species. Foothill yellow-legged frogs are at risk rangewide from large-scale conversion of cobble-bottomed riverine systems downstream from dams and impoundments and are especially vulnerable in the southern end of the range, which includes CCMA. If foothill yellow-legged frogs continue to decline, CCMA could play a crucial role as a refuge for this amphibian species. Southwestern pond turtles are also at risk due to residential development rangewide and undeveloped areas such as CCMA may be critical for the species' perseverance. California condors are slowly increasing in numbers but continue to suffer from ongoing contacts with humans and human artifacts such as power lines, which elevates the significance of relatively unoccupied regions such as CCMA to the species.

One important adverse cumulative impact of restricting off-road vehicle use at CCMA is the predictable uptick in unauthorized off-road vehicle operation and accompanying negative impacts in other areas, such as the Tumey and Panoche Hills, which are also known to provide valuable habitat for other special status species not found in CCMA, such as the San Joaquin kit fox, giant kangaroo rat, and blunt-nosed leopard lizard.

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# 4.7 Air Quality

For ease of reference, the management goals from Chapter 2 are restated here:

- The goal for air quality management is to ensure that BLM authorizations and management activities comply with local, State, and Federal air quality regulations, requirements, State Implementation Plans, and Regional Air Board standards and goals.

## 4.7.1 Introduction

This section addresses impacts to air quality from activities allowed under other resource programs. The primary air quality impacts that can be reasonably expected to occur are vehicle and dust emissions associated with off-highway vehicle recreation and motorized access on BLM lands. As described under the purpose and need in Chapter 1, this RMP/EIS also incorporates new information about CCMA visitor health risk from the Environmental Protection Agency's CCMA Asbestos Exposure and Human Health Risk Assessment to address public health and safety and resources protection issues in CCMA. However, the analysis of alternatives and the associated human health risk from exposure to airborne asbestos emissions is addressed under "Hazardous Materials and Public Health and Safety" in Sections 4.2.

Other air quality impacts evaluated in this RMP/EIS include hazardous materials releases and particulate matter emissions from fire management activities, energy and minerals development, route maintenance, and other BLM management activities and land use authorizations.

## 4.7.2 Overview of Impacts

### 4.7.2.1 Air Quality Management Actions

Management strategies for air quality center on compliance with State and Federal regulations for hazardous air pollutants. Generally, the impacts from these management actions would be beneficial for air quality and public health and safety.

In particular, using the best available control technologies (BACTs) for dust abatement on roads and during project implementation that include, but are not limited to, paving, base rock, chip seal, or applications of liquid based copolymers to stabilize and solidify soils or aggregates and control erosion would have major long-term beneficial impacts for air quality and public health and safety by reducing airborne asbestos emissions.

The following resources/programs will have no or negligible impacts to air quality and will not be further addressed in this section: 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, and visual resources management.

### 4.7.2.2 Other Management Actions

**Recreation and Transportation & Access**

Motorized vehicle travel produces air pollution from engine exhaust and fugitive dust from travel on unpaved roads. Fugitive dust may also be produced to a much lesser extent from travel on paved roads where soil has been tracked onto the paved road.

Vehicles sold and operated in California are equipped with engines that are designed to meet strict mobile-source air pollution regulations; vehicles maintained in compliance with these rules will minimize air pollution emissions. In addition, fuel sold in California must meet specifications that are designed to minimize air pollution.

Other recreational uses such as hiking, rockhounding, and vehicle touring also generate emissions of hazardous air pollutants. Human health risks associated with recreational use are addressed under Hazardous Materials and Public Health and Safety in Section 4.2.

**Fire Management**

Prescribed fires are used to manage fuel stock (vegetation). Small acreages are burned on a rotating basis over the course of several years to reduce the available fuel and thus manage fires. Each air district has specific regulations regarding plans and/or permits required and conditions for prescribed burning. Before implementing each prescribed fire, coordination with the air districts, application for plans/permits, and receipt of an approved permit would be needed.

Fire can have adverse impacts on air quality, depending on the size, location, and type of fire. However, prescribed fires are used to manage fuel stock (vegetation); small acreages would be burned on a rotating basis over the course of several years to reduce the available fuel and thus manage fires. Prescribed fires offer a long term benefit of reducing the available fuel and thus reducing the potential for future wildland fires.

Prescribed fire activities would be coordinated with the appropriate APCD, depending on the location of the prescribed fire and applicable smoke management plan, or permit approvals would be obtained before implementing prescribed fires. This would minimize concurrent multiple smoke sources close to one another that could result in a cumulative smoke impact.

**Energy and Mineral Development**

Energy and mineral development involves extracting materials from the earth using various methods, which depend on the type of material being extracted. Extraction of petroleum resources generally requires preparing the site, drilling, installing well equipment, and storing or transporting the resource off-site. Mineral extraction involves mechanical removal of minerals via heavy equipment and transport off-site via truck.

These processes produce air pollution in the form of engine exhaust emissions and fugitive dust from the transport of materials and the movement of vehicles over unpaved areas. Additional air pollution may be produced at extraction sites where a facility for processing the extracted material is located.

Before initiating any type of energy or mineral development, the entity proposing the development would need to apply for and obtain approval for air permits from the air district where the activity would be located. The permit rules provide for an evaluation of air quality impacts for the proposed activity and must be deemed acceptable by the administering APCD before air permit would be approved.

## 4.7.3 Impacts and Mitigation for Alternative A

### 4.7.3.1 Air Quality Management Actions

Under the No Action Alternative, BLM's would continue to address air quality standards for land use authorizations in CCMA to comply with State and Federal air quality regulations. Air quality impacts

under Alternative A would have negligible benefits and perpetuate current attainment levels for air quality standards.

#### 4.7.3.2 Other Management Actions

**Recreation and Transportation & Access**

Alternative A would allow OHV use on 242 miles of unpaved roads and trails and 478 acres of barren play areas. Compared to existing conditions, the air quality would remain unchanged as related to emissions of particulate matter and $PM_{10}$ & $PM_{2.5}$ concentrations. The amount of OHV use would also be sustained at 35,000 visitor use days, with slight increases over the life of this plan. Therefore, vehicles would continue to emit pollutants, although stricter emission standards for vehicles and motorcycles imposed by the State of California could contribute to some minor improvement in air quality. There could be some potential for reductions in fugitive dust and particulate matter due to the miles of closed roads that are scheduled to be reclaimed and the restoration of barrens where soil disturbing activities would be eliminated. Though the particulate emissions varied among the alternatives, the difference among all alternatives was nominal.

Alternative A would have the greatest impacts on air quality, as described below:

Temporary dry season use restrictions were implemented in 2005 to restrict public use and motorized access of the Serpentine ACEC from June 1st through October 15th. These restrictions are intended to reduce particulate emissions during the driest part of the year, providing a substantial, but temporary, improvement to air quality.

Alternative A also includes the mitigation measures to restore closed routes to a natural landscape. This will result in fewer emissions due to the inability to easily use closed roads and in a reduction in emissions due to wind. Compliance with the ATCM for airborne asbestos, and implementing Best Management Practices and dust control measures related to road maintenance will also contribute to a reduction in airborne emissions for these operations. In the proposed action all barren play areas within the San Joaquin Valley Air Basin portion of the CCMA will be closed, and would contribute to a reduction in particulate matter emissions from these lands for the air basin. Environmental impacts related to ozone precursor emissions would likely remain unchanged from present conditions.

#### 4.7.3.3 Mitigation

Air quality impacts under Alternative A would be mitigated by maintaining compliance with the National Ambient Air Quality Standards, NESHAPs, applicable California air quality regulations, and State Implementation Plans.

### 4.7.4 Impacts and Mitigation Common to Alternatives B and C

#### 4.7.4.1 Air Quality Management Actions

Under these alternatives, air quality management strategies rely on compliance with local, State, and Federal regulations. Alternatives B and C would have negligible impacts on existing air quality conditions described in Chapter 3, because OHV recreation would continue inside the Serpentine ACEC.

#### 4.7.4.2 Other Management Actions

**Recreation and Transportation & Access**

Improvements to major routes identified under Transportation and Access would have major long-term beneficial impacts on air quality by reducing overall emissions from vehicle travel on roadways in CCMA.

In particular, paving the major routes would be the most effective way to reduce emissions, including hazardous air pollutants. According to studies conducted by the California DTSC, applying base rock and chip seal to major routes, would also reduce emissions on those routes.

Under Alternative C, there would be fewer routes designated as open compared to current conditions. Overall, there will be a reduction of approximately 40 percent of the miles of unpaved routes available for use, and a 100 percent reduction in acres of barren play areas. Additionally, Alternative C motorized vehicle travel on major routes roads to minimize air pollution from dust and exhaust by restricting vehicle types and seasons when vehicles could be used.

**Fire Management and Energy & Minerals**

Impacts from other management actions, such as fire management and energy and mineral development would be the same as those described in Chapter 3 and Section 4.1.2, "Overview of Impacts".

#### 4.7.4.3 Mitigation

Prescribed fire activities would be coordinated with the APCD charged with protecting air quality within the locale of the prescribed fire. Smoke management plans and/or permit applications would be prepared and submitted for approval, and smoke-dispersion models would be used as a tool to evaluate the potential for air quality impacts from fires on BLM public lands before conducting prescribed fires. Information provided by the model would also aid decision makers in determining potentially adverse impacts from prescribed fires, or wildland fires, and how to mitigate those impacts.

### 4.7.5 Impacts and Mitigation for Alternatives D and E

#### 4.7.5.1 Air Quality Management Actions

Under these alternatives, air quality management strategies rely on compliance with local, State, and Federal regulations. Alternatives D and E would have positive long-term impacts on air quality compared to Alternatives A, B, or C by reducing emissions of hazardous air pollutants. However, effects on existing air quality conditions described in Chapter 3 would still be negligible under Alternative D, in particular, because OHV recreation would continue outside the Serpentine ACEC.

#### 4.7.5.2 Other Management Actions

**Recreation and Transportation & Access**

Under Alternatives D and E, certain resource uses would be limited or excluded in sensitive areas. In general, air quality impacts under this alternative would be limited to recreation, transportation and access. However, applying surfactants on major routes identified under Alternative D and E would have moderate beneficial impacts on air quality because biodegradable liquid copolymers can effectively reduce emissions, including hazardous air pollutants.

Assuming BLM would follow manufacturer recommended application rates, overall reductions in emissions on major routes in the Serpentine ACEC under Alternatives D and E would be greater than Alternatives A, B, or C. Emissions would be significantly less because vehicle travel would only be authorized on major routes, thereby minimizing the amount of fugitive dust that would be tracked onto these routes from other non-improved routes and trails.

Alternative D would further reduce air pollution from dust and exhaust by restricting vehicle types to full-size vehicles, whereas Alternative E would allow for potentially more visitor use because all highway-licensed vehicles would be authorized on the major routes designated open in the Serpentine ACEC under this alternative.

In addition, the reduction in designated open routes and the enforcement of these designations would result in less off route travel and route proliferation. Off route travel creates new roads, which increases the particulate matter emissions due to vehicle use and windblown emissions.

**Fire Management and Energy & Minerals**

Air quality impacts from fire management and energy and minerals would be negligible compared to other alternatives, although there would be a minor long-term benefit to air quality from withdrawal of mineral entry on public lands in the Serpentine ACEC.

#### 4.7.5.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. The effects of those measures are same as Alternatives A through E.

### 4.7.6 Impacts and Mitigation for Alternatives F and G

#### 4.7.6.1 Air Quality Management Actions

Under these alternatives, air quality management strategies rely on compliance with local, State, and Federal regulations. Alternatives F and G would have the greatest beneficial long-term impacts on air quality compared to all other alternatives. Emissions of hazardous air pollutants would be limited to foot traffic, vehicle travel by existing rights-holders, and limited BLM resource management actions.

Overall, Alternative F and G would have long-term positive effects on existing air quality conditions described in Chapter 3.

#### 4.7.6.2 Other Management Actions

Air quality impacts under Alternatives F and G would be negligible with regard to recreation and public use. Air quality impacts from land use authorizations would be regulated by State and/or local air quality regulations applicable to such facilities. Particulate emissions from prescribed fire activities would be regulated by air district smoke management and/or prescribed fire rules.

#### 4.7.6.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. The effects of those measures are same as Alternatives A through F.

### 4.7.7 Cumulative Effects

The area of consideration for cumulative effects to air quality is based on the air districts that the CCMA is located within. The majority of the area is within the jurisdiction of the Monterey Bay Unified Air Pollution Control District (MBUAPCD). However, a small portion is within Fresno County, which is administered by the San Joaquin Valley 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 $PM_{2.5}$.

The North Central Coast Air Basin has better overall air quality, due to the marine weather influence, although the MBUAPCD is in non-attainment status for the state standard for ozone and $PM_{10}$. The annual air quality report for Monterey County attributes these ozone exceedances to transport pollution coming from the San Francisco Bay Area.

It is likely that continued growth within both the North Central Coast and the San Joaquin Valley air basins 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.

The respective air districts managing air quality in the Planning Area have also developed air quality plans that govern development and air pollution-producing activities within each air district. These plans consider the cumulative effects of all air pollution sources on the overall air pollution levels within each district. The ultimate goal of these plans is to maintain compliance with an air quality standard or to achieve compliance with an air quality standard if the air district is not in compliance. BLM coordination with California Air Resources Board (CARB) and local APCD's would ensure cumulative effects on air quality from resource management actions (i.e. prescribed fires) do not exceed standards for primary and secondary air quality standards.

While air quality may remain bad in the surrounding San Joaquin Valley and contribute to transport pollution, BLM management actions within the CCMA will have little effect on regional air quality conditions. Management activities that produce harmful emissions are localized and limited in scope and duration. The undeveloped nature of the CCMA and surrounding areas contribute to low levels of pollution sources in the near vicinity. Nevertheless, public health and safety measures included in the range of alternatives to reduce human health risks, and compliance with federal and state air quality rules and regulations, would be considered a long-term beneficial cumulative impact on the air quality in the North Central Coast and the San Joaquin Valley air basins.

#### 4.7.7.1 Impacts and Mitigation for Alternative A, B, C, and D

Under these alternatives, land use authorizations for surface disturbing activities and BLM management actions during periods of high OHV recreation use would have adverse cumulative impacts on air quality, but the impacts would be localized to the CCMA. Impacts following high-use periods would dissipate within 48 to 72 hours depending upon weather conditions. These cumulative impacts would also be reduced as a result of restrictions to OHV riding during the dry season.

Besides vehicle emissions, particulate matter ($PM_{10}$ & $PM_{2.5}$) are the major sources of impacts to air quality. San Benito and Fresno Counties are in non-attainment for $PM_{10}$ with Clean Air Act NAAQ standards. However, particulate matter emissions are not expected to contribute to cumulative air quality impacts to Fresno or San Benito counties due to prevailing winds.

Overall, motorized vehicle use on unpaved routes would contribute some level to emissions inventories for the affected air basins, but the cumulative impacts would be negligible because recreation use levels are anticipated to remain near current levels with only slight increases over the life of this plan.

#### 4.7.7.2 Impacts and Mitigation for Alternatives E, F, and G

California State efforts to implement stricter motorized street-legal vehicle and off-road vehicle emissions standards for other pollutants associated with exhaust from motorized vehicles, including: reactive organic gases (ROG), nitrogen oxides (NOX), and carbon monoxide (CO) would lessen contributions for these emissions.

However, cumulative impacts of CCMA management and visitor use on air quality are considered negligible because of the short-term localized nature of the effects of air quality and prevailing winds. Therefore, reducing or eliminating the number of unpaved roads available for OHV use in the CCMA, would only have long-term beneficial cumulative impacts in the CCMA portion of both air basins.

Overall, motorized vehicle use on designated routes under these alternatives would contribute some level to emissions inventories for the affected air basins, but the cumulative impacts would be significantly less than the other 'motorized' alternatives because recreation and visitor use levels would decrease substantially under Alternatives E, F, and G.

### 4.7.7.3 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:

"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."

This analysis assumes that global climate change will make the planning area warmer and drier by the end of the 21st century. However, 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 CCMA, and the plan assumes that knowledge will advance quickly with the current emphasis on climate research and model development. As the RMP is implemented, BLM managers would place a continued emphasis on research, and studies may 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. Overall, BLM's air quality management efforts under the range of alternatives considered in this RMP/EIS would have negligible impacts on global climate change because greenhouse gas emissions would remain at de minimis levels.

# 4.8 Soil Resources

## 4.8.1 Introduction

The greatest soil disturbance activities within the CCMA include non-motorized recreation, motorized recreation, energy and mineral exploration, livestock grazing, and plant community restoration and fire management. As highlighted in Chapter 3.8, soil resources of the CCMA may be divided into two general soil types: 1) serpentine soils found upon the New Idria serpentine mass (within the ACEC), and 2) nonserpentine soils found upon nonserpentine rock types surrounding the serpentine mass (outside of the ACEC). The Serpentine ACEC consists almost entirely of serpentine soils, whereas the San Benito River, Condon, Cantua, and Tucker zones consist almost entirely of nonserpentine soils.

**For the purpose of analysis**: Soil types are grouped and analyzed as "serpentine soils" and "nonserpentine soils." Analysis of impacts to soil resources is focused upon the location and intensity of the activity with respect to these two general soil groups.

Chapter 2 includes the management actions for soil resources for all alternatives. Table 4.8-1 through Table 4.8-10 provides an overview of the management actions that would affect soils and how disturbance as dictated by the alternatives would impact soil resources.

**Table 4.8-1 Summary of soil resource management actions for: Soil disturbance by non-motorized recreation.**

| Alternative | **Impact:** Soil disturbance by non-motorized recreation | **Management action:** Erosion control |
|---|---|---|
| **A** | Continued non-motorized recreation upon serpentine soils. Continued non-motorized recreation upon nonserpentine soils. | Maintain/enhance soil productivity. Install soil erosion control structures. Maintain routes. Prioritize closed areas for restoration. No disturbance on slopes in excess of 50%. |
| **B** | Reduced non-motorized recreation upon serpentine soils. Continued non-motorized recreation upon nonserpentine soils. | Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced non-motorized recreation (relative to Alts. B and C) upon serpentine soils. Increased non-motorized recreation impacts upon nonserpentine soils. | Same as Alternative B. |
| **E** | Further reduced non-motorized recreation (relative to Alt. D) upon serpentine soils. Slight increase in non-motorized recreation impacts upon nonserpentine soils (relative to Alt. A). | Same as Alternative B. |
| **F** | Same as Alternative E. | Same as Alternative B. |
| **G** | No non-motorized recreation upon serpentine soils. Non-motorized recreation impacts upon nonserpentine soils similar to Alt. D. | Same as Alternative B, except: No disturbance on slopes in excess of 40%. |

**Table 4.8-2 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Soil disturbance by non-motorized recreation.**

| Soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| Nonserpentine | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| Predicted soil loss → | A > B ~ C ~ D > E > F ~ G | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted soil loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

**Table 4.8-3 Summary of soil resource management actions for: Soil disturbance by motorized recreation.**

| Alternative | **Impact:** Soil disturbance by motorized recreation | **Management action:** Erosion control |
|---|---|---|
| **A** | Continued intensive motorized recreation upon serpentine soils. Limited motorized recreation upon nonserpentine soils. | Maintain/enhance soil productivity. Install soil erosion control structures. Maintain routes. Prioritize closed areas for restoration. No disturbance on slopes in excess of 50%. |
| **B** | Reduced motorized recreation upon serpentine soils. Limited vehicle use upon nonserpentine soils. | Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance. |
| **C** | Same as Alternative B. | Same as Alternative B. |
| **D** | Further reduced motorized recreation (relative to Alts. B and C) upon serpentine soils. Greatly increased motorized recreation upon nonserpentine soils. | Same as Alternative B. |
| **E** | Further reduced motorized recreation (relative to Alts. B and C) upon serpentine soils. Limited motorized recreation upon nonserpentine soils outside of ACEC. | Same as Alternative B. |
| **F** | No motorized recreation upon serpentine soils. Limited vehicle use upon nonserpentine soils. | Same as Alternative B. |
| **G** | No motorized recreation upon serpentine soils. Limited vehicle use upon nonserpentine soils. | Same as Alternative B, except: No disturbance on slopes in excess of 40%. |

**Table 4.8-4 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Soil disturbance by motorized recreation.**

| Soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine | ↔ | ↓ | ↓ | ↓↓ | ↓↓ | ↓↓↓ | ↓↓↓ |
| Nonserpentine | ↔ | ↔ | ↔ | ↑↑↑ | ↑ | ↑ | ↑ |
| Predicted soil loss → | A > B ~ C ~ D > E > F ~ G | | | | | | |

↔ = no change (existing condition), ↓ = minor decrease (beneficial), ↓↓ = moderate decrease (beneficial), ↓↓↓ = major decrease (beneficial), ↑ = minor increase (adverse), ↑↑↑ = major increase (adverse). Predicted soil loss within the CCMA based upon Alternatives: A>B~C~D>E>F~G. "A> B" reads as: A is greater than B, or B is less than A. "B~C" reads as B is approximately equal to C.

**Table 4.8-5 Summary of soil resource management actions for: Soil disturbance by energy and mineral exploration.**

| Alternative | **Impact:** Soil disturbance by energy and mineral exploration | **Management action:** Erosion control |
|---|---|---|
| A | Continued energy and mineral exploration in serpentine and nonserpentine areas. | Maintain/enhance soil productivity. Install soil erosion control structures. No disturbance on slopes in excess of 50%. |
| B | Same as Alternative A. | Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance. |
| C | Same as Alternative A. | Same as Alternative B. |
| D | Same as Alternative A. | Same as Alternative B. |
| E | Energy and mineral exploration limited to nonserpentine areas outside of the ACEC. | Same as Alternative B. |
| F | Same as Alternative E. | Same as Alternative B. |
| G | Same as Alternative E. | Same as Alternative B, except: No disturbance on slopes in excess of 40%. |

**Table 4.8-6 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Soil disturbance by energy and mineral exploration.**

| Soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Serpentine | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
| Nonserpentine | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Predicted soil loss → | A ~ B ~ C ~ D > E ~ F ~ G | | | | | | |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial).Predicted soil loss within the CCMA based upon Alternatives: A~B~C~D>E~F~G. "A~B" reads as A is approximately equal to B. "D> E" reads as: D is greater than E, or E is less than D.

**Table 4.8-7 Summary of soil resource management actions for: Livestock grazing.**

| Alternative | **Impact:** Livestock grazing | **Management action:** Erosion control |
|---|---|---|
| **A** | Continued grazing within serpentine and nonserpentine areas. | Maintain/enhance soil productivity. Rangeland health monitoring is required. |
| **B** | Same as Alternative A. | Same as Alternative A. |
| **C** | Same as Alternative A. | Same as Alternative A. |
| **D** | Same as Alternative A. | Same as Alternative A. |
| **E** | Same as Alternative A. | Same as Alternative A. |
| **F** | Livestock grazing limited to only nonserpentine areas outside of the ACEC. | Same as Alternative A. |
| **G** | No livestock grazing within the CCMA. | Same as Alternative A. |

**Table 4.8-8 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Livestock grazing.**

| Soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine** | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ | ↓↓↓ |
| **Nonserpentine** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↓↓↓ |
| **Predicted soil loss →** | **A ~ B ~ C ~ D ~ E > F > G** | | | | | | |

↔ = no change (existing condition), ↓↓↓ = major decrease (beneficial). Predicted soil loss within the CCMA based upon Alternatives: A~B~C~D~E~F>G. "A~B" reads as A is approximately equal to B. "F> G" reads as: F is greater than G, or G is less than F.

**Table 4.8-9 Summary of soil resource management actions for: Plant community restoration and fire management.**

| Alternative | **Impact:** Plant community restoration and fire management | **Management action:** Erosion control |
|---|---|---|
| **A** | Continued plant community restoration within disturbed serpentine and nonserpentine areas. Continued fire management activity within serpentine and nonserpentine areas. | Maintain/enhance soil productivity. Install soil erosion control structures. Maintain routes. Prioritize closed areas for restoration. No disturbance on slopes in excess of 50%. |
| **B** | Same as Alternative A. | Same as Alternative A, plus: Restoration plan required for soils with poor restoration potential prior to soil disturbance. |

| | | |
|---|---|---|
| **C** | Same as Alternative A. | Same as Alternative B. |
| **D** | Same as Alternative A. | Same as Alternative B. |
| **E** | Same as Alternative A. | Same as Alternative B. |
| **F** | Same as Alternative A. | Same as Alternative B. |
| **G** | Same as Alternative A. | Same as Alternative B, except: No disturbance on slopes in excess of 40%. |

**Table 4.8-10 Soil disturbance levels as predicted to change on serpentine and nonserpentine soil types for: Plant community restoration and fire management.**

| Soil type | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **Serpentine** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Nonserpentine** | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| **Predicted soil loss →** | **A ~ B ~ C ~ D ~ E ~ F ~ G** | | | | | | |

↔ = no change (existing condition). Predicted soil loss within CCMA based upon Alternatives: A~B~C~D~E~F~G. "A~B" reads as A is approximately equal to B.

## 4.8.2 Overview of Impacts

The primary impact of concern for soil resources is erosion. Erosion is a function of four primary factors including precipitation (amount, intensity, and frequency), soil and bedrock permeability, slope, vegetative cover, and disturbance type and intensity. Erosion is a natural process, but it can be greatly accelerated by human impacts including motorized recreation, development (mining, roads, pipelines, buildings, fences), livestock grazing, and fire. Indirect impacts can result when eroded sediment is transported downstream.

The two general soil types as discussed in Chapter 3.8 in detail, include: 1) serpentine soils found upon the New Idria serpentine mass (within the ACEC), and 2) nonserpentine soils found upon nonserpentine rock types surrounding the serpentine mass (outside of the ACEC). Both serpentine and nonserpentine soil types within the CCMA have moderate to very severe erosion hazard due to their presence on steep slopes. Serpentine soil types are particularly susceptible to erosion due to their naturally sparse vegetative cover. Additionally, serpentine soil types are very slow to naturally revegetate as compared to nonserpentine soils due to their severe, adverse physical and chemical properties. This subsection provides an overview of impacts that occur under all alternatives. The background and overall impact assessment is provided here and, as needed, further analysis is provided for each alternative.

### 4.8.2.1 Soil Resources and Disturbance by Non-motorized Recreation

Non-motorized recreation activities including camping, hiking, hunting, and rockhounding can cause minor adverse impacts to soil resources. Of these activities, camping poses the greatest impact to soil resources since camping sites are repeatedly used. Most campsites with the CCMA are located at designated campgrounds and staging areas, however, there are several small, popular informal campsites scattered throughout the CCMA. Repeated use of campsites can result in localized soil compaction and erosion (adverse). Foot traffic activities such as hiking, hunting, and rockhounding tend to be dispersed and not result in measurable adverse impacts to soil resources. Most hiking and hunting activities tend to

occur primarily outside of the ACEC which are more vegetated and support more game animals, whereas most rockhounding activities are focused within the ACEC where there is a wide variety of rare minerals that appeal to collectors.

#### 4.8.2.2 Soil Resources and Disturbance by Motorized Recreation

OHV recreation activities and motorized vehicle access for recreation can cause soil compaction and increase erosion (adverse). Soil erosion and compaction can lead to decreases in soil fertility, water permeability and retention, and vegetative cover. These conditions may in turn cause secondary impacts such as sedimentation of local watersheds. Currently, the majority of OHV activities within the CCMA are located within the serpentine ACEC. The ACEC contains large areas of naturally barren serpentine soils which are susceptible to erosion following disturbance. Due to the stressful soil conditions imposed by serpentine soils, they are slow to revegetate. Soils outside of the ACEC are comparatively more fertile and support a greater density of vegetation which recovers more rapidly following disturbance.

Soil compliance monitoring is conducted by an interdisciplinary team of HFO specialists using Rangeland Health Standards and Guidelines. The Standards and Guidelines apply to all land uses and not only livestock grazing. Variance from the Standards and Guidelines indicate that land health may be compromised and corrective management action may be required.

#### 4.8.2.3 Soil Resources and Disturbance by Energy and Mineral Exploration Impacts

Energy and mineral development can result in long-term damage to- or permanent loss of soils (adverse). Soil disturbance from construction, is typically more intense compared to OHV (light vehicle) impacts due to the use of heavy equipment. Impacts to soil from transmission lines and staging areas may be temporary, with minor compaction and erosion, whereas impacts from building construction and open pit mining may be regarded as permanent as soil is removed down to bedrock.

Overall, the CCMA has moderate potential for mineral development. The New Idria serpentine mass is highly-mineralized and was historically, commercially mined for magnesite, chromite, cinnabar, and asbestos. The Gem mine, a privately-owned inholding within the CCMA, continues to mine and market benitoite. Most other mineral development within the CCMA has ceased due to depletion of near-surface marketable minerals and changing mineral markets and mineral regulation. The CCMA has moderate potential for energy development. Oil and gas development potential is very low as the New Idria serpentine mass which comprises 40% of the CCMA land area has no potential for fossil fuel resources. The remainder of the CCMA contains sedimentary formations which have not yielded significant oil and gas resources within the local area. Wind energy development has some potential as the CCMA contains some of the highest points in the Diablo Range. Under all alternatives, the San Benito Mountain Research Natural Area is withdrawn from energy and mineral development.

#### 4.8.2.4 Soil Resources and Disturbance by Livestock Grazing Impacts

Livestock grazing has the potential to affect soils on the 14 grazing allotments located at least partially within the CCMA. Overgrazing by livestock may result in soil compaction and accelerated soil erosion (adverse). Therefore, soil integrity is an important component of rangeland health monitoring. Rangeland health monitoring is conducted by an interdisciplinary team of HFO experts using the BLM-approved monitoring approach. Variance from one or more of the standards may indicate that rangeland health has been compromised and corrective management action may be required in the form of revised management.

#### 4.8.2.5 Soil Resources and Disturbance by Plant Community Restoration and Fire Management Impacts

Vegetation restoration is an important tool for restoring or improving function of degraded ecosystems (beneficial). Restoration has many different levels based on the initial condition of the ecosystem and the desired final condition of the ecosystem. Restoration of drastically-disturbed lands, such as mines and serpentine barrens may include erosion control and/or revegetation with native plant species which typically requires intensive soil amendment. The IPM plan for some noxious, invasive species includes prescribed fire. Restoration of climax plant communities such as decadent chaparral also involves prescribed fire. Although initial short-term restoration impacts may be detrimental to the ecosystem, the overall long-term effects are beneficial.

Although fire typically is beneficial to vegetation by controlling weeds (prescribed fire), removing dead vegetation, and promoting new growth of native species. It can however, have adverse effects on soils. Fire lines require the removal of fuels down to bare soil. This often requires the use of heavy equipment. Bare fire lines are often compacted and susceptible to erosion. Additionally, soil erosion may be accelerated after a wildfire within the burn area because the native vegetation was removed.

### 4.8.3 Impacts and Management Actions for Alternative A

#### 4.8.3.1 Soil Disturbance by Non-motorized Recreation

Under Alternative A, non-motorized recreation would continue both inside and outside of the ACEC. Impacts associated with CCMA visitor camping would continue to be the greatest within the ACEC. As a result, serpentine soils within the ACEC, which are sparsely vegetated and susceptible to erosion, would continue to be disturbed, and have minor long-term impacts on erosion rates and sedimentation of local watersheds.

#### 4.8.3.2 Soil Disturbance by Motorized Recreation

Under Alternative A, both highway-licensed and green sticker vehicle recreation and its impacts will continue to be concentrated within the ACEC. Impacts outside of the ACEC will continue to be minor as few designated open routes exist outside of the ACEC. As a result, serpentine soils within the ACEC, which are sparsely vegetated and susceptible to erosion, will continue to be disturbed. Motorized recreation disturbance and have major long-term impacts on erosion rates and sedimentation of local watersheds.

#### 4.8.3.3 Soil Disturbance by Energy and Mineral Exploration

Under Alternative A, energy and mineral exploration will continue within serpentine (ACEC) and nonserpentine (outside of the ACEC) areas, resulting in soil impacts in both areas.

#### 4.8.3.4 Livestock Grazing

Under Alternative A, livestock grazing will continue to be permitted both within and outside of the ACEC, resulting in minor adverse impacts to both serpentine and nonserpentine soils because of the currently low grazing intensity on CCMA public lands.

#### 4.8.3.5 Plant Community Restoration and Fire Management

Under Alternative A, restoration of closed routes and degraded lands will continue both with and outside of the ACEC, resulting in impacts to both serpentine and nonserpentine soils. Control burns would continue to be used for fuels reduction and habitat improvement.

#### 4.8.3.6 Mitigation

The mitigation measures incorporated into vegetation resource management actions described in Chapter 2 would have moderate long-term beneficial impacts on biological resources and water quality in CCMA.

### 4.8.4 Impacts and Management Actions for Alternative B

#### 4.8.4.1 Soil Disturbance by Non-motorized Recreation

Under Alternative B, non-motorized recreation will continue both within and outside of the ACEC. Visitor use within the ACEC will be limited to ≤ 12 days. Camping impacts will continue to be the greatest within the ACEC, as associated with OHV user camping, but will be reduced relative to Alternative A due to visitor use limitations. As a result, there would be a minor decrease (beneficial) of non-motorized recreation impacts to serpentine soils as compared to Alternative A. Non-motorized recreation location and intensity outside of the ACEC would be unchanged and therefore non-motorized recreation impacts to nonserpentine soils would be unchanged as compared to Alternative A.

#### 4.8.4.2 Soil Disturbance by Motorized Recreation

Under Alternative B, motorized recreation of each visitor within the ACEC would be limited to ≤ 12 days per year and motorized vehicle use would be restricted to outside of the proposed Dry Season Use Restriction period of April 15th through December 1st (extended 45 days compared to the current Dry Season Use Restriction period). As a result, there would be a minor decrease (beneficial) of motorized recreation impacts to serpentine soils as compared to Alternative A. Motorized recreation location and intensity outside of the ACEC would be unchanged and therefore motorized recreation impacts to nonserpentine soils would be unchanged as compared to Alternative A.

#### 4.8.4.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative A.

#### 4.8.4.4 Livestock Grazing

Same as Alternative A.

#### 4.8.4.5 Plant Community Restoration and Fire Management

Same as Alternative A.

#### 4.8.4.6 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D, and include best management practices outlined in Appendix V.

## 4.8.5 Impacts and Management Actions for Alternative C

### 4.8.5.1 Soil Disturbance by Non-motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B with visitor use restrictions. As a result, impacts to both serpentine and nonserpentine soils would be unchanged as compared to alternative B.

### 4.8.5.2 Soil Disturbance by Motorized Recreation

Impacts for Alternative C would be similar to those for Alternative B. Motorized recreation would be subject to the same restrictions as Alternative B with the added restriction of only highway-licensed vehicles being permitted on county roads and the dry season route network and green-sticker motorcycle use being permitted only on single track trails. This is the same general use pattern for vehicles on routes (full-sized vehicles on roads; motorcycles on single-track trails) that currently exists, so the amount of disturbance on serpentine soils would be expected to be about the same as Alternative B. Like Alternative B, motorized recreation location and intensity outside of the ACEC would be unchanged and therefore, vehicle recreation impacts to nonserpentine soils outside of the ACEC would be unchanged.

### 4.8.5.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative A.

### 4.8.5.4 Livestock Grazing

Same as Alternative A.

### 4.8.5.5 Plant Community Restoration and Fire Management

Same as Alternative A.

#### 4.8.5.6 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D, and include best management practices outlined in Appendix V.

## 4.8.6 Impacts and Management Actions for Alternative D

### 4.8.6.1 Soil Disturbance by Non-motorized Recreation

Alternative D represents a major shift in non-motorized recreation activities from inside to outside of the ACEC as new staging areas and campgrounds are established outside of the ACEC. With increased motorized recreation staging outside of the ACEC, there will be a major increase (adverse) in OHV users camping outside of the ACEC. Likewise, improved access to hunting areas and improved camping opportunities outside of the ACEC will likely encourage more hunters to camp in those areas outside of the ACEC as well. As a result, there would be an even greater reduction (beneficial) of non-motorized impacts to serpentine soils within the ACEC as compared to Alternative C and a major increase in non-motorized impacts to nonserpentine soils outside of the ACEC as compared to Alternative C.

#### 4.8.6.2 Soil Disturbance by Motorized Recreation

Alternative D represents a major shift in the location of motorized recreation from inside to outside of the ACEC. Under Alternative D, motorized recreation within the ACEC would be restricted to only full-size vehicles on the designated route network. All green sticker vehicle recreation would be relocated to outside of the ACEC. New staging areas and routes would be constructed upon nonserpentine soils in the Tucker, Cantua, and Condon zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The route would be open to full-size vehicles and ATV/UTVs to access Condon Peak for both motorized and non-motorized recreation. The result would be an even greater reduction (beneficial) of motorized recreation impacts to serpentine soils within the ACEC as compared to Alternative C, and a major increase in motorized recreation impacts to nonserpentine soils outside of the ACEC as compared to all other alternatives.

#### 4.8.6.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative A.

#### 4.8.6.4 Livestock Grazing

Same as Alternative A.

#### 4.8.6.5 Plant Community Restoration and Fire Management

Same as Alternative A.

### 4.8.6.6 Mitigation

Mitigation measures are included in the management actions defined in Chapter 2. Many of these mitigation measures are common among Alternatives B, C, and D, and include best management practices outlined in Appendix V.

## 4.8.7 Impacts and Management Actions for Alternative E

#### 4.8.7.1 Soil Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative E is further reduced as visitor use continues to be limited within the ACEC and less new routes are constructed outside of the ACEC as compared to Alternative D. Camping impacts will be reduced as compared to Alternative D as it is expected that there would be fewer OHV users and hunters. Under Alternative E, non-motorized recreation impacts to serpentine soils within the ACEC would be similar to Alternative D. Non-motorized impacts to nonserpentine soils outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

#### 4.8.7.2 Soil Disturbance by Motorized Recreation

Under Alternative E, vehicle use within the ACEC would be similar to Alternative D, although highway-licensed vehicles rather than full-size vehicles would be restricted to a scenic route network composed of T153 and R11, which would allow street-legal motorcycles on the designated route. Motorized recreation outside of the ACEC would be slightly increased (adverse) as compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) on nonserpentine soils in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the

Condon Peak BLM access point on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to both highway-licensed vehicles and green sticker ATVs to access Condon Peak for non-motorized recreation only. Since soil impacts from the construction of these few new routes are expected to be short term, and soil impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine soils outside of the ACEC would be slightly greater (adverse) than Alternative A and much less than Alternative D.

#### 4.8.7.3 Soil Disturbance by Energy and Mineral Exploration

Under Alternative E, energy and mineral exploration would only be permitted outside of the ACEC. As a result, impacts to serpentine soils within the ACEC from energy and mineral exploration would cease. Energy and mineral exploration impacts to nonserpentine soils outside of the ACEC would continue.

#### 4.8.7.4 Livestock Grazing

Same as Alternative A.

#### 4.8.7.5 Plant Community Restoration and Fire Management

Same as Alternative A.

### 4.8.7.6 Mitigation

Mitigation measures included in the management actions under the range of alternatives in Chapter 2 and BMPs outlined in Appendix V would have major long-term benefits for soils and watershed resources in CCMA because of major reductions in surface disturbing activities and increased emphasis on resources protection and restoration.

## 4.8.8 Impacts and Management Actions for Alternative F

#### 4.8.8.1 Soil Disturbance by Non-motorized Recreation

Non-motorized recreation under Alternative F would be similar to Alternative E for use both within and outside of the ACEC. As such, non-motorized recreation impacts to serpentine soils within the ACEC and nonserpentine soils outside of the ACEC would be similar to Alternative E.

#### 4.8.8.2 Soil Disturbance by Motorized Recreation

Under Alternative F, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would be decommissioned. As a result, there would be a major reduction (beneficial) of motorized recreation impacts to serpentine soils within the ACEC as compared to Alternative A. Motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes (approximately 15 miles) on nonserpentine soils in the Tucker, Cantua, and Condon zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to both highway-licensed vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since impacts to soil from the construction of these few new routes are expected to be short term, and impacts to soil from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine soil resources outside of the ACEC would be similar to Alternative E.

#### 4.8.8.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative E.

#### 4.8.8.4 Livestock Grazing

Under Alternative F, livestock grazing would only be permitted outside of the ACEC. As a result impacts to serpentine soils within the ACEC from grazing would cease (beneficial). Grazing impacts to nonserpentine soils outside of the ACEC would continue.

#### 4.8.8.5 Plant Community Restoration and Fire Management

Same as Alternative A.

### 4.8.9 Impacts and Management Actions for Alternative G

#### 4.8.9.1 Soil Disturbance by Non-motorized Recreation

Under Alternative G, non-motorized recreation within the ACEC would not be permitted. As a result, non-motorized recreation impacts to serpentine soils within the ACEC would cease (beneficial). Similar to Alternative F, non-motorized recreation outside of the ACEC would be slightly increased (adverse) compared to Alternative A due to the construction of a limited number of access routes on nonserpentine soils in the Tucker, Cantua, Condon, and San Benito River zones. As such, non-motorized recreation impacts to nonserpentine soils outside of the ACEC would be similar to Alternative F.

#### 4.8.9.2 Soil Disturbance by Motorized Recreation

Under Alternative G, motorized recreation within the ACEC would not be permitted. Clear Creek Road (R1) would not be decommissioned. As a result, impacts to serpentine soils from motorized recreation within the ACEC would be reduced slightly less so than Alternative F due to the fact that Clear Creek Road would not be decommissioned. Vehicle use outside of the ACEC would be slightly increased compared to Alternative A due to the construction of a limited number of access routes (much less than Alternative D) on nonserpentine soils in the Tucker, Cantua, Condon, and San Benito River zones. A new route would be constructed from the existing Condon Peak trailhead on Coalinga-Los Gatos Road up to Condon Peak. The new route would be open to full-sized vehicles and ATV/UTVs to access Condon Peak for non-motorized recreation only. Since soil impacts from the construction of these few new routes are expected to be short term, and soil impacts from their use as access routes are expected to be minimal, overall motorized recreation impacts to nonserpentine soil resources outside of the ACEC would be similar to Alternatives E and F.

#### 4.8.9.3 Soil Disturbance by Energy and Mineral Exploration

Same as Alternative E.

#### 4.8.9.4 Livestock Grazing

Under Alternative G, livestock grazing would not be permitted within the CCMA. As a result impacts to serpentine soils within the ACEC and nonserpentine soils outside of the ACEC would cease (beneficial).

#### 4.8.9.5 Plant Community Restoration and Fire Management

Same as Alternative A.

### 4.8.10 Cumulative Effects

Cumulative impacts from management actions under other resource programs would vary depending on the alternative selected. Since many activities can affect soil erosion, the cumulative impact resulting from management actions under other resource programs can vary greatly. With increases or decreases in soil disturbance, soil-specific management actions including erosion control and revegetation, would also be increased and decreased, and focus of those actions may shift from inside the ACEC to outside of the ACEC as determined by visitor use patterns as dictated by the selected alternative. In general, the primary cumulative impact of selecting alternatives that result in overall reductions to soil disturbance will be reduced erosion and sediment delivery to the San Benito River watershed.

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# 4.9 Water Resources

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goals for water resources management are to (1) maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands and (2) ensure that surface and groundwater quality comply with the Clean Water Act (CWA) and with California State standards.

## 4.9.1 Introduction

Management decisions can impact water quality, water quantity, and availability of water for multiple uses, as well as the watershed Proper Functioning Condition (PFC) for both surface water and groundwater. Water resource management must take into account both intra- and inter-resource relationships. Impacts to water quality analyzed in this section include management actions specified for recreation, fire management, livestock grazing, energy and minerals development, and resource protection measures identified under soil resources.

## 4.9.2 Overview of Impacts

Water resource management decisions generally focus on actions that maintain, restore, or improve water quality and quantity to sustain the designated beneficial uses on BLM lands and ensure that surface and groundwater comply with the U.S. Clean Water Act and California State standards. Other management actions have the potential to impact water resources through the implementation of various resource programs, as described below.

### 4.9.2.1 Water Resources Management Actions

The management actions specified for water resources focus on protecting water quality, maintaining or enhancing overall watershed function, and managing water availability on BLM lands for an array of users.

### 4.9.2.2 Other Management Actions

The following resource programs have the potential to impact water resources:

**Recreation & Travel and Transportation Management**

Development and use of recreational roads and trails can affect water quality through sediment-laden runoff and the introduction of contaminants to surface waters.

**Fire Management**

The frequency and location of prescribed fires and methods in which prescribed fires and wildfires are suppressed can impact water quality through increased overland flow and resulting sedimentation and introduction of chemical contaminants to water bodies. Fire suppression activities can affect watershed function by destruction of riparian vegetation. Introduction of noxious weeds following wildfires can also adversely affect watershed function.

**Livestock Grazing**

Livestock grazing can affect watershed function by creating plant diversity and improved vegetation cover. Overgrazing can lead to soil compaction, reduced vegetative cover, and increased sediment transport to streams.

**Energy and Minerals**

Development of oil and gas drilling sites and minerals extraction sites can impact water quality through sedimentation and accidental introduction of contaminants. Energy and minerals development can also impact groundwater quality and quantity. Energy and minerals development can impact water availability to downstream users if extraction operations divert water from aquatic resources.

Development of new roads and rights-of-ways can impact water quality through increased erosion and sedimentation of surface waters.

## 4.9.3 Impacts and Mitigation for Alternative A

### 4.9.3.1 Water Resource Management Actions

Management actions affecting water quality serve to improve or protect water resources from siltation and sedimentation from road and trail development and maintenance. These actions would have a beneficial impact to water resources because they meet the Alternative A goal of maintaining/enhancing water quality.

**Watershed Function**

Under Alternative A, best management practices (BMPs) are established to guide watershed enhancement and stabilization measures where needed, representing a beneficial impact to water resources because this action serves to meet the goal of enhancing water quality, a primary watershed health indicator.

Many of these management practices have been implemented over the years. BLM does not propose to have funds available to implement all referenced management practices. The continuing priority in the short term is to provide for protection of unstable areas, minimize sediment production, protect water quality by minimizing soil erosion, and ensure that constructed erosion control structures are stabilized and working. Of primary concern are management practices to reduce impacts from motorized travel on roads in CCMA, which have been identified as a significant source of airborne asbestos emissions and excess lifetime cancer risks for CCMA visitors, as identified in the Environmental Protection Agency's Asbestos Exposure and Human Health Risk Assessment (2008). Erosion related to vehicle use on roads and barrens is also a contributor of sediment yield above background erosion rates in the CCMA watersheds. Minimizing dust emissions and erosion on routes and barrens, involving surface hardening, dust suppression, control of drainage, road slope stabilization, slope design, stream crossings, stream course protection, and seasonal use restrictions the extreme weather conditions are critical components to improving watershed conditions and overall protection of human health and the environment.

**Water Availability**

Alternative A contains management actions that allow BLM to control water diversions by land permittees or lessees through the establishment of Federal reserved water rights. This alternative does

allow for public water withdrawals from BLM lands through the State water right appropriation process; however, BLM also retains control of how water can be diverted from aquatic systems on BLM lands through the right-of-way approval process for water transmission infrastructure. These actions have an overall beneficial impact on ensuring water is available for watershed function and habitat value in riparian areas, while also allowing for water withdrawal for approved uses in the Planning Area. This alternative meets the goal of increasing water availability to meet resource needs.

#### 4.9.3.2 Other Management Actions

**Recreation & Travel and Transportation Management**

The no action alternative would continue to allow OHV use on 242 miles of unpaved roads and trails and 478 acres of barren play areas. Impacts related to OHV use of the barrens would be limited to the Clear Creek watershed. By reducing unauthorized uses, eliminating vehicle access to abandoned mine lands and completing significant road improvements and abandoned mine remediation projects, the BLM would minimize the potential for impacts to water quality.

The extent of the contribution of heavy metals and asbestos into the Hernandez Reservoir remains an issue, and some continued natural contribution of mercury and asbestos may be unavoidable. Water sampling data through 2002 indicates a possible overall slight downward trend in mercury concentrations in Clear Creek. However data from 2004/2005 indicates exceedance of the numeric objective for mercury in Clear Creek.

The available data indicate that the San Benito River is currently meeting water quality objectives for mercury. The data also indicate that Hernandez Reservoir is currently meeting water quality objectives for mercury (1998 data); however, mercury in fish tissues is at levels which do not meet stated objectives. The Central Coast Regional Board's Technical Report[4] indicates that sediment loading into the creek is roughly at background levels throughout most of the Clear Creek watershed, which suggests that the OHV activities are not causing any significant mercury loading. Based on both the water and sediment data collected by the Regional Board, it appears that high-use OHV areas are not a significant source of mercury loading.

Though some recent actions by BLM appear to have implemented the mercury-loading controls necessary to achieve the TMDL, Clear Creek is not yet fully attaining standards. Therefore BLM has committed to the Regional Board a five year program of quarterly sampling and monitoring. The Regional Board has not requested any additional implementation efforts as the remedial actions of BLM appear to be causing a decrease in sediment concentrations of mercury in Clear Creek. Achieving the load allocations in Clear Creek is reasonably expected to achieve the load allocations in Hernandez Reservoir and restore beneficial uses of the reservoir.

**Fire Management**

Fire management actions under Alternative A are intended to improve range conditions and for fuels reduction. These prescribed burns are conducted on intervals of decades. With appropriate suppression controls and the BMPs that will be implemented to protect water quality during prescribed or wild fires, BLM's fire management actions would have a negligible adverse impact on water resources because the

[4] Central Coast Regional Water Quality Control Board, Staff Report; *Total Maximum Daily Load, Technical Support Analysis for Mercury Impairment of Clear Creek and Hernandez Reservoir*, March 10, 2004.

goal to maintain/enhance water quality could be compromised on a localized basis during fire suppression efforts around aquatic systems.

**Livestock Grazing**

Alternative A includes actions for protecting springs from livestock trampling and establishing grazing seasons to protect other resources, including water resources. These are beneficial impacts to water resources because it meets the goal of enhancing water quality. Alternative A includes 156,152 acres of allotted grazing lands, the least amount of acreage of the four alternatives. Some of these grazing lands are located in proximity to surface waters in the Planning Area, so this management action represents a minor potential adverse impact to water resources from overgrazing in upland areas adjacent to water bodies. Finally, Alternative A ensures that livestock watering developments will be managed to provide safe drinking water for wildlife. This action is a beneficial impact to water availability for wildlife needs because it meets the goal of increasing water availability to meet resource needs.

**Energy and Minerals**

Alternative A allows for energy and mineral development throughout the Planning Area, as long as development protects rare, threatened, and endangered species and paleontological resources, and meets the principals of multiple-use management of BLM-administered lands, including the protection of water resources. Since oil and gas leases and mining plans of operation are required to address protection of water resources, energy and minerals actions would meet the goal of maintaining water quality and would therefore have no adverse impact on water resources.

#### 4.9.3.3 Mitigation

Mitigation measures are included within the management actions identified in Chapter 2. Management actions prescribed for Alternative A that serve as mitigation measures would include seasonal closures to activities that can affect water quality, as determined on a case-by-case basis; monitoring water quality and soil loss/sedimentation; and implementing BMPs as determined on a case-by-case basis.

### 4.9.4 Impacts and Mitigation Common to Alternatives B, C, D, and E

#### 4.9.4.1 Water Resources Management Actions

**Water Quality**

Under Alternatives B, C, D, and E common management actions are listed that aim to protect water quality in the Planning Area, including the use of BMPs in activity plans, and management of water bodies to meet Clean Water Act objectives through total maximum daily load pollutant allowances and other water quality standards. These actions would result in beneficial, long-term impacts to water quality in the Planning Area because they would improve water quality by complying with the Total Maximum Daily Loads of pollutants in Clear Creek and San Benito River. Compared to Alternative A, the actions common to Alternatives A, B, and C represent a more defined and proactive approach to protecting water quality in the Planning Area.

**Watershed Function**

Alternatives B, C, D, and E have common management actions that serve to protect watershed function through restoration projects and coordination with other resource management groups to protect water bodies. These actions would have a beneficial, long-term impact on watershed function, similar to the

beneficial impacts stated under Alternative A, because they meet the goal of improving water quality to sustain beneficial uses.

**Water Availability**

Alternatives B, C, D, and E common management actions include provisions for maintaining spring developments and reservoirs, and maintaining existing adjudicated water rights in the Planning Area. These actions would result in generally beneficial impacts to water availability because they meet the goal of maintaining water quantity in the Planning Area.

#### 4.9.4.2 Other Management Actions

**Recreation & Travel and Transportation Management**

Under Alternatives B, C, and D, allowable uses and BLM management actions are proposed to provide for off-highway vehicle use, as well as other non-motorized recreation opportunities. Most of these actions would result in beneficial impacts to water resources because they meet the goal of maintaining and improving water quality. In particular, dust suppression and surface hardening techniques on 25-30 miles of major roads and reducing soil disturbing activities on abandoned mine lands would contribute to reducing off-site transport of metals and asbestos and have major long-term benefits on water quality in the CCMA watersheds.

Under Alternative D, management actions specify increasing and/or improving motorized access to CCMA public lands outside of the ACEC for recreation opportunities. These new access developments and improvements could result in increased sediment runoff to water bodies, which would represent a short-term minor adverse impact to water resources because water quality could be compromised in specific locations. However, Alternatives B, C, D, and E also contain provisions for restricting motorized access by vehicle type and incorporate route designation criteria that would minimize the introduction of sediments or contaminants into water bodies and prevent destruction of riparian habitat by recreational vehicle use. Thus, these Alternatives would have negligible impacts to water resources compared to the existing conditions described in Chapter 3.

As additional data becomes available, this information will be valuable in monitoring the implementation of management actions, to determine whether restricting use in mine areas and reducing the miles of routes available for vehicle use, is having the desired effect of reducing contaminated sediment delivery downstream. The Aurora Mine site area would be completely closed between the Aurora grade and SBMRNA reducing soil disturbance and the potential for off-site transport of contaminants.

Alternative E would reduce the miles of available routes in the Larious and San Carlos watershed where the highest levels of background concentrations of hazardous metals are present, thereby reducing the potential for human exposure and contaminated sediment delivery. Additional routes accessing the following mine areas (Chromium, Mercury, Asbestos) would be closed: Larious watershed – Larious, Sampson, Spanish, and Wonder Mines; San Carlos watershed – San Carlos and Molina Mine; Cantua watershed – Del Mexico, Anita, Sec. 28 asbestos, and Coalinga asbestos Mines; San Benito watershed – Big Ridge Mine; White Creek watershed – Big Ridge, Tromby, Archer, Byles, and Butler Mines. Any motorized OHV use on highly erosive areas such as barren slopes and on unpaved roads and trails, would disturb soils containing hazardous metals, and increase erosion and transport of sediment above natural background levels. Closure of routes accessing these mines and a corresponding reduction in soil disturbance from OHV's at these areas, would contribute to improvements in water quality by reducing the potential for contaminated sediment delivery.

In general, under Alternative E designated beneficial water uses identified for streams associated with the CCMA would be enhanced through a reduction in miles of routes and acres of barrens available for OHV use, reductions in stream crossings, and implementation of Best Management Practices to minimize watershed impacts. Considering estimates that nearly half the sediment delivered to streams within the CCMA come from stream and swale crossings, the vast reduction in the number of crossings should result in substantial reductions in sediment delivery. This information will assist in evaluating the effectiveness of route designation & barren area closures, along with other watershed restoration projects.

**Fire Management**

Fire management actions common to Alternatives B, C, D & E include coordination efforts with the CALFIRE to minimize environmental damage, including damage to water resources, from fire suppression efforts. Wildland fire suppression and the use of prescribed fire or mechanical treatments would be managed to prevent adverse impacts to vernal pools and other waterways. These actions would have a beneficial impact to water quality and watershed function by controlling the introduction of sediment-laden suppression waters and/or chemical retardants into water bodies. These actions would have a positive long-term effect on water resources described in Chapter 3.

**Livestock Grazing**

Alternatives B, C, D, and E include common management actions that would allow BLM to make lands unavailable for livestock grazing if water resources were being degraded by grazing practices. They also would allow for fencing of spring developments to prevent trampling by livestock. These actions would result in beneficial impacts to water resources because they meet the goal of maintaining and improving water quality. These actions would have a positive long-term effect on water resources described in Chapter 3.

**Energy and Minerals**

Energy and minerals management actions under Alternatives B, C, D, and E for energy and minerals would have negligible impacts on water resources described in Chapter 3.

#### 4.9.4.3 Mitigation

Mitigation measures are built into the management actions in Chapter 2. Mitigation measures common to Alternatives B, C, D, and E include management actions that include use of BMPs, restricting certain uses that degrade water quality, and periodic monitoring of water quality. These mitigation measures would have a positive long-term effect on water resources described in Chapter 3.

### 4.9.5 Impacts and Mitigation for Alternative F and G

#### 4.9.5.1 Water Resource Management Actions

**Water Quality and Watershed Function**

Under Alternatives F and G, all fluvial systems would be managed to meet PFC. This action is the most environmentally protective measure of the alternatives because it addresses all water bodies in the Planning Area. This alternative would have a beneficial and long-term impact because it meets the goal of improving water quality.

**Water Availability**

Alternatives F and G contain management actions that allows BLM to file for Federal reserved water rights on acquired lands. This action has an overall beneficial impact on ensuring water is available for watershed function and habitat value in riparian and upland areas because it meets the goal of maintaining water quantity for beneficial uses. It does not afford specific opportunities for private entities to acquire water rights on BLM managed lands, which would represent a minor adverse impact to permittees or lessees wishing to divert water for various developments or grazing purposes.

### 4.9.5.2 Other Management Actions

**Recreation & Travel and Transportation Management**

Under Alternatives G all recreation activities in the Serpentine ACEC would be prohibited, including off-highway vehicle recreation, which would decrease the chance of adverse visitor impacts on riparian areas. These actions would result in beneficial impacts to water resources because they help meet the goal of maintaining and improving water quality.

Management actions to restore roads that no longer serve their original purpose, prohibit public use within the ACEC would serve to protect water quality and watershed function, and overall would minimize or eliminate adverse impacts on water resources from vehicle use. However, foot traffic in the ACEC and travel routes cross steams or riparian habitat outside of the ACEC under Alternatives F and G could have minor localized impacts to water resources described in Chapter 3.

**Fire Management**

Under Alternatives F and G, approximately 1,450 acres in the Planning Area would be targeted for annual prescribed burns, and 12,500 acres for decadal prescribed burns. Approximately 3,350 acres would also be targeted for mechanical treatments to control wildfire fuels on a decadal basis. These acreages are greater than the current management strategy for fire management (Alternative A), and could result in minor to moderate adverse impacts to water resources from the introduction of sediment-laden suppression water and/or chemical retardants to water bodies in proximity to treated areas. This alternative would temporarily not meet the goal for maintaining water quality on a localized basis.

**Livestock Grazing**

Alternative G includes 43,397 acres of allotted grazing lands, approximately 70 percent less area than Alternative A. Some of these grazing lands are located in proximity to surface waters in the Planning Area, so this management action represents a moderate to major potential beneficial impact to protect water resources from overgrazing in upland areas adjacent to water bodies.

**Energy and Minerals**

Under Alternatives G, all CCMA public lands would be closed to all energy and mineral development, which would serve to protect water quality and watershed function, and would be considered a moderate long term beneficial impacts to water resources described in Chapter 3.

### 4.9.5.3 Mitigation

Mitigation measures are built into the management actions in Chapter 2. Mitigation measures under Alternatives F and G are the same as Alternatives B, C, D, & E, and include use of BMPs, restricting

certain uses that degrade water quality, and periodic monitoring of water quality. These mitigation measures would have a positive long-term effect on water resources described in Chapter 3.

### 4.9.6 Cumulative Effects

Cumulative impacts to water quality could occur in areas downstream of BLM managed lands as a result of the management actions specified in the document. For example, management actions that result in increased sedimentation and/or contamination of water bodies would likely create similar effects in downstream areas, subject to distance and other factors such as sediment/contaminant transport characteristics and the ability of aquatic systems to buffer pollutant loads. Alternative G, in general, is most protective of water resources and therefore this alternative has the lowest potential for off-site impacts to water quality. Alternative A, which affords the most intensive development and resource extraction activities, has the highest potential to adversely impact off-site water quality.

Water quantity is perhaps the most important off-site water resource issue. By allowing increased use of water from BLM managed lands, downstream areas would have less water to maintain watershed health, or for diversion purposes such as irrigation. Alternatives that include BLM establishing federal water reserves (Alternative B through G) would potentially adversely affect water availability to off-site (downstream) users.

Cumulative impacts to water resources could result from long-term degradation of water quality through management actions that result in pollutant loading to water bodies. While all of the alternatives contain mitigation to prevent long-term degradation of water bodies, non-point source pollution from un-monitored activities, like certain recreation activities and the natural erosion process, could create slow but gradual degradation of stream conditions and overall watershed function.

Cumulative impacts could result from withdrawals of water to maintain watershed function or for development projects (e.g. oil and gas drilling), which would result in less available water for other uses over time within the Planning Area.

#### 4.9.6.1 Impacts and Mitigation for Alternative A, B, C, and D

BLM actions that would increase groundwater use in the CCMA, such as installation of public wash racks would have an adverse cumulative impact on water availability. Additionally, heavy metals and asbestos are concerns in the CCMA; the BLM contracted a water quality study (Dynamac, 1998) to determine the magnitude of heavy metals being deposited into streams from 15 abandoned mines. The background concentration of metals detected in soils tended to be above stated federal standards, and is consistent with the natural geochemistry of the area. However, differences in the water samples taken from below and above abandoned mine sites indicated that disturbed areas are contributing to metal concentrations over and above the naturally high levels. Disturbance by vehicles has also been a factor in increasing concentrations of metals transported downstream in the water.

Compared to existing conditions, under these alternatives, water quality should exhibit a gradually improving trend over many years. Impacts related to OHV use of the barrens would be limited to the Clear Creek watershed. By eliminating unregulated use, eliminating vehicle access to all remaining abandoned mines, continuing completion of abandoned mine remediation projects, and by completing significant road repairs and improvements, the BLM would minimize the potential for additional human-caused impacts to the subject waterways, and maintain or enhance current water quality conditions while minimizing effects to human health. Reducing the number of miles of unpaved roads by 45 percent, and reducing soil disturbing activities at remaining mine sites, would contribute to reducing off-site transport of metals and asbestos. The extent of the contribution of heavy metals and asbestos passing into the

Hernandez Reservoir remains an issue, and some continued natural contribution of mercury and asbestos may be unavoidable. Recent water sampling data indicates a possible downward trend in mercury concentrations in Clear Creek.

The Aurora Mine site area would be completely closed between the Aurora grade and SBMRNA reducing soil disturbance and the potential for off-site transport of contaminants. Alternatives C and D would reduce the miles of available routes in the Larious and San Carlos watershed where the highest levels of background concentrations of hazardous metals are present, thereby reducing the potential for human exposure and contaminated off-site sediment delivery.

Any motorized OHV use on highly erosive areas such as barren slopes and on unpaved roads and trails, could disturb soils containing hazardous metals and asbestos, and increase erosion and transport of sediment above natural background levels. Closure of routes accessing these mines and a corresponding reduction in soil disturbance from OHV's at these areas, would contribute to improvements in water quality by reducing the potential for contaminated sediment delivery.

In general, streams associated with the CCMA would be enhanced through decreased miles of routes and acres of barrens available for OHV use, reductions in stream crossings, and implementation of Best Management Practices to minimize watershed impacts. Under Alternatives C and D, riparian areas would have at least 50 percent fewer miles of OHV routes, and the number of stream crossings would decline as well compared to the existing designated route network. Nearly half the sediment delivered to streams within the CCMA comes from stream and swale crossings. Therefore, a reduced number of crossings would reduce substantially sediment delivery offsite. BLM and the USGS will continue to monitor the volume of sediment measured in tons, for daily and monthly quantities.

#### 4.9.6.2 Impacts and Mitigation for Alternatives E, F, and G

Appropriation of water rights from private land owners could also contribute to decreasing amounts of water available for beneficial uses. If request for new rights-of-way for water pipelines or storage tanks are submitted, BLM would evaluate any such proposal for potential impacts to groundwater quantity or quantity and associated impacts to other CCMA resources.

Actions within the CCMA watershed involving both groundwater and surface water could affect water quality outside of CCMA. For example, ephemeral drainages flowing during the wet season and flood events could potentially carry pollutants from the surface and impact water quality in the Hernandez Reservoir and other drainages. However, BLM would need to monitor water quality in CCMA waterways, as proposed in the range of alternatives, in order to assess these potential impacts.

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# 4.10 Special Designations

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goals for ACECs/RNAs are to identify and manage ACECs and RNAs to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

- The goals and objectives for managing Wilderness Areas and Wilderness Study Areas (WSAs) are the same for all alternatives. For designated wilderness areas, BLM is required to manage the areas consistent with the Act of designation and the Wilderness Act of 1964 as applicable. More specific management direction can be found in 3 CFR 6300. BLM is required to manage WSAs consistent with Section 603 of the FLPMA and the H-8550-1 Handbook (Interim Management Policy for Lands Under Wilderness Review) until Congress designates the area(s) as wilderness or releases them from the Section 603 FLPMA provision. If the areas are released, they would be managed consistent with the provisions within the RMP.

## 4.10.1 Introduction

This section focuses on the environmental impacts that management actions may have on the suitability of CCMA public lands for a special designation or protective management. Special designations are eligible based on the presence of particular values and qualities. These areas are designated through different processes and managed under special considerations. Special designations in the CCMA include the Serpentine Area of Critical Environmental Concern (ACEC), the San Benito Mountain Research Natural Area (RNA), and the San Benito Mountain Wilderness Study Areas (WSA). There are no Wild and Scenic Rivers (WSRs) designated, nor recommended, for addition to the National Wild & Scenic River System in CCMA. Each special designation area is managed according to its land use designation under all alternatives, as described in Chapter 2.

ACECs are designated for special management to (1) protect and prevent irreparable damage to important historic, cultural, or scenic values, or to fish and wildlife resources or other natural systems; or (2) protect life and safety from natural hazards. The management direction for WSAs outlined in the BLM's Interim Policy for Lands Under Wilderness Review is "to prevent impairment of wilderness values until Congress determines their suitability for wilderness designation". As such, BLM will continue to manage the San Benito Mountain Wilderness Study Area accordingly.

BLM Manual 8351 provides policy and program guidance for identification, evaluation, and management of potential Wild and Scenic Rivers, and directs BLM to "evaluate river segments within the resource management planning process to determine eligibility, tentative classification, protection requirements, and suitability under the Wild and Scenic River Act (WSRA)." Therefore, the CCMA RMP/EIS includes a Wild and Scenic River Inventory in Appendix VI that identifies and evaluates all rivers located on BLM-administered lands to determine if they are appropriate for addition to the National Wild and Scenic River System (NWSRS); and BLM's recommendations for legislative actions to accomplish such additions.

## 4.10.2 Overview of Impacts Common to All Alternatives

This subsection provides an overview of impacts that are common to all alternatives because the type of effects that special designations would have on the human environment are the same under all of the alternatives. The rationale for the limited range of alternatives with regards to special designations is

presented in Chapter 1, Section 1.3.3.3; and the analysis of environmental consequences provided here are based on the severity of the impacts to the human environment from special designations.

#### 4.10.2.1 Special designations

ACEC/RNA, WSA, and WSR designations allow focused management to occur on these lands, which enhances the values for which they were set aside, and minimizes detrimental impacts. Management must be in strict compliance with the laws and regulations that govern their special designations.

The range of alternatives does not include actions that would result in irreversible or irretrievable impacts to existing ACEC/RNAs or WSAs, (i.e., an impact that would make a particular ACEC or WSA unsuitable for continued protective management).

**Resources Protection and Mitigation Measures**

Designation of special management areas does not preclude land uses that are appropriate (i.e. not detrimental) to the unique features or values that receive special protection. Activity plans may be necessary to enhance the values for which these areas were established, to minimize detrimental impacts, and to facilitate mitigation. To ensure protection of unique features and values, appropriate protective measures for land use authorizations would be incorporated into management actions or land use authorizations that have the potential to disturb resources.

Section 2.4.10 lists proposed ACEC/RNA protective measures; implementation would depend on the type of disturbance, and its severity and duration. On-site inspections and project planning would be necessary to develop site-specific appropriate terms and conditions for approval. Pre-development activities may include dust suppression, seasonal restrictions, and avoidance of sensitive habitats. Appropriate activities for the development phase may include topsoil protection, minimization of surface disturbance, reseeding of disturbed sites, wastewater containment, and implementation of buffer zones around sensitive habitats. Post-development activity could include removal and disposal of construction material, recontouring surface land to pre-disturbance alignment, erosion control, and top-soiling and reseeding disturbed sites with native or non-native, non-invasive vegetation.

#### 4.10.2.2 Other Management Actions

Among the range of alternatives, some other management actions could have impacts to the Serpentine ACEC, including impacts from energy and mineral development; impacts from livestock grazing and impacts of transportation and recreational activities on natural vegetation and soil erosion. These impacts are not exclusive to the Serpentine ACECs, and would have similar impacts on water quality, vegetation, and soils wherever such activities occur in CCMA.

**Energy and Mineral Development**

Energy and mineral development in the Serpentine ACEC could potentially cause increased airborne asbestos emissions, surface and groundwater contamination, increased soil erosion, native vegetation removal, recontouring of natural terrain, and the proliferation of noxious and invasive weeds. These effects would be long-term in nature depending on the severity, duration, and application of mitigation measures.

If public lands are available for mineral entry in the Serpentine ACEC, surface-disturbing activities for energy and mineral development would be evaluated for potential adverse impacts on a case-by-case basis. On-site field surveys would occur on all applications. Consultations with the U.S. Fish and Wildlife Service concerning special status species and sensitive habitat would occur if appropriate.

**Transportation and Recreation**

Vehicular access and recreational activities in the ACEC would perpetuate human health risk from exposure to asbestos, and could potentially damage natural vegetation and increase soil erosion when travel occurs on non-established motorized vehicle routes or vehicle roadways. BLM would enforce allowable use restrictions to manage recreational activities and reduce human health risks in the Serpentine ACEC and San Benito Mountain RNA; and designated routes would be maintained to minimize detrimental long-term environmental effects.

**Water and Biological Resources**

Wildlife habitat improvement and watershed restoration projects such as stabilizations of barrens, noxious and invasive weed abatement, or riparian area protection measures would have beneficial impacts on CCMA special designations. Such management practices would improve plant diversity, structure, and cover, decrease soil erosion, and improve soil water infiltration. Habitat and vegetation improvement projects may include topsoil protection, erosion control devices, re-seeding of disturbed areas, wastewater containment, noxious weed control, or implementation of buffer zones around sensitive habitats.

**Livestock Grazing**

Under all alternatives, no grazing would occur in the San Benito Mountain RNA or WSA. Although, livestock may affect sensitive plant communities, wildlife habitat, or special status species habitat in the Serpentine ACEC through grazing and trampling under Alternatives A through E. Sensitive habitat management and protection within grazing allotments would be accommodated in Allotment Management Plans. The HFO would work with grazing lessees to minimize potential impacts in the ACEC by placing salt licks, watering facilities, and supplemental feeding sites away from sensitive habitats. Grazing throughout an allotment is not uniform due to terrain, forage quantity and quality, weather, and water availability differences. Appropriate levels of livestock grazing would be obtained through limitation of season of use, fencing, strategic placement of watering and salting sites, or limitation of animal numbers.

**Fire Management**

Historically, nearly all wildfires in the Planning Area have been human caused. Though wildfires in CCMA are rare, such a high level of human ignitions is a concern, and public outreach efforts would be emphasized to reduce potential occurrences. Wildfire has the potential to destroy unique vegetation communities, wildlife habitat, and special status species habitat in the Serpentine ACEC and San Benito Mountain RNA and WSA. On the other hand, well managed use of prescribed fire would enhance the diversity and complexity of vegetation communities and wildlife habitat, reduce hazardous fuels, and abate noxious and invasive weeds in accordance with the HFO Fire Management Plan. The goal of wildfire containment is to suppress 90 percent of all fires before 10 acres are burned. Non-fire fuels treatment includes mechanical and biological controls of fuels (vegetation) rather than burning.

## 4.10.3 Impacts and Mitigation Common to All Alternatives

### 4.10.3.1 Special Designation

Under all alternatives, the existing Serpentine ACEC (30,000 acres), and the San Benito Mountain RNA (4,147 acres) and WSA (1,500 acres) would remain special designation areas. The WSA would be managed according to the Interim Management Policy (IMP) with added emphasis on management of natural resources to protect the values for which these special designations have been established. The effects of maintaining the Serpentine ACEC designation for the 30,000-acre area of serpentine soil with high concentrations of asbestos fibers associated with the New Idria serpentine mass would provide major

long-term benefits to public health and safety because BLM's proposed management restrictions would reduce asbestos exposure to EPA's acceptable risk range for human health as described in Section 4.2.

### Special Designation Area Protection Measures

Special designation would prevent land uses that are detrimental to the unique features or values by restricting allowable uses, or requiring special protection measures prior to BLM authorization. Appropriate management activities would be identified to enhance the natural and cultural resources values, and to minimize detrimental impacts and facilitate mitigation for activities that have the potential to disturb surface land to ensure protection of unique features and values.

In the Serpentine ACEC, management activities such as road maintenance, construction, grading, and hard rock mining, or oil and gas development, would be evaluated for potential adverse impacts to the values for which the ACEC was established.

Prior to surface-disturbing activities in a special designation area, the site would be evaluated for potential adverse environmental impacts to vegetation, wildlife, and special status species and measures to reduce or eliminate the impacts. Mitigation measures would be separated into pre-development, development, and post-development activities. Pre-development activities may include road location, fencing, and seasonal restrictions to protect sensitive resources. Appropriate activities during the development phase may include topsoil protection, minimization of surface disturbance, re-seeding abandoned disturbed sites, wastewater containment, noxious weed control, and implementation of buffer zones around sensitive habitats. Post-development activity could include removal and disposal of construction material, recontouring surface land, topsoiling, and reseeding disturbed sites with native vegetation. Compensation may be required in the form off-site habitat enhancement such as guzzler development, seeding of native shrub or forage species, or providing funds for purchase of off-site lands.

#### 4.10.3.2 Mitigation

Mitigation measures are incorporated in the management actions in Chapter 2. Potential impacts to sensitive vegetation, wildlife, and special status species habitat from mineral and energy production, recreation, livestock grazing, or wildfire may be identified through rangeland health monitoring. Development protective measures include site planning and evaluation, fencing, seasonal restrictions, re-seeding abandoned disturbed sites, wastewater containment, noxious weed control, recontouring surface land, and reseeding disturbed sites. These measures help avoid or minimize impacts to resources.

### 4.10.4 Impacts and Mitigation under Alternatives B, C, and D

#### 4.10.4.1 Special Management Area Protection Measures

The impacts of special management area designations would be the same under all alternatives. Management actions included under alternatives B, C, and D to protect public health, special status species, and other natural and cultural resources would have minor long-term benefits to special designations in CCMA.

#### 4.10.4.2 Other Management Actions

### Energy and Mineral Development

The reasonably foreseeable energy and mineral development scenario is the same under all alternatives. Therefore impacts are expected to be similar under these alternatives because all CCMA public lands would be available for leasing, sales, and hard rock mining. However, the pre-development, development,

and post development protective measure associated with Alternatives B, C, and D would provide minor long-term resources benefits compared to the no action alternative. Overall, the impacts of energy and mineral development would be negligible because there is no potential for oil and gas development in the ACEC, and stipulations for mining claims would require strict adherence to resource protection measures and establish reclamation bonds to rehabilitate public lands once mining activities have been terminated.

### Recreation and Access

Alternatives B, C, and D would promote varying degrees of high-impact recreation activity. The types of recreation activities and allowable uses under these alternatives would have moderate long-term adverse effects on the values for which the special designation areas are established due to impacts of authorized and unauthorized off-highway vehicle use and shooting on CCMA resources in the ACEC.

### Water and Biological Resources

Impacts would be similar to Alternative A, but the pre-development, development, and post-development protective measure associated with Alternatives B, C, and D would provide additional benefits to protect these resources. On the other hand, BLM management actions for water and biological resources under these alternatives would have long-term beneficial impacts on the values for which the special designation areas are established.

### Livestock Grazing

Alternatives B, C, and D would require that grazing lessees prohibit livestock turn-out and gathering activities within 200 feet of sensitive habitat areas; and require cattle grazing lessees to eliminate salting or supplemental feed or watering facilities within 200 feet of sensitive habitat areas. In addition, the BLM would coordinate with the grazing lessees in on-the-ground meetings at least annually at the beginning of each grazing season. These management actions would have minor long-term benefits on the values for which the ACEC was established.

### Fire Management

The impacts of fire management would be the same under all alternatives. Management actions included under alternatives B, C, and D to reduce risk to lives, property, and resources from wildfire would have minor long-term benefits on special designation areas.

#### 4.10.4.3 Mitigation

Potential impacts to sensitive vegetation, wildlife, and special status species habitat from mineral and energy production, recreation, livestock grazing, or wildfire would be identified through rangeland health monitoring. Specific mitigation measures would be implemented to reduce potential impacts**.** Pre-development, development, and post-development protective measures would reduce or eliminate impacts to the values for which special designation areas are established. These mitigation measures would have minor long-term beneficial impacts on these values compared to the no action alternative.

### 4.10.5 Impacts and Mitigation under Alternatives E, F, and G

#### 4.10.5.1 Special Management Area Protection Measures

The impacts of special management area designations would be the same under all alternatives. Management actions included under alternatives E, F, and G to protect public health, special status species, and other natural and cultural resources would have major long-term benefits to special designations in CCMA.

### 4.10.5.2 Other Management Actions

#### Energy and Mineral Development

The reasonably foreseeable energy and mineral development scenario is the same under all alternatives. Therefore impacts are expected to be similar under these alternatives because none of the public lands in the special designation areas would be available for leasing, sales, or hard rock mining. Overall, the impacts of energy and mineral development would be negligible because there is no potential for oil and gas development in the ACEC, and BLM would recommend withdrawal of public lands in the ACEC from mineral entry. Only the United States Congress can formally withdraw public lands from mineral entry, which would result in major long-term benefits to public health and safety, special status species, and other values for which the special designation areas are established.

#### Recreation and Access

Alternative E promotes low-impact activities in special designation areas and has much greater restrictions for vehicle use in the ACEC than Alternative A-D, but Alternative E would still allow motorized access for the public entirely. Motorized recreational touring would be limited to BLM-led tours at Fort Ord, which would greatly reduce impacts from vehicles. Alternative F and G minimize or avoid adverse effects to resources in existing special designation areas from high-impact recreational activity by limiting access to pedestrian use (i.e. foot traffic) only or prohibiting all forms of public entry into the ACEC, respectively. These alternatives would provide major long-term benefits to public health and safety, special status species, and other values for which the special designation areas are established.

#### Water and Biological Resources

Impacts would be less than Alternatives B, C, and D but the pre-development, development, and post-development protective measure associated with Alternatives E, F, and G would provide additional benefits to protect special designation area values. BLM management actions for water and biological resources under these alternatives would also have long-term beneficial impacts on the values for which the special designation areas are established.

#### Livestock Grazing

Alternatives E would require management actions similar to previous alternatives that would have minor long-term benefits on the values for which the ACEC was established. However, Alternatives F and G would exclude livestock grazing from the ACEC, which would also have minor long-term benefits on the health risk to grazing operators from exposure to asbestos, as well as special status species and other natural and cultural resources by reducing or eliminating the effects of trampling.

#### Fire Management

The impacts of fire management would be the same under all alternatives. Management actions included under Alternatives E, F, and G to reduce risk to lives, property, and resources from wildfire would have minor long-term benefits on special designation areas.

### 4.10.5.3 Mitigation

Mitigation measures are incorporated in the management actions in Chapter 2. Alternatives E, F, and G include measures to consolidate activities to reduce the net impact, and for recontouring and reseeding. Potential impacts to sensitive vegetation, wildlife, and special status species habitat from mineral and energy production, recreation, livestock grazing, or wildfire may be identified through Rangeland Health Monitoring. Specific mitigation measures would be developed to reduce potential impacts. The allowable

use restrictions under Alternatives E, F, and G provide the most protection for special designation area values of all alternatives considered in this EIS.

### 4.10.6 Off-site and Cumulative Impacts

Off-site and cumulative impacts from energy development, mining, grazing, and similar activities on BLM-administered lands in special designation areas could potentially contaminate surface and groundwater, increase soil erosion, reduce natural vegetation cover, and proliferate noxious and invasive weeds both within the Serpentine ACEC and the San Benito Mountain RNA and WSA. Most surface disturbance would be localized to the ACEC, but noxious and invasive species issues could be regional. The impacts would be either short- or long-term, depending on their severity, and could be reduced through adequate planning, mitigation, and monitoring. Adherence to appropriate pre-development, development, and post-development protective measures would be critical to mitigate off-site and cumulative impacts. The Preferred Alternative does not include actions that would result in an irreversible or irretrievable impact to the ACEC or WSAs (i.e., an impact that would make these areas unsuitable for continued protective management).

The cumulative effects of Alternatives B, C, and D are similar to Alternative A; whereas Alternatives E, F, and G are collectively more consistent with resource management goals and would provide major long-term benefits to public health and safety by reducing asbestos exposure from current levels.

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# 4.11 Livestock Grazing

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for livestock grazing management are to (1) provide for a sustainable level of livestock grazing consistent with other resource objectives, (2) identify lands and forage available for livestock grazing, and (3) achieve the standards and implement guidelines for rangeland health as outlined in the Central California Standards and Guidelines for Livestock Grazing (hereafter referred to as the Standards and Guidelines).

### 4.11.1 Introduction

Hollister Field Office land use decisions relating to the management of rangeland resources and livestock grazing are made in accordance with parameters defined by current Bureau of Land Management (BLM) grazing regulations and the Central California Rangeland Health Standards and Guidelines (hereinafter, the Standards and Guidelines). Upon BLM approval in 2000, the Standards and Guidelines were amended into the 1984 Hollister RMP, and an interdisciplinary team of BLM resources specialists monitors rangeland health to determine compliance with the Standards and Guidelines.

## 4.11.2 Overview of Impacts

This subsection provides an overview of impacts to rangeland resources that could occur under the various alternatives. The background and overall assessment is provided here and further analysis, such as the location or severity of the impact, is provided under each alternative.

### 4.11.2.1 Livestock Grazing

**Rangeland Health Standards and Guidelines**

Variance from one or more of the standards indicates that rangeland health may be compromised and corrective actions for livestock grazing may be required. Where livestock grazing would limit attainment of the standards for rangeland health, rangeland management guidelines would be implemented as necessary to attain the standards. Current grazing levels would be maintained until analysis of monitoring data and/or evaluation of rangeland health assessments identifies a need for adjustment to meet objective standards for rangeland health. The Hollister Field Office (HFO) lands that are found to be unsuitable for livestock grazing, or that contain resource values that cannot be adequately protected from livestock impacts through mitigating measures or implementation of rangeland guidelines, would not be allocated to livestock grazing. Finally, HFO lands determined by evaluation of inventory, monitoring, or rangeland health assessment to be without forage that is or would be available for livestock through implementation of rangeland guidelines would not be allocated to livestock grazing. In summary, management actions that comply with the standards and guidelines have beneficial impacts to natural resources.

**Livestock Management, Including Forage, Grazing Season, and Use Levels**

The HFO prepares Allotment Management Plans (AMPs) that specify livestock management, including type of livestock, season of use, level of use (specified as AUMs), and grazing intensity. The grazing season would be established based on impacts on other resources and resource use. Grazing in Areas of Critical Environmental Concern (ACEC) and/or areas where special status plant species occur will be carefully monitored to determine if adverse impacts to protected resources are occurring. If an allotment fails to comply with the Standards and Guidelines and monitoring determines that grazing is the cause, then provisions would be provided to make the necessary adjustments to bring about compliance. Livestock distributions across HFO allotments are not uniform due to terrain, soil, and forage variations.

Poor livestock distribution can lead to adverse impacts due to heavy grazing pressure on some sites (e.g., riparian habitats and adjacent terraces).

#### 4.11.2.2 Fire Management

Prescribed fire may improve forage production, enhance wildlife habitat, reduce levels of hazardous fuels, and abate noxious and invasive weeds. Prescribed fire will often increase livestock forage within one to three years. Subsequent livestock use would depend upon residual mulch requirements and available forage each year after burning.

Wildfire can have a pronounced impact on livestock grazing through its effect on forage production. The principal forage in the HFO grazing allotments consists of annual grasses and forbs. As annual grasses and forbs mature, they provide fine fuel that can be easily ignited by lightning strikes or human causes. Forage loss on burned allotments will reduce livestock AUMs until the forage can recover sufficiently to support livestock grazing. Establishment of invasive weeds after a fire may reduce forage productivity. Post-fire rehabilitation will hasten allotment recovery and will reduce the chances for noxious and invasive weed establishment.

#### 4.11.2.3 Habitat and Vegetation Maintenance, Protection, or Improvement

Prescribed fire, mechanical treatments, herbicides, watering facilities, fencing, and livestock grazing are tools used to enhance wildlife habitats and vegetation communities in rangelands. The HFO uses prescribed fire and mechanical treatments to achieve diversity in habitat types and plant communities. Herbicide use is minimal and used to control unwanted vegetation that does not respond to other treatments. Fences and watering facilities improve livestock distribution throughout an allotment. In addition, noxious and invasive weed management is an important part of rangeland maintenance.

#### 4.11.2.4 Land Disposal, Acquisition, or Exchanges

Suitability for livestock grazing would be considered in land use authorizations, and the acquisition of new lands would likely provide minor long-term benefits by increasing the land available for grazing.

### 4.11.3 Impacts and Mitigation for Alternative A - E

#### 4.11.3.1 Livestock Grazing

**Rangeland Health Standards and Guidelines**

Interdisciplinary rangeland health assessments on all grazing allotments would be carried out to evaluate conformance with the Standards and Guidelines. Alternatives would provide specific measures to maintain or improve rangeland health with regard to livestock grazing, a beneficial impact.

**Livestock Management, Including Forage, Grazing Season, and Use Levels**

Under Alterative A-E, grazing use is authorized on 14 allotments on 22,140 acres within the CCMA boundary. Grazing use allocations within the CCMA total 1,354 AUMs. Current grazing allotments are meeting the demand for livestock grazing in the Planning Area, so existing management actions provide a beneficial impact to rangeland resources for grazing access and use. When rangeland health evaluations determine that exclusion of livestock grazing may be necessary to meet resource objectives, these areas would not be available for livestock grazing, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Where livestock grazing may be found to limit achievement of multiple-use objectives, actions to control grazing intensity,

duration, timing, and deferment would be required to meet physiological requirements of key plant species or to meet other resource objectives, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Spring developments to provide water for livestock and wildlife would be fenced to prevent trampling, a beneficial impact to riparian areas. Conversion of existing allotments from sheep to cattle grazing would occur if determined to be compatible with rangeland health standards and in conformance with resource objectives. The conversion of allotments between livestock species is not anticipated to result in adverse impacts to natural resources or general rangeland health. Under Alternative A - E, approximately 1,986 acres of lands designated for grazing are located in the Clear Creek ACEC. Grazing in the ACEC has the potential for minor adverse impacts on cultural resources, paleontological resources, and sensitive species habitat from livestock trampling or disturbance, including potential habitat for the federally-listed San Benito evening primrose.

#### 4.11.3.2 Recreation and Access

Under all alternatives vehicular activity could potentially damage vegetation and increase soil erosion when travel occurs on non-established motorized vehicle routes or vehicle roadways. This could adversely impact range condition and long term production for livestock.

Under Alternatives A, B, and C there would not be a significant change to livestock grazing in CCMA. Motorized vehicle activity would remain focused in the ACEC. Minor impacts to livestock grazing would continue to occur.

Under Alternative D, management actions specify increasing and/or improving motorized access to CCMA public lands outside of the ACEC for recreation opportunities. The increase in access to the Condon, Tucker and Cantua areas could result in increased vehicle activity in grazing areas not previously used for recreation. The potential for user conflicts and impacts to vegetation utilized by livestock would increase. These impacts would be moderately adverse.

Under Alternative E, management actions would continue to encourage recreation activity and access in the Condon, Tucker and Cantua area which could result increased conflicts with livestock grazing and private land due to limited vehicle access in CCMA with emphasis on non-motorized use. The impacts of this alternative to livestock grazing would be slightly adverse.

#### 4.11.3.3 Fire Management

The period of grazing deferment after wildland fire would be consistent with site characteristics, ecological site descriptions, land management objectives, short-term emergency stabilization and rehabilitation objectives (e.g., promotion of the desired plant community), and events occurring before, during, and after the fire, which represents beneficial impacts to rangeland resources. All alternatives recognize the threat of noxious and invasive weeds to livestock grazing and forage productivity. The HFO would provide management action to abate the proliferation of noxious and invasive weeds, resulting in beneficial impacts to rangeland resources.

#### 4.11.3.4 Habitat and Vegetation Maintenance, Protection, or Improvement

Livestock grazing would be allowed to improve wildlife habitat and enhance vegetation resources. This would be considered a moderate, long-term benefit to livestock grazing and would be consistent with goals and objectives for biological resources management.

#### 4.11.3.5 Land Disposal, Acquisition, or Exchanges

Suitability for livestock grazing would be considered in land use authorizations, and the acquisition of new lands would likely provide minor long-term benefits by increasing the land available for grazing. Under Alternatives B and C, approximately 3,300 acres of land designated for grazing allotments are also designated for potential disposal. This represents a moderate to major adverse impact because the amount of land available for ruminants would not meet current demand levels in the Planning Area.

#### 4.11.3.6 Mitigation

Rangeland health would be monitored to identify allotments not meeting the Standards and Guidelines, and corrective action would be taken through AMPs as appropriate.

### 4.11.4 Impacts and Mitigation from Alternative F

#### 4.11.4.1 Livestock Grazing

**Rangeland Health Standards and Guidelines**

Interdisciplinary rangeland health assessments on all grazing allotments would be carried out to evaluate conformance with the Standards and Guidelines. Alternatives would provide specific measures to maintain or improve rangeland health with regard to livestock grazing, a beneficial impact.

**Livestock Management, Including Forage, Grazing Season, and Use Levels**

Under Alterative F, grazing use would continue to be authorized on all 14 allotments, but approximately 83 AUMs that were previously grazed would become unavailable, and 1,986 acres of lands located in the Serpentine ACEC would be excluded from the existing grazing allotments, providing a total of 20,154 acres and 1,271 AUMs available for grazing on public lands in CCMA located outside of the ACEC. This would result in a minor, long-term adverse impact on four (4) grazing lessees in the CCMA and a moderate adverse impact to one lessee due to an eighty percent loss of public lands from their allotment. The modification of allotment boundaries may require construction of additional fence along the boundary of the ACEC.

When rangeland health evaluations determine that exclusion of livestock grazing may be necessary to meet resource objectives outside the ACEC, these areas would become unavailable for livestock grazing, which represents a beneficial impact to other natural resources, but may also result in increased adverse impacts to grazing opportunity. Where livestock grazing may be found to limit achievement of multiple-use objectives, actions to control grazing intensity, duration, timing, and deferment would be required to meet physiological requirements of key plant species or to meet other resource objectives, which represents a beneficial impact to other natural resources, but may also result in minor adverse impacts to grazing opportunity. Spring developments to provide water for livestock and wildlife would be fenced to prevent trampling, a beneficial impact to riparian areas.

#### 4.11.4.2 Recreation and Access

Under Alternative F, recreation and access would be significantly limited within the ACEC. This may increase use in grazing lands adjacent to the ACEC. The potential increase in recreation use would have a minor impact to grazing use.

#### 4.11.4.3 Fire Management

The period of grazing deferment after wildland fire would be consistent with site characteristics, ecological site descriptions, land management objectives, short-term emergency stabilization and

rehabilitation objectives (e.g., promotion of the desired plant community), and events occurring before, during, and after the fire, which represents beneficial impacts to rangeland resources. Prescribed burning exclusively for rangeland type conversion would not occur, which would potentially limit the acreage of suitable land for grazing purposes, a minor adverse impact. Alternatives F would allow BLM to manage for the threat of noxious and invasive weeds to livestock grazing and forage productivity. The HFO would provide management action to abate the proliferation of noxious and invasive weeds, resulting in beneficial impacts to rangeland resources.

#### 4.11.4.4 Habitat and Vegetation Maintenance, Protection, or Improvement

Livestock grazing would be allowed to improve wildlife habitat and enhance vegetation resources. This would be considered a moderate, long-term benefit to livestock grazing and would be consistent with goals and objectives for biological resources management.

#### 4.11.4.5 Land Disposal, Acquisition, or Exchanges

Suitability for livestock grazing would be considered in land use authorizations, and the acquisition of new lands would likely provide minor long-term benefits by increasing the land available for grazing.

#### 4.11.4.6 Mitigation

Rangeland health would be monitored to identify allotments not meeting the Standards and Guidelines, and corrective action would be taken through AMPs as appropriate.

### 4.11.5 Impacts and Mitigation Under Alternative G

#### 4.11.5.1 Livestock Grazing

Under this alternative, livestock grazing would be excluded from public lands within the CCMA boundary. The exclusion of grazing on 22,140 acres in CCMA would be a severe adverse impact to 7 individual grazing operations on seven (7) BLM allotments. A total of six (6) grazing allotments would be eliminated by this action due to significant reductions in available public land within their allotment boundaries. The modification of allotment boundaries on the remaining eight (8) allotments may require construction of fence along the boundary of CCMA, which could have minor short-term adverse impacts on special status species from surface disturbance during construction activities. Removing livestock from the entire CCMA could have moderate long-term beneficial impacts on special status animals and their associated habitats because more forage would be available for cover and consumption for terrestrial species. Conversely, eliminating livestock grazing could have minor, long-term adverse effects on aquatic species because natural succession would reduce existing habitat quality in ponds and meadows.

#### 4.11.5.2 Recreation and Access

Under Alternative G, recreation and access would be significantly limited. This would result in little or no impact to livestock grazing use.

#### 4.11.5.3 Fire Management

Same as Alternatives F.

#### 4.11.5.4 Habitat and Vegetation Maintenance, Protection, or Improvement

Same as Alternatives F.

#### 4.11.5.5 Land Disposal, Acquisition, or Exchanges

Approximately 3,300 acres of land designated for grazing allotments are also designated for potential disposal. This represents a moderate to major adverse impact because the amount of land available for ruminants would not meet current demand levels in the Planning Area. In addition, this alternative could result in major adverse impacts if lands designated for disposal support high-quality special status species habitat.

#### 4.11.5.6 Mitigation

Rangeland health would be monitored to identify allotments not meeting the Standards and Guidelines. In addition, specific measures to prevent overgrazing and protect sensitive habitat from grazing on specific allotments are included in management actions for special designation areas.

### 4.11.6 Cumulative Effects

Grazing has the potential to affect wildlife and sensitive species habitats, but appropriate management would alleviate negative impacts. Increased grazing would not occur in areas where wildlife habitat is the main management concern. Grazing may contribute to maintaining a diversity of vegetative stages and plant associations and may mitigate any lesser adverse impacts on special status species or wildlife habitats caused by grazing; therefore, grazing would be considered a beneficial impact. Livestock grazing would also be effective in reducing fine fuels that may carry wildland fire across the landscape.

Potential negative cumulative impacts that may result from livestock grazing would include impairment of surface water resulting from the removal of vegetation cover in the watersheds, which could increase sediment load to streams. However, any allotments that are not in conformance with the range health standard for water quality would be made unavailable until the standards can be reached. Furthermore, impacts from reduced vegetation cover would most likely be short term because most grazing occurs on annual grasslands, which are reestablished with each new growing season. Livestock could also transport weed seeds to and from HFO rangeland and private land, which could be a significant cause of weed expansion throughout the region. Long-term management efforts may be required for weed abatement once populations are established.

Cumulative impacts related to grazing management would be localized to riparian, grassland, and shrub habitats that occur in specific allotments. The effects of grazing on native plant species structure, cover, and diversity would be variable because of non-uniform grazing that result from differences in terrain, forage abundance and preference, and soil attributes. The duration of the impact would depend on its magnitude and reoccurrence.

Cumulative impacts under Alternatives A would be similar to those under Alternative B-E; however, decreases in grazing acres and AUMs in allotments under Alternatives F and G would result in decreases in adverse cumulative impacts of livestock grazing on public lands in the Planning Area.

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# 4.12 Energy and Minerals

For ease of reference, the management goals from Chapter 2 are restated here:

- Establish guidelines for managing resources to allow development of energy and minerals resources to meet the demand for energy and mineral production while protecting natural and cultural resources in the area.

## 4.12.1 Introduction

No oil and gas exploration and production, and some limited mineral production, currently takes place in the CCMA. No commercial-scale wind energy or geothermal power facilities exist within the Planning Area either.

The management actions for energy and minerals include various requirements for the different types of possible exploration and development: oil and gas, mineral, wind, and geothermal.

The overall difference between the alternatives may be very little for oil and gas exploration and production. Over the last 10 years, no oil and gas wells have been drilled on Federal lands within the CCMA, even in areas that are considered to have high potential for oil and gas production. As noted in the HFO's 2005 *Reasonably Foreseeable Development Scenario for Oil and Gas* (Appendix VIII), the CCMA is considered to have low to moderate potential for oil and gas production, so it is unlikely that any wells would be drilled on BLM-administered lands.

## 4.12.2 Overview of Impacts

### 4.12.2.1 Energy and Minerals Management Actions

The BLM has estimated that over the next 15 to 20 years there will be no more than 15 exploratory and development wells drilled on Federal lands in the entire Hollister Field Office. The BLM has assumed that there would be some pipelines and roads associated with the drilling as well as some seismic exploration. This is estimated to have a total disturbance of 74 acres, of which one third (26 acres) would be temporary and would be mostly or fully restored within a few months to a couple of years of construction, as noted in the HFO's 2005 *Reasonably Foreseeable Development Scenario for Oil and Gas* (Appendix VIII).

The majority of the BLM public lands that are considered as having high potential for oil and gas are outside of CCMA, and therefore would not be affected by the range of alternatives in Chapter 2.

Potential impacts from BLM management actions associated with mineral exploration and development include (1) restriction of access to minerals, wind energy sites, and oil and gas, which may limit production and increase dependence on other domestic sources or foreign energy sources; (2) decreased income from the local production of these materials, and (3) the unavailability of local building stone or other raw mineral materials.

Additionally, potential impacts associated with wind energy and geothermal exploration and development would be restriction of access to areas where wind or geothermal production potential exists, which may result in decreased local production of electricity and decreased local income from local construction and operation employment opportunities associated with these energy developments. This is also addressed in Section 4.15, "Social and Economic Conditions."

Potential direct and indirect impacts from energy and minerals exploration and development to natural resources could include disturbed land, increased vehicular traffic, decreased scenic opportunities and visual quality, impacts on habitat, noise, air emissions (dust and pollutant air quality), and increased erosion resulting in additional sediment loading to area watersheds. These impacts are analyzed in the respective resource sections of Chapter 4.

Finally, abandoned mine lands (AML) are not addressed in this section because the management actions for all of the alternatives sufficiently address activity-level plans or project-specific mitigation/ reclamation planning such that AML would not result from future mineral extraction on public lands in the Planning Area. AML from historic mining activities are addressed in the Section 4.2.

#### 4.12.2.2 Other Management Actions

Management actions under other resource programs that could impact energy and mineral development include the following.

**Social and Economic Conditions**

Management actions specified for social and economic conditions address varying degrees of promoting commodity development in the Planning Area, which can affect the degree to which energy and minerals development can be implemented economically.

**Travel and Transportation Management**

Several management actions for transportation and access under each alternative impose limitations on vehicle use, development of new roads, and closure of existing road networks in the CCMA. Since energy and minerals development requires the use of vehicles and potentially new road construction, this resource program has the potential to significantly affect the ability to develop these resources.

**Land Tenure Adjustments**

Disposal of BLM managed lands with moderate potential for energy or mineral production would have a minor adverse impact on the development of these resources if the disposed lands were restricted for such use, either by private owners or other public entities.

### 4.12.3 Impacts and Mitigation for Alternative A

#### 4.12.3.1 Energy and Minerals Management Actions

Current management actions outlined in the 1984 Hollister RMP and the 1993 Oil and Gas Amendment would continue to provide opportunities to develop energy and mineral resources on a case-by-case basis in areas deemed appropriate for development by BLM. However, BLM would pursue withdrawal of certain public lands in Clear Creek Canyon and the San Benito RNA. These impacts would be negligible based on existing conditions and reasonably foreseeable development of energy and minerals in CCMA The absence of a management framework for acquired lands and wind energy under Alternative A would represent a minor to moderate adverse impact to energy and minerals because the goal of meeting the demand for increased energy production would not be fully met.

#### 4.12.3.2 Other Management Actions

**Social and Economic Conditions**

There are no management actions for social and economic conditions specified for Alternative A; therefore, no impacts to energy and minerals would occur from this resource program under the no action alternative.

**Travel and Transportation Management**

Under Alternative A, management actions limit vehicle use to designated routes and barrens. These actions would have a negligible impact on energy and mineral exploration and development because of the extensive route network in CCMA. The highest impacts would occur in the Tucker and Cantua Zones, as there are no designated routes in these management zones, but they are within or immediately adjacent to areas with moderate to high potential for energy development as specified in the Reasonably Foreseeable Development (RFD) scenario contained in Appendix VIII.

**Land Tenure Adjustments**

None of the management actions under Alternative A identify specific public lands for disposal; therefore, no impacts to energy and minerals would occur from this resource program under the no action alternative.

#### 4.12.3.3 Mitigation

Under Alternative A, mitigation measures would include use of appropriate "no surface occupancy" stipulation controls and other mitigation/monitoring management guidelines listed in Chapter 2. These measures would have negligible impacts on energy and mineral development and moderate beneficial impacts on BLM resource management goals and objectives.

### 4.12.4 Impacts and Mitigation Common to Alternative B and C

#### 4.12.4.1 Energy and Minerals Management Actions

Under all alternatives, BLM would maintain and protect natural and cultural resources and the existing conditions in the San Benito Mountain WSA and the Serpentine ACEC. However, Alternatives B and C would have fewer impacts on energy and minerals development compared to Alternative A over the long term because BLM would not pursue withdrawal of any public lands from mineral entry. Development in the Serpentine ACEC would have beneficial impacts to energy and minerals, although they would be minor because the area only has moderate potential for energy development, including wind energy (refer to Map 10 in Appendix I).

The introduction of a management framework for renewable energy development under these alternatives would represent a minor to moderate beneficial impact on energy development and BLM's goal of meeting the demand for increased energy production.

#### 4.12.4.2 Other Management Actions

**Social and Economic Conditions**

Management actions for social and economic conditions are common to Alternatives B, C, and D. The impacts of social and economic management action would be negligible based on existing conditions and reasonably foreseeable development of energy and minerals in CCMA.

**Travel and Transportation Management**

Similar to Alternative A, management actions common to Alternatives B, C, and D limit vehicle use to designated routes throughout the CCMA, including specific areas such as portions of the Serpentine ACEC, and the Tucker, Condon, and Cantua zones. These actions could adversely impact the ability to explore and develop energy and mineral resources in currently roadless areas; however, these impacts would be minor to moderate because most roadless areas are outside of high potential areas for energy development as specified in the RFD (Appendix VIII).

**Land Tenure Adjustments**

Common management actions to Alternatives B, C, and D include efforts to acquire lands in specific areas to reduce user conflicts and increase logic in public land use patterns, and to dispose of lands that meet certain screening criteria. Acquisition of lands with high potential for energy development, including wind energy, would represent a beneficial impact to energy and minerals development, while disposal of such land could result in adverse impacts. Approximately 3,300 acres of public lands are identified for disposal under Alternatives B and C; which would have minor adverse effects on energy and mineral development if the disposed lands were restricted for such use, either by private owners or other public entities.

#### 4.12.4.3 Mitigation

Mitigation under Alternative B and C includes use of appropriate surface disturbance controls and other mitigation/monitoring management guidelines outlined in Chapter 2. These effects of these measures on energy and mineral development would be negligible.

### 4.12.5 Impacts and Mitigation for Alternative D, E, and F

#### 4.12.5.1 Energy and Minerals Management Actions

Under Alternatives D, E, and F, all BLM-administered lands in the Serpentine ACEC would be withdrawn from energy and mineral development, including wind energy. Restriction of energy development in these areas would have a minor adverse impact on energy and minerals development because while other areas in the Planning Area with higher potential for energy development would be available for development, the goal of meeting the demand for energy and mineral production may not be fully met when the ACEC is closed to development. However, this alternative would meet the goal of allowing for some energy and mineral production while ensuring adequate protection of human health and the environment.

#### 4.12.5.2 Other Management Actions

**Social and Economic Conditions**

Under Alternatives D, E, and F, management actions for social and economic conditions would focus on allowing commodity production, including energy and minerals development, while emphasizing protection of human health and the environment. These actions would likely result in more stringent

restrictions and/or mitigation requirements on where and how energy and mineral extraction could occur. While this would not create an adverse affect on the opportunity for rockhounding (i.e. hobby gem and mineral collection), it could slightly adversely affect the economic viability of energy and mineral development in certain areas; although the impacts would be minor because the area only has low or moderate potential for energy development, including wind energy.

**Travel and Transportation Management**

Under Alternatives E and F, management actions for transportation and access substantially limit the use of roads in the Serpentine ACEC year-round, and elsewhere in CCMA during periods of inclement weather. Also, all vehicle access in the San Benito Mountain RNA would be authorized by permit only. These actions would have minor adverse impacts on energy and minerals development by limiting the areas and times when exploration and development could occur. The CCMA contains relatively few areas of high and moderate potential for energy development, including wind energy, so exclusion of vehicles use in this area for energy development would have a long-term moderate adverse impact.

**Land Tenure Adjustments**

Approximately 3,300 acres of public lands are identified for disposal under Alternative E; which would have minor adverse effects on energy and mineral development if the disposed lands were restricted for such use, either by private owners or other public entities.

Under Alternative F, no BLM-managed lands are identified for disposal. Rather, BLM would consider acquisition of lands from willing sellers with moderate to high energy potential, which would result in a minor beneficial impact to energy and minerals because they would potentially be available for development.

#### 4.12.5.3 Mitigation

Under Alternatives D, E, and F, oil and gas leases would be limited to "no surface occupancy" stipulations in special status species habitat as a mitigation measure and the endangered species stipulations guidelines listed in Chapter 2.

### 4.12.6 Impacts and Mitigation for Alternative G

#### 4.12.6.1 Energy and Minerals Management Actions

Under Alternative G, all 63,000 acres of BLM-administered lands in CCMA would be withdrawn from mineral entry. Withdrawal of public lands from mineral entry in the CCMA would only have a minor adverse impact on energy and minerals because other public lands in the Hollister Field Office with higher potential for energy development would be available, although the goal of meeting the demand for energy and mineral production may not be fully met, including encouraging the development of renewable energy resources.

### 4.12.7 Cumulative Effects

The Planning Area includes the CCMA, as well as public and private lands in western Fresno and southern San Benito counties. There have been hundreds of wells drilled in the Planning Area 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 oilfields and associated roads are in various states of

maintenance. The level of reasonably foreseeable development within the CCMA is a negligible portion of the overall development in the assessment area. To the south of the Hollister Field Office management boundary lie the largest oilfields in the lower 48 states, which are administered by the Bakersfield Field Office of BLM in Kings' and Kern Counties. They contain 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 these regions over the life of the RMP. In any event, the level of activity outside the CCMA will be several orders of magnitude greater than within the CCMA because production of energy and minerals within the CCMA would add negligible levels to overall production within the region, even if new reserves are developed in areas with low to moderate potential based on the value of oil.

Beneficial cumulative impacts associated with energy and minerals development would include increased jobs and income and decreased transportation costs for construction material such as sand and gravel due to locally available supplies. Potential negative cumulative impacts include reduced habitat quality from erosion and sediment transport to off-site streams, increased vehicular traffic (including commercial vehicles), increased noise and dust generation, decreased visual quality, and decreased scenic recreational opportunities.

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# 4.13 Cultural Resources

## 4.13.1 Introduction

Cultural resources include prehistoric and historic archeological sites, artifacts and rock art, sacred sites and other traditional cultural properties, buildings and structures, landscaping, and historic districts and rural landscapes. Consideration and treatment of cultural resources by Federal agencies is mandated by a number of Federal statutes (Chapter 3.13.2).

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to "take into account the effects of Federal actions on historic properties" and outlines Federal agency responsibilities for identification, management, protection, preservation, and use of historic properties. The principal Federal regulations that guide implementation of the NHPA are found at 36 CFR 800 (Protection of Historic Properties) and 36 CFR 60 (National Register of Historic Places).

The BLM National Programmatic Agreement (PA) between BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (SHPO) provides alternative procedures for implementing 36 CFR 800, along with BLM Manual 8100 Series, and the California Protocol implementing the National PA.

The objective of the protection component for BLM's cultural resource management program is aimed toward protecting the significance of cultural resources by ensuring that they are managed in a manner suited to the characteristics, attributes, and uses that contribute to their public importance; toward giving adequate consideration to the effects of land use decisions on cultural properties; toward meeting legal and regulatory obligations through a system of compliance fitted to BLM's management systems; and toward ensuring that cultural resources on public land are safeguarded from improper use and responsibly maintained in the public interest.

Not all cultural resources are significant and qualified for consideration under the NHPA and other regulations. Significant resources are designated as "historic properties" and are defined in 36 CFR 800.16(1) as "any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP)."

Historic properties on Federal lands are identified through survey, research, and often test excavations to determine their NRHP eligibility. Identification of historic properties is assumed under Federal management of cultural resources and can require a tremendous level of specialist effort when large public land holdings are involved; treatments and procedures developed to protect and preserve such historic properties can also be extremely diverse and complex.

For these reasons, management strategies for cultural resources are often addressed in specific plans that focus on certain resource types or particular areas of cultural sensitivity within the larger Planning Area. Preparation of a Cultural Resources Project Plan (CRPP) for BLM managed lands in different management areas of the Hollister Field Office would support the accomplishment of other cultural resource management actions.

## 4.13.2 Overview of Impacts and Mitigation Measures

### 4.13.2.1 Impacts to Cultural Resources

Virtually all impacts under the NEPA are defined as adverse effects for purposes of compliance with Section 106 of the NHPA. According to 36 CFR 800.9(a), "an undertaking has an effect on a historic

property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the National Register." An effect is considered adverse when the effect on a National Register-eligible property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association. These effects are caused primarily by direct impacts of soil-disturbing activities and indirect impacts by authorized management actions from other resource activities such as road, grazing, and fire management. Adverse effects include the physical destruction of all or part of the property. Adverse effects on historic properties include, but are not limited to,

> Physical destruction or alteration of all or part of the property;
>
> Isolation of the property from or alteration of the property's setting when that character contributes to the property's qualifications for listing in the National Register;
>
> Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting;
>
> Neglect of a property resulting in its deterioration or destruction;
>
> Transfer, lease, or sale of the property.

These adverse effects would be permanent and direct impacts on the resource because the sites are non-renewable that can be irretrievably lost if subject to certain management actions. The effects can be mitigated by a variety of methods based on the type of site and proposed action. The chosen method(s) is determined by consultations between the Federal agency, SHPO, and the Advisory Council on Historic Preservation with applicable Native American tribes and the public as necessary.

Impacts to Cultural Resources from OHV Activity

Although impacts to cultural resources come from a variety of different vectors (Chapter 3.13.1), one form of human-caused activity from has the potential to impact cultural resources in profound ways: OHV recreation. If this activity is mismanaged or poorly monitored on public lands, the potential for short-term and long-term adverse effects to all kinds of cultural resources becomes realized. Damage from OHV use can be direct, indirect, or both. For example, an archeological site's physical components can be directly impacted by irresponsible OHV use: vehicle "free-play" can accelerate the erosion of prehistoric soils or create artifact damage from vehicle crushing. Of course, it is the responsibility of the OHV user to follow designated trails and only use "open areas" for vehicle free-play. However it is also the responsibility of the Agency providing OHV use to clearly identify those designated trails and open areas. As a multiple-use Agency, it is one of the BLM's missions to provide safe OHV recreation where feasible and manageable.

The presence of OHV recreation is well established in California and the Clear Creek Management Area since the 1960s. During the early 1980s, the State of California Department of Parks and Recreation completed a study near the CCMA to augment the OHV recreation already occurring in the region. The report known as the Martin Ranch State Vehicular Recreation Area (SVRA) Feasibility Study (1984) reviewed the known cultural resources information west of the CCMA. The study included some limited reconnaissance of the region in addition to the background data. The final report included recommendations and suggested mitigation strategies for cultural resources should the SVRA go forward. Their comments were brief but revealing in "Mitigation Measures 1:"

> All property north of the Cantua Creek watershed, including Peppergrass Flat, will be closed to OHV use or traded to BLM…In addition, the Joaquin Rocks area and the Arroyo Cantua battle site, including other recorded archeological sites along Cantua Creek, will be closed to OHV use or traded to BLM (DPR 1984:35).

Two years later the BLM approved the Ciervo Hills - Joaquin Rocks Cultural Resource Management Plan, which cited a California Department of Parks and Recreation archeological inventory conducted for the proposed Martin Ranch SVRA study in 1985 by State Parks Archaeologist Herb Dallas. The State Parks inventory identified twenty-four new archeological sites in the Cantua Creek area. The recognition that these sites represented one of the state's least understood groups was regarded as "significant when considering protection and conservation of these resources" (USDI 1986b:3). The proposed Martin Ranch SVRA was never approved for implementation due to costs associated with the management and protection for threatened and endangered species, cultural resources, and air quality.

In the late 1980s and early 1990s, the BLM continued to plan for OHV recreation in the Hollister Field Office Area, with the CCMA the focus of the planning and studies to understand OHV-related impacts and management costs. A three-part Clear Creek OHV Feasibility Study was conducted by the Hollister Field Office, the results of which were somewhat incorporated into the 1995 CCMA RMP planning process. The study represented the "examination of the feasibility of developing OHV recreation outside the hazardous asbestos area in the Clear Creek Management Area" (USDI 1991:1).

The study considered twelve different factors: (1) soil erosion, (2) cultural resources, (3) threatened and endangered plants, (4) paleontological resources, (5) riparian areas, (6) water quality, (7) dust emission regulations, (8) non-OHV forms of recreation, (9) visual resources, (10) livestock operations, (11) active mines and claims, and (12) adjacent land uses (USDI 1991:1-3). For the purposes of the study, a 102,000 acre area was divided into seven subareas for analysis: Byles Canyon, Larious Canyon, San Carlos Bolsa, Cantua Creek, Joaquin Ridge, White Creek, and Condon Peak (USDI 1991:4).

In the cultural resources segment of the study, the general recommendation was that even though each subarea was "certain to contain some cultural resources, they are certainly many alternatives to avoid impacting archaeological sites" (USDI 19991:16). It was further recommended that site-specific inventories be completed before any kind proposed surface disturbances, and if "any significant sites result from those surveys, avoidance of those sites is to take precedent over mitigation" (USDI 1991:17).

More specific recommendations from the study pertaining to cultural resources and proposed OHV recreation outside of the HAA and ACEC were:

> Byles Canyon Study Area - "In the event that increased OHV use is planned for the Clear Creek Canyon mouth, the remaining sites located nearby should first be evaluated. Access to the immediate area surrounding these sites should be restricted until they are evaluated" (USDI 1991:18).
>
> White Creek - "In fact, these sites have already suffered extensively from looting; increased access would aggravate the situation. In the event that OHV use will be allowed in the area, measures should be taken (fencing) to prohibit any access" (USDI 1991:19).
>
> Condon Peak - "The south-southwest portion of the study area along Los Gatos Creek contains the highest potential for habitation sites. Many habitation sites known to contain burials are situated on private land along Los Gatos Creek. In fact, that potential exists along all of the bigger watercourses in the OHV study area (see White Creek)" (USDI 1991:19).

These conclusions are still valid and would be applicable to any Alternative that proposes OHV recreation beyond the Current Management situation.

Probably one of the better studies related to the characterization of potential negative effects and impacts from OHV-based recreation on cultural resources is "The Effects of Off-Highway Vehicles on Archaeological Sites and Selected Natural Resources of Red Rock Canyon State Park" (2007) by

Associate State Archaeologist Mike Sampson for California State Parks. This study was initiated to investigate OHV use and its effects upon cultural and natural resources within Red Rock Canyon State Park in Kern County and to identify "some practical measures to address problems associated with off-highway vehicle use" that may apply to the management of vehicular recreation in State Parks or other OHV use areas (Sampson 2007:1).

Some of the earliest OHV effect studies on cultural resources were performed by the BLM in California in the 1960s and 1970s. OHV-related damage was identified as the since "significant source of damage to archaeological sites and other historic properties, second only to development" (Sampson 2007:3). It became understood that OHV recreational use had the unintended consequence of enabling artifact collectors and looters to access vast areas of public land. As OHV technology improved, some lands which were formerly difficult to access became within reach. Irresponsible OHV use was documented as the primary cause for the "inadvertent or purposeful destruction of significant cultural features," occurring most frequently in areas closed to roads or campgrounds (Sampson 2007:4).

The Red Rock Canyon study identified thirty-six archeological sites within the State Park that were traversed by Park roads or "informal" OHV trails. Thirteen of the sites were prehistoric habitation locations with another eleven sites identified as prehistoric lithic scatters; the remaining twelve sites were historic camps or other resource. In fact, a historic stage station site is "regularly crossed by OHV traffic" (Sampson 2007:5).

Sampson's description of visitor use and recreation at Red Rock Canyon State Park mirrors the recreational activity that occurs at some of the historic sites in the CCMA, on both private and public land:

> The site of Cudahy Camp has been impacted by modern-day camping and vehicle activity. Illegal target shooting would occur at this location and considerable trash has been left on-site by campers. The campers damage the remains of the historic buildings and displace surface artifacts. The site has now been closed to camping. OHV users perform unauthorized hill climbs on the edge of the residential area that leave the bare slopes scarred and highly susceptible to erosion (Sampson 2007:8).

Although there was physical damage at each cultural resource, 17 of the 36 archeological sites in the study (46%) exhibited "pronounced damage resulting from regular OHV use and erosion that follows from vehicular activity." This more intensive damage included "measurable deflation of the sites within road beds or the trail treads, degradation of cultural deposits, vehicle scars resulting from off-trail riding, road damage requiring extensive and costly restoration efforts, loss of soils in measurable volumes, loss of vegetation, creation of deep gullies, displacement and damage to artifacts and cultural features, modern-day trash left on-site, [and] alteration of natural hydrologic patterns" (Sampson 2007:9).

#### 4.13.2.2 Mitigation Measures for Cultural Resources

If a proposed action or an existing land use has the potential for adversely or otherwise negatively affecting the characteristics which contribute to the Use Allocation determined for a cultural resource (or the qualities which qualify a property for the National Register of Historic Places), the BLM shall ensure that appropriate conservation treatment or mitigation measures are carried out. The preferred strategy for treating potential adverse effects on listed or eligible properties is avoidance. If avoidance is imprudent or infeasible, a range of alternative physical and administrative conservation measures are be considered. The BLM employs these conservation measures as management tools to protect and mitigate impacts to cultural resources.

Physical Conservation

Physical conservation measures can be applied *directly* to the cultural property or *indirectly* to the general site area, such as signing, fencing, or patrolling. The following methods describe the direct physical conservation measures used by the BLM:

Stabilization - Structural and material stabilization techniques introduce chemical, mechanical, or structural elements to retard the deterioration of a variety of cultural resources.

Erosion Control (on-site) - Examples of on-site erosion control measures include recontouring a site's surface to promote better drainage, and backfilling illegally excavated areas.

Fire Control (on-site) - Effective on-site fire control is limited primarily to preventive measures.

Detailed Recording - This non-destructive technique may include the use of detailed mapping using surveying equipment, photogrammetry, aerial and standard photography, use of electronic equipment such as magnetometers, and narrative descriptions.

Relocation - This alternative is largely limited to structures and to some forms of rock art, such as boulders containing petroglyphs. Relocation of structures usually is expensive and requires special skills and equipment.

Adaptive Reuse of Structures - The adaptive reuse of historic structures should be considered before selecting some more potentially destructive methods (such as relocation). After rehabilitating a structure consistent with its historic character it may be usable in its original location.

Archeological Data Recovery - Archeological data recovery includes those techniques that maximize controlled collection and/or excavation of cultural materials and data analysis. Excavation should be attempted only when other protection alternatives are not adequate or feasible to protect the scientific information contained in the property.

Indirect conservation measures refer to the second type physical conservation techniques that do not directly modify the cultural resource. For this reason they are often preferable to direct physical conservation methods. The following strategies are indirect methods used by the BLM:

Signs - Under conditions of active or potential vandalism, cultural properties should be adequately signed, identifying the protection afforded by law. Signs should be placed so as not to intrude upon the property or to draw unwanted attention to it. Interpretive signs may also be appropriate for some properties and may protect them by promoting conservation ethics.

Fences and Gates - Fences, barriers, and gates of various materials can be used alone or in combination with other methods to restrict access. The selection of designs and materials must avoid unwarranted intrusion on the property. Maintenance costs and safety requirements must also be considered in the design.

Patrols and Surveillance - Patrols and surveillance are determined by and scheduled according to the nature of the resource, degree of threat present, and the uses appropriate for the cultural resources involved. Irregularly scheduled patrols are among the best means of deterring looting, vandalism and other unauthorized uses. Surveillance can be accomplished through "stake-outs" or remote detection systems; however, installation of surveillance equipment should not impair or compromise the integrity of the cultural resources.

Erosion Control (off-site) - Flooding, seepage, major runoff, movement of soils by wind action, and other potential erosion problems can be monitored and controlled. Erosion control performed off-site can generally be accomplished at lower cost and with fewer disturbances to the resource than on-site erosion control.

Fire Control (off-site) - An active fire protection program should include cultural resource values in pre-suppression, suppression, and post-suppression activities. Periodic inspections at historic sites may be undertaken to determine potential fire hazards. Pre-suppression measures include fire retardant treatments, reduction of fuel, construction of fuel breaks, and site-specific fire action plans. Post-suppression analysis should consider physical conservation measures needed to restore the setting and/or rehabilitate the resource damaged by fire and suppression activities.

If physical conservation measures are applied to a cultural resource, then it is important that consider that maintaining cultural resource integrity is usually preferable to resource relocation or the use of data recovery techniques as these methods will permanently alter the nature of the resource, perhaps adversely. Physical conservation measures and methods should be carefully selected to fit the nature of the property and the data being protected, to be reasonably reversible, and disturb the least practical amount of the property.

Long-term costs and feasibility of site maintenance must be considered in project design and the effectiveness of implemented conservation measures should be routinely monitored. If a cultural property that is scientifically significant cannot be preserved in place, the loss of research potential can sometimes be reduced through various data recovery techniques with well-defined study topics and data collection priorities related to the resource.

Administrative Conservation

Administrative conservation measures can also mitigate impacts to cultural resources. These measures do not involve physically altering the resource and generally cost less to implement and manage than physical protection/mitigation measures. Administrative conservation strategies used by the BLM for cultural resources include:

Withdrawals - Protective withdrawal of lands (43 CFR 2300-2370) means withholding an area from settlement, sale, location or entry under the general land laws and mining laws.

Closures to Public Access and/or Off-Highway Vehicle Use - Areas may be temporarily closed to public use and travel (43 CFR 8364 and 8340) to facilitate special cultural uses or to protect scientific values. Public lands may also be designated as indefinitely limited or closed to the use of OHVs.

Special Designations - Individual cultural properties or districts may be nominated to and listed on the National Register of Historic Places (NRHP) to recognize and reinforce their special management status (36 CFR 60 and 65). Areas of Critical Environmental Concern (ACEC) may also be designated to address special management needs for cultural resources.

Land Acquisitions - State or privately owned portions of Federal cultural properties or adjacent State or private lands may be acquired through exchange, purchase, or deed to maintain site integrity or to provide buffer areas (43 CFR 2200).

Recreation and Public Purposes Act - This Act allows transfer of land to State or local government agencies or other entities (such as historical societies, conservation groups) under a

conditional lease or patent (43 CFR 2740) and can be used to allow other entities to protect and develop cultural properties for public use when it is impractical or infeasible for the BLM.

Easements - BLM may acquire an easement to ensure administrative access to a cultural property or to install physical conservation measures on non-Federal lands to protect BLM-administered cultural properties.

Public Information and Education - Efforts to inform and educate the public about local cultural resource significance and conservation ethics may help decrease vandalism and ensure compliance with use restrictions.

There are several considerations when applying administrative conservation measures as a means of cultural resource management. Implementation of these measures often requires considerable lead-time and support from other resource specialists, professionals, and adjoining land owners or lease holders. The physical environment should also be protected from incompatible visual and structural intrusions by consideration of an appropriate buffer area if necessary. It is important that the immediate setting of the property should be managed in a manner consistent with established resource protection objectives. Lastly, a periodic review of implemented conservation measures is needed to evaluate their long-term effectiveness.

Mitigating Impacts to Cultural Resources from OHV Activity

The General Recommendations from the State Parks study in Red Rock Canyon provided for the protection of cultural resources with achievable goals and mitigation management strategies while affording continued OHV recreation and access (Sampson 2007:10):

Provide a map of Red Rock Canyon State Park to the public that clearly illustrates roads and trails and lists park rules and regulations;

Implement an active program of archeological, biological, and geologic monitoring in the Park and include a provision to study vehicle effects;

Separate OHV use from other recreational pursuits such as, camping, bird watching, observing wildlife, studying plants, seeking solitude, taking photographs, etc., where feasible;

OHV use is incompatible with Indian people conducting ceremonies;

Large boulders or other natural materials, fencing, and road obliteration are the most effective barriers for closing roads and informal or unauthorized OHV trails to protect archeological sites;

Regularly patrol the backcountry.

All of the above management recommendations would be effective for cultural resource protection in the CCMA. Each of these strategies relies on Agency support, user compliance, and regular review of the implemented measures to evaluate their level of success. In fact, several of these methods are already utilized in the CCMA to achieve desired cultural resources conditions.

### 4.13.3 Impacts and Mitigation Common to All Alternatives

The CCMA was previously inventoried for cultural resources in order to generate baseline data to be used in CCMA planning efforts. Based upon that report and other data accumulated over the years, a comprehensive cultural resources management strategy for the region has been developed with protection

efforts for cultural resources that include site avoidance, physical barriers, site monitoring, and review of proposed undertakings to address potential effects to cultural resources.

Subsequent inventory efforts have been and are currently being performed on a project-specific basis as needed, specifically when a proposed project or event moves beyond those projects/activities not included in the "Exempt Undertakings" section, outlined in Appendix C of the Programmatic Agreement (PA) between the California Bureau of Land Management (BLM) and the California State Historic Preservation Officer (SHPO). The PA is designed for the BLM to "integrate its historic preservation planning and management decisions with other policy and program requirements to the maximum feasible extent in the public interest." The PA meets the Section 106 requirements of the NHPA to "take into account the effects of the agency's undertaking on properties included in or eligible for the National Register of Historic Places" (NRHP) as cited in 36CFR800.1(a).

There are at least four dozen prehistoric and historic archeological sites and localities within the CCMA and nearly as many sites on the lands adjacent to the CCMA Planning Area. Many of these sites and localities have been affected over the past years by mining use and reuse, OHV-related vandalism and erosion, and begin neglect. The most visible archeological resources are the mining landscape and related features related to mercury extraction and processing. Some of these historic mining resources have been evaluated for their cultural values as part of Abandoned Mine Lands (AML) projects concurrent with the PA and National Environmental Policy Act (NEPA).

Although the creation of campsites in the CCMA has affected several prehistoric archeological sites (lithic scatters), the most significant impacts have been from illegal and uncontrolled artifact collection. Collectors have probably removed most of the outstanding examples of Native Californian workmanship from the CCMA, but perhaps there are more examples of their crafts in situ. Likewise, historic mine sites have been collected from or used as firewood and/or target practice by the camping public. A program of archeological site monitoring for parts of the CCMA was implemented by the BLM in 1989 to observe changes to archeological sites from either human or natural causes. Based upon a successful program after four years, the monitoring program was extended and similar efforts were concentrated at other sites. Overall, the sites appear to be in a relatively static condition. No new observable impacts or changes to the sites have occurred since monitoring has been implemented. For example, CA-SBn-167 has been fenced out from the public on either side of Clear Creek road. CA-SBn-170 was fenced out from the public to protect the archeological values and botanical habitat from unauthorized OHV use. No new impacts to either site have been observed since the fence construction.

Demonstrated use conflicts with desired cultural resource management conditions at a particular archeological site or Native American traditional use area can resolved through the use of the Route Designation Criteria (Appendix A), the Barren Designation Criteria (Appendix B) and Best Management Practices (Appendix D) established in the 2006 Clear Creek Management Area Resource Management Plan Amendment and Route Designation Record of Decision (2006). For example, a single "open barren" originally designated for OHV-use on route R2 within the Clear Creek Serpentine ACEC is near a known contemporary Native American traditional use area (continued use of this barren is also likely to negatively affect soils erosion and endangered species). Unintended OHV use off of the designated barren has impacted traditional use activities at this location, but through rider education and better signage for temporary route closures this multiple-user conflict has been resolved. If user conflicts persist at the site (including continued and persistent off-trail OHV usage) then re-designation of routes and/or barrens is permitted and authorized. In conjunction with site monitoring, re-direction of recreation user activities is one of the Best Management Practices available to protect cultural resources.

All of the Alternatives provide for consideration of historic properties consistent with authorities and responsibilities under applicable Federal statutes and their implementing regulations. This includes the

analysis of authorized land uses, as necessary and on a project-by-project basis, in terms of their potential to impact historic properties either directly (construction and other ground-disturbing activities) or indirectly (grazing, recreation, increased use of public land). All Alternatives also recognize the increasing importance of government-to-government consultation with Native American tribes and other concerned parties on specific undertakings involving various authorized land uses. Authorized uses with high potential to directly impact historic properties include tree harvesting, mineral extraction, road and pipeline construction, and facilities construction. Undertakings with moderate potential to directly or indirectly impact historic properties include controlled burns and other vegetation management practices, grazing, and increased traffic on public lands as a result of improved recreational opportunities or other land use programs. Compliance with Section 106 of the NHPA is intended to promote the protection and preservation of historic properties so that authorized use of public lands would not result in adverse impacts to National Register-eligible archeological sites, traditional cultural properties, or built environment resources. However, when avoidance of adverse impacts is not feasible due to overriding project or land use considerations, mitigation measures may be implemented.

## 4.13.4 Impacts and Mitigation for Alternative A (No Action Alternative)

### 4.13.4.1 Cultural Resources Management Actions

Archeological and Historic Sites

The guidance for successful route designation within the CCMA was established in the 2006 ROD for the CCMA RMP Amendment. By adhering to the "guiding criteria" affecting access to routes, utilizing applicable management guidance established by the, and relying on a solid route/barren designation methodology that balances science and user need (Cultural and Paleontological Resources review as a potential resource concern, TIER 1), route and barren designation for the CCMA would not adversely affect any cultural resources. Of course as new information is gathered from archeological inventory and excavation, and new ethnographic data is revealed from Native American concerns, future undertakings and projects within the CCMA would address this new data and management strategies would adapt if warranted.

Direct impacts to archeological or historic properties as a result of implementing the Best Management Practices (BMPs) - including enclosing or restricting public access to them - are likely to be negligible. Indirect impacts may occur as a result of drawing unwanted attention (i.e., vandals or collectors) to site locations through placement of fences or barriers intended to protect the resources. These impacts may be avoided by consultation with the Native American community, monitoring fenced areas, or by using natural barriers rather than fences to enclose sensitive areas if feasible. Taking administrative and/or on-the-ground measures to protect historic properties would not result in any cumulative impacts.

In general, Alternative A (No Action) would result in a moderate amount of disturbance to cultural resources.

Native American Values

In close coordination with federally recognized or non-federally recognized tribal groups, work to provide access to public lands managed by the BLM for the purposes of traditional cultural practices involving the maintenance of California Indian sociocultural systems. In some cases, the BLM will attempt to promote access on private lands adjacent to BLM in consultation with neighboring land owners.

#### 4.13.4.2 Mitigation

Redesigning or relocating project components that have the potential to adversely affect historic properties contributes to their protection and would not result in direct, indirect or cumulative impacts. However, enclosing archeological sites with fencing may result in indirect impacts by drawing unwanted attention (i.e., vandals or collectors) to site locations; Native Americans may also object to the presence of fencing around traditional cultural properties or other traditional use areas. These impacts may be avoided by monitoring fenced areas or by using natural barriers rather than fencing to enclose sensitive areas. No direct or cumulative impacts would occur as a result of enclosing or restricting public access to historic properties.

Mitigation for this Alternative includes measures to protect sites by restricting access or installing fences; monitoring all known archeological sites "at-risk" on public lands for use impacts; and on-site resource interpretation installations.

#### 4.13.4.3 Other Management Actions

Closure of the CCMA since May 1, 2008, has had the unintended consequences of redirecting OHV recreation use to other areas in the Hollister Field Office that had been historically closed to OHV use or not been used for that form of recreation. The Panoche Hills were closed to OHV use in 1970, in particular two-wheeled vehicles, "due to resource deterioration" and the inability to "confine such use to designated areas" (USDI 1978:5). The Tumey and Ciervo Hills to the south were also closed to OHV use. The Kettleman Hills in Fresno County had to be officially closed to OHV use on March 26, 2007, in order to protect existing endangered species habitat on public land and an adjacent sheep grazing lease on public and private land. Since 2008, the Williams Hill area in southern Monterey County has new levels of OHV recreational use never before observed by the BLM. The desire for dedicated OHV recreation areas is understood; however the BLM is a multiple-use agency that must balance several interests - some with a potential to conflict with each other - in one area. The simple prohibition of one land-use activity for a given area does not entirely discourage that use, and in some instances can create new impacts to other areas that had not historically seen such use activities (Figure 4.13-1). It is the responsibility of the BLM to manage public lands "on the basis of multiple use and sustained yield" (FLPMA Sec.102 (7)).

**Figure 4.13-1**: Example of Self-Documented OHV Trespass in the Panoche Hills October 2008 ("Renegade," South Bay Riders Forum).

One observation to consider under this Alternative relates to the effects of OHV recreation. In the General Comments section from the 2008 Public Scoping Report Clear Creek Management Area Resource Management Plan and Environmental Impact Statement, this comment was submitted by a member of the California Native Plant Society:

> OHV is a large and growing sport. While it is destructive [sic], some public lands should be set aside for that activity. It may be better to keep OHV activity at Clear Creek then to consider another site where the downside of OHV use is not known (USDI 2008).

## 4.13.5 Impacts and Mitigation Common to Alternatives B, C and D

### 4.13.5.1 Cultural Resources Management Actions

Archeological and Historic Sites

Nominating eligible sites to the National Register for any areas of high cultural, historical, or archeological significance, along with the research and documentation necessary to justify it, contributes to the protection of historic properties and would not result in any direct, indirect, or cumulative impacts to the resources themselves, if properly implemented. If and when a National Register-eligible archeological site cannot be adequately protected from vandalism or its scientific data value is at risk, BLM may choose to realize significant direct impacts to the site and implement mitigation measures. Management actions would account for adverse impacts from unauthorized excavation and vandalism.

In general, Alternatives B, C, and D would promote the most amount of high-impact activity or development that could result in direct impacts to cultural resources.

Native American Values

Continue to coordinate and consult with federally recognized tribal groups to create better government to government relations for improved access to public lands. Moreover, consultation will continue with non-federally recognized tribes and groups to identify needs and develop better access policies to public lands.

#### 4.13.5.2 Mitigation

Mitigation for these Alternatives includes measures to protect sites by restricting access or installing fences; monitoring all known archeological sites "at-risk" on public lands for use impacts; and on-site resource interpretation installations. Fences or barriers would be used where necessary to protect sites from human caused or other disturbances. Data recovery would be initiated at archeological sites that are unable to be protected with administrative mitigation measures.

### 4.13.6 Impacts and Mitigation for Alternatives E, F, and G

#### 4.13.6.1 Cultural Resources Management Actions

Archeological and Historic Sites

The management actions would provide beneficial impacts for the protection of cultural resources by reducing adverse impacts from unauthorized excavation and vandalism. This suite of Alternatives would promote and enhance the goals for other use allocations by cooperating with research institutions and avocational societies to the extent possible in development areas.

Cultural resources outreach including on-site resource interpretation installations in the CCMA would increase public awareness of historic properties and of BLM efforts to protect known resources. This management action would not result in any direct adverse impacts to these resources. Indirect or cumulative impacts to the resources themselves may have some minor effects.

An example of the "vehicle tours" component discussed in Alternatives E has already been attempted with some success (Figure 4.13-2). In May 1989 the BLM Hollister Field Office led a tour of "historic, geologic, and archaeological sites" with participants in the Molina Ghost Run, a four-wheel OHV recreation club. The tour included visiting Clear Creek Canyon, Alpine Mine, Picacho Mine, New Idria, a "Prehistoric Indian Site," the San Benito Mountain Natural Area, KCAC Asbestos Mine, and the Gem Mine.


**Figure 4.13-2**: BLM Jeep Tour for the public in the CCMA (Unknown, USDI BLM).

The concept of creating a visitor-use "park" in the CCMA would also be feasible for cultural resources. A good analogy for this interpretive approach would be the Almaden Quicksilver County Park near San Jose, California (Figure 4.13-3). This 4,152 acre park is operated and maintained by the Santa Clara County Parks Department. The park contains numerous historic features related to mercury mining during the mid to late 19th century, very similar in historic theme to the CCMA and nearby New Idria.

**Figure 4.13-3**: Santa Clara County Parks Interpreter John Slenter with the visiting public at Mine Hill in Almaden Quicksilver County Park (R. Morris, Santa Cruz Archaeological Society).

In general, Alternatives E, F, and G would promote the least amount of high-impact activities or development and would result in the fewest potential impacts to cultural resources.

Native American Values

Continue to coordinate and consult with federally recognized tribal groups to create better government to government relations for improved access to public lands. Moreover, consultation will continue with non-federally recognized tribes and groups to identify needs and develop better access policies to public lands.

#### 4.13.6.2 Mitigation

Focusing research opportunities into areas favored/planned for future development contributes to the long-term protection of historic properties. By providing increased protection measures and limiting public access to historic properties, these Alternatives would probably result in a minimum level of cumulative impacts on historic properties and nonrenewable cultural resources.

### 4.13.7 Cumulative Effects

Cumulative effects on archaeological sites, traditional cultural properties, and historic resources are caused by impacts (both mitigated and non-mitigated) that can occur over a long period of time, resulting in the gradual but permanent loss of archaeological data as well as the diverse culture history represented

by those properties. In this sense, cumulative losses of cultural resources in the project area also have the potential to indirectly affect Native American groups and various other populations with a history of settlement and land use in the region. Specific site types that embody this culture history are prehistoric habitation and resource procurement sites, rock art, sacred sites, mission-related sites, and historic ranching, mining, and agricultural sites. While impacts to historic properties may be considered "mitigated" by the retrieval of scientific data from archaeological sites, or by the recovery of historical data present in built resources (e.g., buildings, structures, landscapes), the cultural heritage represented by these sites is a nonrenewable resource whose loss cannot be mitigated and thus constitutes a major and unavoidable negative cumulative impact.

All of the Alternatives include policies and actions to protect historic properties and promote/enhance their preservation management in conjunction with Sections 106 and 110 of the NHPA and other applicable Federal statutes and regulations, including the Federal Land Policy and Management Act of 1976 requirement to manage public lands in a manner that would "protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values." All of the alternatives provide for the identification of historic properties in the Planning Area, for the protection (through monitoring and/or enclosure) of all historic properties determined to be at risk from both authorized and unauthorized uses, and for data retrieval (excavation) of sites that can no longer be adequately protected. Although there is some potential for certain protective measures (e.g., fencing) to draw unwanted attention to sites or to restrict access to traditional use areas if properly implemented, site monitoring and other security strategies are generally beneficial and do not result in direct, indirect, or cumulative impacts to the resources.

While cumulative effects on cultural resources are difficult to predict, increased or strengthened management programs for the protection and long-term preservation of historic properties will ultimately prevent major cumulative effects from occurring. Under each Alternative there are possible cumulative effects to resource types in areas that receive increased use from potential ground disturbing activities; these resource types and areas will require more intensive management and mitigation measures by BLM as demands rise. These demands could be potential uses for energy and mineral, grazing, transportation, recreation, and other approved land use authorizations. Additionally, there are potential cumulative effects from increased public awareness of cultural resources – the risk of vandalism or theft rises. These cumulative impacts cannot be directly measured. Over time, these activities could impact resources permanently and result in an irretrievable loss to non-renewable resources. The protection or enhancement management actions of historic properties over a long period of time would not result in cumulative impacts.

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# 4.14 Paleontological Resources

## 4.14.1 Introduction

### 4.14.1.1 Management Responsibilities

Planning and management actions for paleontological resources on BLM lands are implemented in accordance with BLM Manual 8270 and Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management; Management of Museum Collections (DM 411); the Federal Land Policy Act of 1976; the National Environmental Policy Act of 1969; and other specific Federal regulations (outlined in DM8270). BLM policy laid forth in these guidelines is to promote the scientific, educational, and recreational uses of fossils on public lands; mitigate resource conflicts; and develop strategies to regularly monitor public lands where important paleontological localities have been identified.

Land use planning for paleontological resources includes the identification of areas and geologic units containing paleontological resources and an evaluation of the potential of areas to contain vertebrate fossils or noteworthy occurrences of invertebrates or plant fossils. Knowledge of geologic units and the kinds and quality of the fossils produced by such units is critical for proper management.

## 4.14.2 Overview of Impacts and Mitigation Measures

### 4.14.2.1 Impacts to Paleontological Resources

All BLM programs that may have an adverse impact on paleontological resources through their actions or authorizations are responsible as benefiting activities for funding any necessary resource inventories, evaluations or other work needed to avoid or mitigate adverse impacts on paleontological resources. In rare instances, paleontological resources may be found in association with cultural resources. Such occurrences fall under the provisions of the Archeological Resources Protection Act. In the event of such an occurrence the BLM will evaluate the discovery and determine an appropriate course of action that will safeguard both the paleontological and archeological materials.

Authorized Land Use Actions and Permitted Fossil Collection

Impacts from authorized land use management actions would be negligible because this activity is regulated through a permitting process. Potential impacts are addressed in mitigation measures required by the specific land use authorization or use permit.

Paleontological resources have high public education and recreation values. Such values can be enhanced by publishing guides to selected collecting areas and developing interpretive trails. Working collaboratively, BLM Paleontologists and Recreation Specialists can develop responsible and outstanding recreational and educational opportunities involving paleontological resources that will enhance public understanding of fossils and the science of paleontology, and showcase BLM's stewardship role.

Minerals management can have both positive and negative effects on paleontological resources. Mineral development and related activities, such as road building, can expose new fossil localities. Onshore Oil and Gas Order No. 1 provides the means, where necessary, to protect paleontological resources which may be adversely impacted by mineral development. Fossils are not locatable under the mining laws.

Finally, the management of paleontological resources shall be considered in Land Use Planning and Environmental Review by the BLM in accordance with appropriate laws and regulations.

Unauthorized Land Use Actions and Non-Permitted Fossil Collection

Impacts to fossil resources from unauthorized land use actions should be negligible given the paleontological sensitivity of geological units within the CCMA Planning Area. This is also applicable to possible non-permitted collection of vertebrate or otherwise scientifically significant fossils. However, important paleontological values outside the Planning Area could be impacted from unauthorized uses.

### 4.14.2.2 Mitigation Measures for Paleontological Resources

Any field surveys and/or inventories intended to protect paleontological resources will be targeted to specific areas or be issue driven as needed. Adverse impacts to paleontological resources shall be mitigated as necessary on a case-by-case basis. Mitigation requirements apply primarily to vertebrate fossils, however where noteworthy occurrences of invertebrate or plant fossils are known or expected, the same planning and mitigation procedures will be followed. Factors such as locality or specimen significance, economics, safety, and project urgency will be considered when developing mitigation measures. Additional mitigation measures (if necessary) would be developed and implemented as timely as possible so as not to delay project actions.

The preferred mitigation technique is to change the project location based on the results of field survey. If relocation will eliminate impacts and is acceptable to all parties, then approval for the project to proceed may then be granted. When avoidance is not possible, appropriate mitigation may include excavation or collection (data recovery), stabilization, monitoring, protective barriers and signs, a combination of the above, or other physical and administrative protection measures.

Physical Conservation

Physical conservation measures can be applied *directly* to the paleontological resource or *indirectly* to the general site area, such as signing, fencing, or patrolling. The following methods describe the direct physical conservation measures used by the BLM:

> Erosion Control (on-site) - Examples of on-site erosion control measures include re-contouring a site's surface to promote better drainage.
>
> Detailed Recording - This non-destructive technique may include the use of detailed mapping using surveying equipment, photogrammetry, aerial and standard photography, use of electronic equipment such as magnetometers, and narrative descriptions.
>
> Data Recovery - Includes those techniques that maximize controlled collection and/or excavation of paleontological materials and data analysis.

Indirect conservation measures refer to the second type physical conservation techniques that do not directly modify a paleontological resource. For this reason they are often preferable to direct physical conservation methods. The following strategies are indirect methods used by the BLM:

> Signs - Under conditions of active or potential vandalism, areas should be adequately signed, identifying the protection afforded by law. Signs should be placed so as not to intrude upon the property or to draw unwanted attention to it. Interpretive signs may also be appropriate for some properties and may protect them by promoting conservation ethics.

Fences and Gates - Fences, barriers, and gates of various materials can be used alone or in combination with other methods to restrict access. The selection of designs and materials must avoid unwarranted intrusion. Maintenance costs and safety requirements must also be considered in the design.

Patrols and Surveillance - Patrols and surveillance are determined by and scheduled according to the nature of the resource, degree of threat present, and the uses appropriate for the resources involved. Irregularly scheduled patrols are among the best means of deterring vandalism and other unauthorized uses. Surveillance can be accomplished through "stake-outs" or remote detection systems; however, installation of surveillance equipment should not impair or compromise the integrity of the cultural resources.

Erosion Control (off-site) - Flooding, seepage, major runoff, movement of soils by wind action, and other potential erosion problems can be monitored and controlled. Erosion control performed off-site can generally be accomplished at lower cost and with fewer disturbances to the resource than on-site erosion control.

Fire Control (off-site) - An active fire protection program should include paleontological resource values in pre-suppression, suppression, and post-suppression activities. Periodic inspections may be undertaken to determine potential fire hazards. Pre-suppression measures include fire retardant treatments, reduction of fuel, construction of fuel breaks, and site-specific fire action plans. Post-suppression analysis should consider physical conservation measures needed to restore the setting and/or rehabilitate the resource damaged by fire and suppression activities.

Administrative Conservation

Administrative conservation measures can also mitigate impacts to paleontological resources. These measures do not involve physically altering the resource and generally cost less to implement and manage than physical protection or mitigation measures. Administrative conservation strategies used by the BLM for fossil resources include:

Withdrawals - Protective withdrawal of lands (43 CFR 2300-2370) means withholding an area from settlement, sale, location or entry under the general land laws and mining laws.

Closures to Public Access and/or Off-Highway Vehicle Use - Areas may be temporarily closed to public use and travel (43 CFR 8364 and 8340) to protect scientific values. Public lands may also be designated as indefinitely limited or closed to the use of OHVs.

Special Designations - Areas of Critical Environmental Concern (ACECs) can be designated to address special management needs for paleontological resources.

Easements - BLM may acquire an easement to ensure administrative access to a paleontological locality or to install physical conservation measures on non-Federal lands to protect BLM-administered paleontological resources.

Public Information and Education - Efforts to inform and educate the public about local paleontological resource significance and conservation ethics may help decrease vandalism and ensure compliance with use restrictions.

## 4.14.3 Impacts and Mitigation Common to All Alternatives

If significant fossil resources were present in the CCMA, recreational activities such as motorized or non-motorized exploring off of designated roads and trails would create a need for protective measures to preserve fossil resources and mitigate adverse impacts. Unauthorized collection of paleontological resources would be a direct and permanent impact because such resources are non-renewable and irretrievable.

Paleontological resources can be directly impacted by construction and development activities; collection of fossils for scientific, educational, or recreational use; by trampling of animals and humans; and by natural erosion processes. Impacts from construction and development activities could be mitigated with appropriate measures specified in the required permitting documents, typically associated with energy and minerals or other land use authorizations. Soil erosion and floods could impact paleontological resources by exposing surfaces, particularly on steep slopes. Once exposed, these fossils would gradually degrade and/or be permanently impacted from unauthorized collection. The installation of temporary fences along margins of camp sites or other developments to eliminate project-related impacts to undisturbed areas would be required. If necessary, site-specific mitigation would be initiated, and fencing might be made permanent. Contract studies could be required if impacts to significant sites could not be avoided. Relocation of proposed developments would be preferred to avoid impacting significant paleontological sites and localities.

## 4.14.4 Impacts and Mitigation for Alternative A (No Action Alternative)

### 4.14.4.1 Paleontological Management Actions

Impacts from authorized paleontological management actions would be negligible because these activities are regulated through a permitting process. Potential impacts are addressed in mitigation measures required by the specific use authorization or use permit.

Impacts to vertebrate fossil resources from unauthorized use or collection should be negligible given the paleontological sensitivity of geological units within the CCMA Planning Area. This is also applicable to the possible non-permitted collection of otherwise scientifically significant fossils, including invertebrate or botanical specimens.

### 4.14.4.2 Mitigation

Mitigation measures would be incorporated into management actions, such as installing temporary fences, maintaining buffer zones, relocating development, data recovery, or even stabilizing and rehabilitating soils. Additional mitigation measures are outlined in other Chapters of the Environmental Consequences sections of this RMP.

### 4.14.4.3 Other Management Actions

Impacts would include the authorized and unauthorized uses from construction and development activities (energy and minerals and other land use authorizations), soils erosion, grazing, recreation, transportation - wherever soil disturbances occur. Unless mitigated, these activities would cause permanent long-term impacts on non-renewable and irretrievable paleontological resources.

Paleontological resources would benefit from soil resource management actions that control erosion and avoid surface disturbance on steep slopes or during wet periods. Due to high erosion rates on steep slopes in the Planning Area, soil resource management actions would reduce potential impacts to significant paleontological resources from moderate and minor to negligible and would cause a beneficial impact by

mitigating the constant exposure of subsurface materials, including new fossils. If exposed for long periods of time, these fossils would erode from the confining sediments and gradually deteriorate.

## 4.14.5 Impacts and Mitigation Common to Alternatives B, C and D

### 4.14.5.1 Paleontological Management Actions

Impacts would be similar to those in Alternative A.

### 4.14.5.2 Mitigation

Mitigation measures would be similar to those in Alternative A. Require the installation of temporary fences along margins on developments to eliminate off-site project-related vehicle impacts to undisturbed areas. Site-specific mitigation would be initiated, if necessary, through contract studies if impacts to significant sites could not be avoided. Impacts from this management action would depend upon the significance of the resource being impacted in areas where construction would continue.

## 4.14.6 Impacts and Mitigation for Alternatives E, F, and G

### 4.14.6.1 Paleontological Management Actions

Impacts would be similar to those in Alternative A. These Alternatives promote less high-impact activity and more protection of ecological resources; this may reduce the potential for major impacts to paleontological resources (if present).

### 4.14.6.2 Mitigation

Mitigation measures would be similar to those in Alternative A. Should natural erosion threaten the integrity of significant fossil resources in the Planning Area, efforts would be made to stabilize and rehabilitate these resources on a case-by-case basis. Impacts from this alternative would depend upon the scientific significance of the resources stabilized. Ideally work would be accomplished with preservation groups or societies to conserve the resource in situ.

## 4.14.7 Cumulative Impacts

The long-term desired outcome of managing paleontological resources is to ensure their availability for future scientific, educational and/or recreational uses. Such uses include collection, site interpretation, in site preservation, study and exhibition.

Within the CCMA, cumulative impacts related to all management actions that could potentially affect paleontological resources would be negligible, with minor to moderate cumulative impacts related to potential unauthorized fossil collection or the mechanical breakage and disarticulation of surface fossils due to trampling by animals or human activities. Cumulative impacts from paleontological management would also be negligible.

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# 4.15 Social and Economic Conditions

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goal for social and economic conditions is to manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.

## 4.15.1 Introduction

As described in Section 3.15.2, the population of the Planning Area is large by any standard, but especially so relative to the small public land base administered by the HFO. The population within the HFO boundaries is important because it represents the potential user and customer base that could make demands on BLM resources based on the management action selected from the alternative. Nevertheless, the size of the economy associated with the population within the Planning Area would dwarf any of the social and economic contributions made by public land resources.

To better focus on local population pressures and local socioeconomic impacts, two analysis areas were defined within the larger population and economy of the HFO – the Central Coast and the Diablo Range. The Central Coast focuses on Santa Clara, Monterey and Santa Cruz counties. The Diablo Range analysis area focuses on San Benito, Fresno, and Merced Counties and is where CCMA is located.

Table 4.15-2 describes projected population growth in individual counties, the Central Coast analysis area, the Diablo Range analysis area, and California, between 2000 and 2030, representing the period during which the CCMA RMP would be implemented.

**Table 4.15-2 Projected Population Growth, 2000–2030, HFO and Local Analysis Areas**

| County | 2000 | 2010 | 2020 | 2030 | % Change 2000-30 |
|---|---|---|---|---|---|
| Fresno | 803,401 | 949,961 | 1,114,654 | 1,297,476 | 61.5 |
| Merced | 210,876 | 277,715 | 360,831 | 437,880 | 107.6 |
| San Benito | 53,770 | 62,530 | 73,547 | 84,727 | 57.6 |
| **Diablo Range** | **1,068,047** | **1,290,206** | **1,549,032** | **1,820,083** | **226.7** |
| Santa Clara | 1,691,183 | 1,844,146 | 2,006,992 | 2,152,963 | 27.3 |
| Monterey | 403,636 | 453,292 | 505,359 | 556,962 | 38.0 |
| Santa Cruz | 256,874 | 271,222 | 286,044 | 294,711 | 14.7 |
| **Central Coast** | **2,351,693** | **2,568,660** | **2,798,395** | **3,004,636** | **80.0** |
| **CA State Total (mil.)** | **34.0** | **39.2** | **43.9** | **48.1** | **41.3** |

Growth in the entire 12 county Hollister Field Office boundary is projected to be about 44 percent over this period. Within the HFO though, the fastest rates of growth would be in those counties that make up the Diablo Range analysis area, which is projected to grow over 200 percent during the period, compared to the 80 percent growth expected in the Central Coast analysis area. These estimates speak to the anticipated continuation of high annual growth rates in the areas of the San Joaquin Valley and Central Valley, where the cost of living, especially the cost of housing, is generally lower. Growth in Santa Cruz

County would be very low, whereas Monterey County's growth would be about the same as that of the state and the rest of the HFO. Most of Monterey County's growth would occur in the Salinas Valley, in the communities of Salinas, Gonzales, and Soledad; which are all in close proximity to the CCMA. In addition, population growth in Marina is expected to exceed 100 percent, as development increases on the former Fort Ord lands. (AMBAG 2004).

While annual rates of growth are not very high, less than 1 percent in the Central Coast and less than 2 percent in the Diablo Range, the absolute increase in each area is substantial. Population in the Central Coast analysis area is projected to increase by almost 350,000 and in the Diablo Range by over 500,000. The implication of these numbers is that demand for multiple public land uses, particularly recreation, will also continue to grow.

## 4.15.2 Overview of Impacts

### 4.15.2.1 Social and Economic Conditions

Management actions under Alternatives A-F would provide the BLM the ability to provide social and economic benefits from recreation and other multiple uses to local residents, business, visitors, and future generations.

By allowing various levels of opportunity for tourism, production, industry, and/or commodity use of natural resources, social and economic conditions are highly influenced by the range of alternatives and management actions under each resources program, such as recreation, energy and minerals, livestock grazing, and other natural resources with values requiring maintenance and protection by law. The effects of the range of alternatives and management actions on social and economic conditions are described below.

### 4.15.2.2 Natural Resources Management Actions

Under all alternatives, proposed actions for some resources would have no measurable direct impact on social or economic conditions. These resources are air quality, soil resources, water resources, biological resources, special designations, and paleontological resources. This is not to say that management of these resources is not important to the quality of social and economic life in the HFO; management of natural and public use resources in accordance with established laws and regulations is critical to the long-term social and economic health of local and regional economies and social systems. That level of management is assured though by all alternatives. The management changes proposed for these resources in the alternatives may have some marginal social and economic impacts, but those impacts would not be substantially adverse or beneficial. For that reason, discussion of the socioeconomic effects of changes in CCMA management will be limited to those resources described in Section 3.15 as having some measurable socioeconomic impact – recreation, energy and minerals, livestock grazing, and lands and realty.

### 4.15.2.3 Cultural and Heritage Resources Management Actions

The BLM has a continuing responsibility under Section 106 of the National Historic Preservation Act and the BLM Nationwide Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers (updated, 2009) to participate in government-to-government consultation with federally recognized tribes regarding cultural resource values on public land. The Programmatic Agreement also provides for consultation with non-federally recognized Native American groups that express interest in using ceremonial sites or traditional resource gathering areas that are now located on public lands. Until recently, the only specific locations in the

CCMA identified as having possible cultural/heritage value to area Native American groups are portions of the Condon and San Benito River management zones. Historic mining operations are also dispersed throughout the CCMA, though most of the remnants of these activities have deteriorated through natural processes or been degraded by vandalism and unauthorized collection. Through public outreach and involvement, Native American interests have also indentified concerns regarding access to ancestral sites in the Larious Creek watershed of the CCMA. It can also be assumed that Native American groups would place heritage values on any prehistoric or ethnographic period archaeological site containing cultural artifacts, including human burials. It is also likely that many sites and areas of potential cultural/heritage concern to Native Americans exist on public lands and simply have not been identified to date by either the BLM or the Native American individuals or groups.

Section 2.4.13 addresses specific cultural resources goals, objectives, and management actions for the CCMA under the range of alternatives to encourage and promote Native American access to sites of cultural value on public land. The management changes proposed for these resources in the alternatives may have some marginal social and economic impacts, but the only impacts to Native American interests and other CCMA visitors that would be substantially adverse would be under Alternative G, as a result of the complete loss of access to areas with cultural and heritage resource values.

#### 4.15.2.4 Recreation (and Transportation) Management Actions

Recreation use of public lands is expected to increase as population grows not only in the Central Coast and Diablo Range areas that support local use but also throughout the HFO and California. If recreation use were to grow at a rate proportional to population growth in the Central Coast and Diablo Range areas, over 50,000 annual visits would be expected, compared to the estimated fiscal year 2006 use of 43,000 visits. However, a more likely scenario is that the increase in recreation visits would far exceed population growth as competition for recreation space accelerates and as word of the recreation opportunities on BLM lands in CCMA spreads. If use were to triple during the life of this RMP/EIS, over 90,000 visits annually would be expected. At this level of use, annual expenditures in support of recreation on public lands in the CCMA might reach as much as $4 million in current dollars. Although still an inconsequential level compared to Central Coast and Diablo Range economies, it is likely that some individual businesses, like motorcycle shops in Salinas and Hollister, would continue to rely greatly on OHV recreation activity in CCMA, which currently represents about 80 percent of total use in the CCMA.

Although demand for access to hunting would increase as population increases, the level of hunting activity in the Diablo Range area is unlikely to grow even at the rate of population since the activity is tied more to the number of animals rather than the demand for hunting. Hunting clubs and individuals that benefit financially from providing access to hunting on public lands would continue to benefit and may see access fees increase as demand grows. Businesses that would benefit from this activity are likely to be dispersed outside the Diablo Range analysis area.

Beyond any economic benefits of public land recreation, population growth in the face of a static number of opportunities for dispersed, outdoor recreation would cause the value of this type of recreation to be magnified. As indicated in Section 3.15.4, public lands are already among a limited number of venues in the Central Coast and Diablo Range areas that allow residents to escape the press of population and find a sense of isolation. That experience would become even more valued as population grows.

#### 4.15.2.5 Environmental Justice

The requirements for environmental justice review during the environmental analysis process were established by Executive Order 12898 (February 11, 1994). That order declares that each Federal agency

is to identify "disproportionately high and adverse human health or environment effects of its programs, policies, and activities on minority populations and low-income populations."

Table 4.15-3 describes estimated ethnicity in 2000 and projected future ethnicity in 2010, 2020, and 2030 in the Central Coast and Diablo Range analysis areas. The growth in the percentage of the population described as Hispanic is projected to be very rapid in both the Central Coast and the Diablo Range analysis areas, exceeding even the rapid growth of the Hispanic population for California as a whole. The population described as American Indian would also increase in both areas although the total percentage would remain small. The African American and Asian-Pacific percentages remain smaller than comparable State figures over the period.

**Table 4.15-3 Ethnicity, Central Coast and Diablo Range, 2000–2030**

| Area | Ethnicity, Percent | | | |
|---|---|---|---|---|
| | Hispanic | African American | American Indian | Asian-Pacific |
| **2000*** | | | | |
| Central Coast | 38.4 | 2.7 | 0.5 | 5.2 |
| Diablo Range | 44.8 | 4.6 | 0.8 | 7.8 |
| California | 32.6 | 6.5 | 0.6 | 11.3 |
| **2010** | | | | |
| Central Coast | 45.6 | 2.9 | 0.6 | 5.6 |
| Diablo Range | 53.5 | 4.9 | 1.4 | 7.2 |
| California | 38.7 | 6.7 | 1.0 | 12.4 |
| **2020** | | | | |
| Central Coast | 50.5 | 2.8 | 0.6 | 5.9 |
| Diablo Range | 57.5 | 5.1 | 1.9 | 6.9 |
| California | 43.0 | 6.7 | 1.4 | 13.1 |
| **2030** | | | | |
| Central Coast | 55.3 | 2.7 | 0.6 | 6.0 |
| Diablo Range | 60.8 | 5.3 | 2.4 | 6.4 |
| California | 46.8 | 6.6 | 1.7 | 13.2 |

* Figures differ from those in Table 3.15-5, which are April 2000 Census counts. These are July 1 estimates (California Department of Finance).

Although not projected, the percent of the population with personal income below the poverty level is anticipated to remain extremely high in the Diablo Range area, as shown in Table 3.15-5, and somewhat below the State average in the Central Coast. There are no trends or expected changes in economic patterns that would indicate a change for relative poverty levels in either area.

As indicated in the discussion of socioeconomic impacts, the general effect of BLM management programs and actions under all alternatives is limited. Specific individuals or niche groups that would be affected can be readily identified. None of the anticipated socioeconomic impacts to be experienced by these individuals and groups appear to be negative, nor can the affected parties be categorized by ethnicity. No minority or low-income populations appear to be disproportionately at risk of being affected by public land management.

## 4.15.3 Social and Economic Impacts under Alternatives A, B, C, and D

### 4.15.3.1 Recreation

Beyond any economic benefits of public land recreation, population growth in the face of a static number of opportunities for dispersed, outdoor recreation would cause the benefits of these alternatives to be magnified. As indicated in Section 3.15.4, public lands are already among a limited number of venues in the Central Coast and Diablo Range areas that allow residents to escape the press of population and find a sense of isolation. That experience would become even more valued as population grows.

### 4.15.3.2 Energy and Minerals

Future production of minerals in the CCMA under these alternatives depends more on the demand for the minerals and the extent of recoverable reserves available than on any BLM management strategy.

Important at one time, production of asbestos, bentonite, and mercury from public lands has ceased and is unlikely to start up again. Although demand for oil and natural gas is currently high, production from the Federal mineral estate in the throughout the HFO has been declining, and this would appear to be the trend into the future. Furthermore, the potential for oil and gas development and exploration on BLM-managed lands in CCMA is extremely low and not reasonably foreseeable into the future.

Renewable energy sources will be placing a burden on public lands for solar and wind energy development in areas with high potential. Alternatives A, B, C, and D would allow BLM to consider proposals for mineral entry, oil and gas development; however, the feasibility of these opportunities would depend on sustainability of energy sources in CCMA. Wind energy would be excluded from the ACEC under all alternatives. Therefore, the impacts of energy and mineral management actions on socioeconomic conditions under Alternatives A, B, C, and D would be negligible.

### 4.15.3.3 Livestock Grazing

Under these alternatives, the same 7,547 animal unit months (AUMs) that are currently available for grazing would remain available and the number of leases would remain unchanged at 14 (see Section 3.15.4). The economic value of the forage grazed would remain at about $109,000 annually in current dollars, an insignificant contribution to the local economy of the Diablo Range area where the CCMA public land grazing occurs. The CCMA portion of the grazing allotments and the associated AUMs would, however, continue to be important to the success of the grazing operations as forage from public lands would continue to provide supplemental income to leaseholders. Therefore, the impacts of livestock grazing management actions on socioeconomic conditions under these alternatives would be negligible.

### 4.15.3.4 Lands and Realty

Under all alternatives, BLM would continue to authorize rights-of-ways, communications sites, and other land uses consistent with CCMA resource goals and objectives. Also, consolidation of lands into manageable blocks through acquisition, exchange, or disposal would increase the inherent economic efficiency of public land management in that administrative costs per acre should be reduced, and the potential economic return per acre would be greater for larger holdings than for small. To the extent that larger blocks of public land make them more viable habitat for threatened, endangered, or sensitive species, they become more valuable as lands that can be used as offsetting mitigation. This would make the projected residential and commercial development in both the Central Coast and Diablo Range areas more manageable and less costly because habitat on private lands lost to development could be offset by

habitat on public lands. Therefore, lands and realty management actions under Alternatives A, B, C, and D would have long-term beneficial impacts of on socioeconomic conditions.

## 4.15.4 Social and Economic Impacts under Alternatives E, F, and G

There are several impacts and mitigations related to the range of alternatives due to the similarities in actions that would affect resources or social and economic conditions, including public health and safety. The respective social and economic condition impacted by natural and cultural resources, energy and minerals, livestock grazing, and lands and realty management actions are the same as those described under Alternatives A, B, C, and D. However, the severity of the impacts to social and economic decisions associated with recreation management actions does vary with regard to the particular actions outlined in Alternatives E, F, and G.

### 4.15.4.1 Recreation Management Actions

Within the visitor shed, motorcycle retail outlets concentrate close to their customers. Table 4.15-4 below reports date from the US Census Bureau Zip Code Business Patterns 2001, The Business Patterns Report does not specify the actual numbers of employees in each business but sorts businesses by classes based on ranges of numbers of employees. At a minimum, the visitor shed for the Management Area in 2001 had 1031 jobs in retail motorcycle businesses.

Communities with comparatively high employment in retail motorcycle sales are most likely to experience long-term adverse effects under these alternatives as motorized recreation on public lands in CCMA decreases significantly. The geographic areas most likely to have economic impacts are those currently with high numbers of employees in retail motorcycle sales. Table 4.15-4 lists the top ten zip code areas provide the largest number of jobs related to retail sales of motorcycles.

**Table 4.15-4** – Top ranked communities within the visitor use region by zip code, with the greatest employment in retail sales of new and used motorcycles (NAICS 441221) in 2001. Source: US Census Bureau Zip Code Business Patterns 2001

| City | Zip Code Area | Minimum Estimate of Number of Employees |
|---|---|---|
| Santa Cruz | 95062 | 62 |
| Modesto | 95351 | 45 |
| Visalia | 93292 | 42 |
| San Francisco | 94103 | 42 |
| Bakersfield | 93301 | 32 |
| Redwood City | 94063 | 30 |
| Livermore | 94550 | 26 |
| Hayward | 94544 | 24 |
| San Jose | 95112 | 24 |
| San Francisco | 94109 | 22 |
| Concord | 94520 | 22 |
| Fremont | 94538 | 22 |
| Walnut Creek | 94596 | 22 |
| San Jose | 95124 | 22 |

California Department of Motor Vehicles tracks information on motor vehicles with green-sticker registrations by zip code by month. This information helps the BLM to know where significant

populations of OHV recreational users live and, in the absence of visitor profile data specifically collected from visitors while they are visiting the CCMA, what the demographic profile of visitors is and how it differs or is similar to the population as a whole. Table 4.15-5 shows the top-ten ranked zip code areas within the visitor shed region, with: the highest total green-sticker registrations, the highest frequency of registrations among rural communities (populations between 1,000 and 5,000), among suburban communities (populations less than 25,000), and among urban communities (populations greater than 25,000).

These areas represent significant populations with vehicles used in OHV and other motorized recreation.

**Table 4.15-5** – Communities with the largest number of green-sticker registrations and with the highest frequency of green-sticker registrations by community size, located within the visitor use region.

| Communities with the Highest Number of Registered Green Sticker Vehicles | | | Rural Communities with the Highest Frequency of Green Sticker Registrations in the Population | | |
|---|---|---|---|---|---|
| City | Zip Code | Number of Registered Vehicles | City | Zip Code | Per Capita Frequency of OHV vehicles in the population |
| 1. Bakersfield | 93312 | 2457 | 1. Friant | 93626 | 14.8% |
| 2. Hollister | 95023 | 2318 | 2. Creston | 93432 | 11.1% |
| 3. Livermore | 94550 | 1822 | 3. Hickman | 95323 | 10.6% |
| 4. Tulare | 93274 | 1712 | 4. Prather | 93651 | 10.5% |
| 5. Clovis | 93611 | 1705 | 5. Lebec | 93243 | 10.3% |
| 6. Paso Robles | 93446 | 1542 | 6. Frazier Park | 93225 | 9.5% |
| 7. Wasco | 93230 | 1540 | 7. La Grange | 95329 | 8.9% |
| 8. Gilroy | 95020 | 1415 | 8. Herald | 95638 | 8.6% |
| 9. Bakersfield | 93308 | 1371 | 9. Linden | 95236 | 8.6% |
| 10. Porterville | 93257 | 1350 | 10.Santa Margarita | 93453 | 8.0% |
| Suburban Communities with the Highest Frequency of Green Sticker Registrations in the Population | | | Urban Communities with the Highest Frequency of Green Sticker Registrations in the Population | | |
| City | Zip Code | Per Capita Frequency of OHV vehicles in the population | City | Zip Code | Per Capita Frequency of OHV vehicles in the population |
| 1. Wilton | 95693 | 7.8% | 1. Bakersfield | 93312 | 6.1% |
| 2. San Martin | 95046 | 7.6% | 2. Hollister | 95023 | 4.8% |
| 3. Templeton | 93465 | 6.9% | 3. Paso Robles | 93446 | 4.3% |
| 4. Denair | 95316 | 6.5% | 4. Oakley | 94561 | 3.9% |
| 5. Santa Ynez | 93460 | 6.5% | 5. Brentwood | 94513 | 3.9% |
| 6. Acampo | 95220 | 6.3% | 6. Atascadero | 93422 | 3.8% |
| 7. Pioneer | 95666 | 6.3% | 7. Clovis | 93611 | 3.6% |
| 8. Escalon | 95320 | 6.2% | 8. Visalia | 93292 | 3.6% |
| 9. Byron | 94514 | 6.0% | 9. Sonora | 95370 | 3.2% |
| 10. Hughson | 95326 | 5.7% | 10. Bakersfield | 93313 | 3.1% |

From comparisons of the communities with high frequency of green-sticker vehicles with the entire population of the visitor shed, the BLM can develop an initial profile of the economic and social

characteristics of OHV recreation users and of similarities and differences with the entire population of the visitor shed. Table 4.15-6 displays selected characteristics of communities where OHV ownership and registration are high as contrasted with the entire population of the Management Area visitor shed.

**Table 4.15-6** – Comparison of selected demographic characteristics of communities identified in Table 4.15-4, with high frequencies of registered green-sticker vehicles. Source: US Census Bureau, Census 2000 data

| Community Groups as Defined in Table 2 | Population percentage self-identified as white race | Median Age in Years (both sexes) | Average Number of People in Households | Average Number of People in Families | Population Percent of People > 16 years old and employed | Median Number of Rooms in Houses | Per Capita Income 1999 |
|---|---|---|---|---|---|---|---|
| Top 10 Rural Communities | 86.9 | 39.4 | 2.7 | 3.6 | 41.3 | 5.2 | $20,131 |
| Top 10 Suburban Communities | 86.1 | 38.4 | 2.3 | 2.8 | 43.6 | 5.7 | $25.334 |
| Top 10 Urban Communities | 83.8 | 34.4 | 3.0 | 3.8 | 44.0 | 5.6 | $21,294 |
| All Communities in the Visitor Shed | 58.5 | 33.8 | 2.9 | 4.3 | 44.2 | 4.9 | $25,012 |
| All California | 59.5 | 33.3 | 2.9 | 3.4 | 43.0 | 4.8 | $22,711 |

Significant clusters of communities with high percentages of green-sticker vehicle registration occur in the Bakersfield, San Luis Obispo – Atascadero – Paso Robles, eastern Contra Costa County, and Stanislaus County. In communities with relatively high proportions of green-sticker registrations for off-highway vehicles, the populations appear to differ from the total population of California. The proportion of people who identify themselves as white racially is higher than in the population at large. Also, the populations of the rural and suburban communities where OHVs are most common tend to be somewhat older and have smaller families in comparison the total population of the visitor shed.

Although these alternatives would emphasize low-impact non-motorized recreation, they would not likely have much effect on the demand or the amount of non-motorized recreation use in CCMA. As with Alternatives A, B, C, and D, demand for public land recreation would largely be driven by external factors related to population and the competition for recreation space. The speed at which recreation use grows could be affected by the extent to which BLM management produces favorable recreation experiences and promotes the use of public lands for recreation.

In conclusion, Alternatives E, F, and G would have major long-term adverse impacts on the social and economic conditions of businesses and employees within the communities that specialize in off-highway

vehicle sales due to the loss of OHV recreation opportunities on CCMA public lands. However, the overall impact to the social and economic conditions within the Planning Area would be negligible due to the immense size of the populations in the Central Coast and Diablo Range analysis areas.

### 4.15.5 Cumulative Effects

The social and economic changes underway in the Planning Area are expected to continue, regardless of the alternative selected in this EIS, because, as stated earlier, the size of the economy associated with the population within the Planning Area would dwarf any of the social and economic contributions made by public land resources.

However, the role that public lands play in defining quality of life for area residents may especially be affected by demographic changes in the future. Public lands will become increasingly important as remaining reservoirs of open space and as providers of increasingly highly valued visual quality. To the extent that perceptions of quality of life are tied to public health and safety, visual quality, and the maintenance of open space, BLM decisions that affect those elements become more important.

The cumulative impacts for social and economic conditions as they relate to public health and safety, visual quality, recreation opportunity, livestock grazing, and natural and cultural resources, are described in those sections.

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# 4.16 Visual Resources Management

For ease of reference, the management goals from Chapter 2 are restated here:

- The goal for visual resource management is to manage public land actions and activities in a manner consistent with visual resource management (VRM) class objectives.

## 4.16.1 Introduction

As outlined in Section 3.16.2, visual resource management (VRM) classes are assigned to the various parts of the landscape based on visual characteristics and/or to meet management objectives. These range from preserving a natural landscape and existing characteristics (Class I) to providing for management activities that allow major modification of the landscape (Class IV). While numerous management activities can impact visual values, the most significant impacts are large-scale or cumulative ground-disturbing activities that alter the existing form, line, color, and texture of the existing landscape.

Impacts to visual resources are considered major if they substantially change or degrade the character of the landscape as seen from sensitive viewsheds, or if the allowable modifications exceed VRM classifications. While topography can allow for some landscape modifications, many types of disturbance, such as roads and artificial structures, can dominate the landscape depending on their size, distance, topographic position, presence or absence of screening, and contrast with surrounding conditions. Viewsheds deemed to be of high value are those that have high scenic quality, such as the Joaquin Ridge/Rocks area west of U.S. Interstate 5, or other areas in CCMA with high visual sensitivity due to a large amount of public interest and viewing, such as San Benito Mountain and Hernandez Valley.

Since all BLM-administered lands in the Planning Area have been previously evaluated and been assigned VRM Classes III or IV, with the exception of San Benito Mountain WSA (VRM Class 1), this RMP/EIS will not elaborate on the methodology employed to assign the classifications.

## 4.16.2 Overview of Impacts

### 4.16.2.1 Visual Resource Management Actions

Designation of VRM classes for certain geographic areas within the Planning Area is the main variable in determining the level of impacts to visual resources.

### 4.16.2.2 Other Management Actions

Impacts to visual resources can result from a variety of other management actions, including fire management, recreation, and energy and mineral development.

**Wildfire and Prescribed Burns**

For all alternatives, management actions would limit bulldozer use on wildfires and prescribed burns in the ACEC due to human health risks, and outside the ACEC, where possible, for other resources concerns. All other actions relating to wildfires and prescribed burns would be designed to maintain a particular area's VRM classification.

The most important effect to visual resources from wildfire and prescribed burns is the modified nature of the landscape following a fire. Charred vegetation, downed timber, and discolored soils and rock can affect the quality of the visual landscape. These effects can be widespread and long-term.

**Recreation and Access**

Recreation-related activities that can affect visual resources are mainly related to motorized recreational vehicle use. Motorized vehicle routes, existing and new, can adversely affect the visual quality of the landscape. In addition, the development of new trails and visitor facilities can have an effect on the visual quality of an area, although these developments are generally more localized.

**Energy and Mineral Development**

Potential activities in the CCMA related to energy and mineral development include production of oil and gas, as well as limited saleable and locatable mineral production. However, the potential for development in CCMA in low-to-moderate; and no new oil and gas wells have been drilled in the past 30 years. Furthermore, BLM estimates that no more than 15 exploration and production wells would be drilled within the next 15 to 20 years throughout the Hollister Field Office. The drilling of new wells is most likely in currently producing oil fields outside of the CCMA, including the Coalinga, Jacalitos, Kreyenhagen, Kettleman Middle Dome, and Pyramid Hills in Fresno County; and the Vallecitos, Bitterwater, and Hollister oil fields in San Benito County, where energy and mineral development would coincide with the construction of new pipelines, roads, and processing facilities, which would not conflict with current VRM class designations in CCMA.

While there are only a few areas within the Planning Area that could be considered for potential wind resource development, the most likely area for wind farm siting is on Joaquin Ridge. BLM lands in this region follow the ridgeline of the mountains east of the Clear Creek Management Area. Wind farms can significantly affect the visual character of the landscape due to turbine heights, the "shadow-flicker" phenomenon from rotating blades, and newly built access roads for turbine maintenance. A large portion of Joaquin Ridge was designated as an Area of Critical Environmental Concern (ACEC) in the Hollister RMP (2007), and wind farms would have a major and long-term impact on visual resources in the Joaquin Rocks ACEC, if developed.

## 4.16.3 Impacts and Mitigation for Alternative A

### 4.16.3.1 Visual Resource Management Actions

Under Alternative A, VRM classifications would not change since the 1984 Hollister RMP was published. Alternative A would have minor to moderate impacts on visual resources because current management practices do not afford visual protection standards for acquired lands, which would leave these areas in danger of potential deterioration of visual quality.

Additionally, development of new communications sites would be addressed on a case-by-case basis under this alternative. The presence of communication towers could have a moderate to major impact depending on their location and configuration.

### 4.16.3.2 Other Management Actions

**Wildfire and Prescribed Burns**

Under Alternative A, approximately 1,250 acres in the Planning Area would be targeted for annual prescribed burns, and 15,500 acres for decadal prescribed burns. This would have a negligible adverse impact on visual resources because it represents current management practices. Other actions under this alternative include limitations on the use of bulldozers on both wildfires and prescribed burns when and where possible, which would result in beneficial impacts to visual quality.

**Recreation and Access**

New access roads and/or trails are not proposed in the Planning Area under Alternative A, with the exception of limited access improvements in the Condon and Cantua zones. Therefore, recreation-related improvements under Alternative A would have no adverse impact on visual resources

**Energy and Mineral Development**

Under Alternative A, oil and gas and mineral extraction activities would be considered on a case-by-case basis, and all such developments would be allowed only in areas where appropriate mitigation would protect sensitive areas such as ACECs and known rare, threatened, and endangered habitat. These management actions would have a minor affect on visual resources, which would be localized to the immediate area surrounding the development.

#### 4.16.3.3 Mitigation

Alternative A includes management actions that would serve to mitigate impacts to visual resources, including limiting the use of bulldozers on wildfires and prescribed fires; regulating communication towers to appropriate areas; and restricting motorized vehicles to existing designated routes.

### 4.16.4 Impacts and Mitigation Common to Alternatives B through G

#### 4.16.4.1 Visual Resource Management Actions

For Alternatives B through G, VRM Class IV standards apply except as otherwise noted.

The San Benito Mountain WSA would be managed as VRM Class I. This designation would preclude the siting of communication towers and other major land-disturbing actions that could affect visual quality. Alternative E would provide the most protection and enhancement of visual resources because the scenic route corridor would be managed as a Class II area, and therefore, this alternative would have the most beneficial long-term impact compared to the other alternatives.

#### 4.16.4.2 Other Management Actions

Impacts from other management actions are described under subsection 4.16.2, "Overview of Impacts." These include impacts as a result of wildfire and prescribed burns, recreation and access, and energy and mineral development. Issues specific to Alternative B, or C, or D, are described below.

**Wildfire and Prescribed Burns**

Under Alternatives B through G, approximately 1,450 acres in the Planning Area would be targeted for annual prescribed burns, and 14,000 acres for decadal prescribed burns. This would have a similar level of adverse impact on visual resources as Alternative A due to the higher acreage targeted for annual burns, but lower acreage for decadal burns.

**Recreation and Access**

Alternatives B through G would allow new motorized access routes to be established in the Planning Area. This would result in minor adverse impacts to visual resources from road cuts. These alternatives also emphasize expansion of existing facilities for communications and for recreation opportunities. These actions would have a negligible impact on visual resources because they would be limited to exiting locations.

**Energy and Mineral Development**

Under Alternatives B through G, surface disturbance for energy and mineral development would not be allowed in threatened and endangered species habitat, resulting in a beneficial impact to visual resources. In addition, under alternative D, E, F, and G, the Serpentine ACEC would not be available for energy or mineral development, resulting in beneficial impacts to visual resources in these areas.

#### 4.16.4.3 Mitigation

Alternatives B through G have mitigation measures that are included in the management actions identified in Chapter 2. Alternatives B through G include several management actions that would serve to mitigate potential impacts to visual resources. These include implementation of best management practices for road maintenance, watershed restoration, rights-of-ways, and energy and mineral development; and limiting the use of fire retardant drops on exposed rock outcrops and other sensitive visual resource areas that could result in adverse impacts to visual quality of the landscape.

### 4.16.5 Cumulative Impacts

Generally, Federal and State lands that abut or are near BLM lands utilize the BLM VRM system for classifying their holdings and, therefore, are not in conflict with VRM designations on BLM lands. Private lands that are next to or near BLM holdings are not subject to VRM and thus are not required to follow VRM guidelines when being developed or utilized for agricultural, industrial, or commercial uses. VRM classifications established for BLM lands have no standing on adjacent private lands and, therefore, would have no off-site impacts on those private lands.

Cumulative impacts to visual resources could occur as development pressure increases on the CCMA public lands. Because Alternatives A and B would allow the most high-impact use of all alternatives considered, they also have greater potential for cumulative impacts to visual resources. These impacts can be minimized by following BMPs and mitigation measures during site selection and construction.

Cumulative impacts could occur from the need for expansion or maintenance of nearby local road systems outside of the Serpentine ACEC, and increased use of roads on private lands due to closur3e of routes on adjacent BLM-administered lands. Private, County and State road construction and maintenance would increase impacts on visual resources from CCMA public lands.

These impacts are mainly limited to highly traveled areas in the CCMA such as the Tucker, Condon, Cantua, and San Benito River Zones. In most areas of the CCMA, it is unlikely that the County road systems within the CCMA would grow significantly, because the dispersed private lands within the Planning Area are already served by County and State roads, and also because of the limited access on public lands available under most of the alternatives. As use of the public lands decreases, these impacts would become negligible.

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# 4.17 Fire Management

For ease of reference, the management goals from Chapter 2 are restated here:

- The goals for fire management are to (1) establish a fire management program that is cost-efficient and commensurate with threats to life, property, public safety, and resources, (2) use fire to restore and/or sustain ecosystem health, (3) cooperate with communities at risk within the wildland-urban interface to develop plans for risk reduction, (4) cooperate with regional partners in fire and resource management across agency boundaries, and (5) reduce man-made fires, with a special emphasis on reductions in developed areas such as communities, campgrounds, and transportation corridors.

## 4.17.1 Introduction

Wildland fire management includes using prescribed fire and non-fire fuel treatments to modify vegetation communities to achieve beneficial uses of wildland resources. Federal fire policy requires that appropriate management responses to wildland fire be defined for all Hollister Field Office (HFO) lands in a Fire Management Plan (FMP) that is tiered to the Hollister Resource Management Plan (RMP). The purpose of fire and fuels management is to identify and integrate HFO fire management with participating Federal and State agency fire and fuels management. Under all of the alternatives being considered in this RMP/EIS, management direction would allow fire to continue to be used to achieve desired resources goals and objectives, provided the BLM's fire management program is cost-efficient and commensurate with objectives involving the threat of fire to life, property, public safety, and resources.

## 4.17.2 Overview of Impacts

This subsection provides background information and an overview of impacts that would be common to all alternatives.

### 4.17.2.1 Fire Management Actions

**Wildland Fire**

Wildland fire, defined as any non-structure fire occurring in the wildland, includes *prescribed fire*, *wildland fire use*, and *wildfire*. Prescribed fire is used to accomplish resource management objectives. *Prescribed fires* are planned fires ignited by resource managers. Fires that occur from natural causes such as lightning that are then used to achieve management purposes under carefully controlled conditions with minimal suppression costs is known as *wildland fire use (WFU)*. *Wildfires* are unwanted and unplanned fires that result from natural ignition, unauthorized human-caused fire, escaped WFUs, or escaped prescribed fire.

Prescribed fire would be used for specific management goals in the Planning Area. (WFU currently is not identified for management use in the Hollister FMP, 2008) Prescribed fire could be used to accomplish a number of resource management purposes, such as reducing the amount of hazardous fuels, improving plant species diversity, increasing livestock forage production, abating noxious and invasive weeds, and improving wildlife habitat. Prescribed fire would be used particularly in chaparral vegetation to reduce hazardous fuel, improve wildlife habitat, and enhance watersheds. Multiple resource management objectives would often be achieved concurrently. Prescribed fire would not occur in habitat, cultural, and paleontological resource-sensitive areas.

Prescribed fire could occur either in a defined 'area' or in localized 'burn piles'. 'Area' prescribed fires are used to burn vegetation in place and can vary in the number of acres burned. 'Burn piles' are heaps of woody fuel that are accumulated after a mechanical treatment. Consistency with State fire and air pollution laws and BLM policy would be maintained during prescribed fires. Appropriate smoke management plans would be developed and approved by the local air quality monitoring district for each prescribed fire. Acceptable burn days would be determined in coordination with State and local agencies and minimized during April through September.

**Wildfire**

Wildfire starts in the Planning Area are caused by either lightning or humans. Approximately 85 percent of wildfire starts are caused by humans. Escaped prescribed fire would be managed as a wildfire. Firefighter and public safety is the first rule in wildfire management. The Hollister FMP goal for all FMUs is to suppress all wildfires 90 percent of the time on initial attack with less than 10 acres burned. An appropriate management response for each wildfire would occur in accordance with management objectives based on current conditions, fire location, and values to be protected. A response could vary from an aggressive initial action to monitoring when all other actions have been carefully examined and control lines have been determined to hold. Appropriate management response strategies would be tailored to address areas of significant constraints, including WUI areas, Areas of Critical Environmental Concern, Wilderness Study Areas, critical habitats, areas of soil instability, and areas of other critical resource constraints. Fire that escapes initial attack (i.e., more than 10 acres at 90 percent of the time past the first 24 hours) would undergo a wildland fire situation analysis to determine the complexity level and suppression alternatives to minimize its severity. Minimum impact suppression tactics would always apply to fire suppression. Sensitive habitat and cultural and paleontological resources would be protected from fire and fire suppression activity.

**Non-fire Fuels Management**

Fuels management is critical to (1) reducing the risk to life and property from catastrophic fire in the WUI, (2) creating plant community diversity, and (3) reducing fire intensity to protect natural and cultural resources. Prescribed fire is the main tool used by the HFO to manage fuels; however, non-fire fuels management tools are useful in areas where prescribed fire is not appropriate (e.g., the WUI and critical habitats). Non-fire fuels management tools include mechanical and biological controls and herbicides, which are beneficial in fire-sensitive areas. Mechanical fuels treatment is the most common and includes using chain saws, chippers, weed eaters, mowers, and a masticator mounted on an all-terrain vehicle. Woody plant material may be piled and burned as a follow-up treatment. Biological controls such as cattle grazing manage the amount and distribution of fine fuels. Herbicides are used on a limited basis to control unwanted vegetation that eludes prescribed fire or mechanical treatments. Plant debris is left on-site to provide soil organic matter and reduce soil erosion. Non-fire fuels management would be conducted in compliance with State and Federal regulations.

**Post-fire and Non-fuel Treatment Rehabilitation and Monitoring**

Rehabilitation often is needed after a wildland fire to restore vegetation cover and reduce soil erosion. The need for rehabilitation after non-fire treatment is usually minimal because the treatments are designed to retain protective plant cover to prevent soil erosion. An interdisciplinary resource team would define the specifics for rehabilitation and monitoring after a wildland fire.

The FMP calls for ecosystem rehabilitation after wildland fire. Monitoring by HFO staff would determine the need and action required to restore plant cover and minimize soil erosion. Emergency Stabilization and Rehabilitation (ESR) has occurred on approximately 500 acres per year, with the

majority of acres being maritime chaparral and annual grassland fuel types. Once chaparral and annual grass vegetation has burned, exposed soils would be subject to erosion from the lack of vegetation cover.

Short- and long-term goals are to mitigate fire-related degradation of natural and cultural resources and to minimize threats to life or property resulting from the effects of fire. Short-term ESR actions focus primarily on damage caused by the fire-suppression effort and include constructing protective fences and erosion-abatement structures, seeding, and straw mulching. Native grasses and shrubs are seeded to promote soil stability and reduce weed establishment. Long-term restoration actions include the establishment of native shrub and grasses on site to reestablish pre-fire oak savannah/shrub/chaparral/ annual grass cover. Livestock grazing would not be allowed until the newly established vegetation is of sufficient size to withstand tissue removal and trampling.

Resource specialists would conduct short- and long-term monitoring. Short-term monitoring requirements would include evaluating the implementation of treatment and its initial effectiveness. Long-term monitoring could include vegetative transects or the establishment of permanent photo points, depending on specific project objectives.

#### 4.17.2.2 Other Management Actions

**Air Quality**

Fire can have a minor to moderate adverse impact on air quality, depending on the size, location, and type of fire. However, prescribed fires are used to manage fuel stock (vegetation); small acreages would be burned on a rotating basis over the course of several years to reduce the available fuel and thus manage fires. Prescribed fire activities would be coordinated with the appropriate APCD, depending on the location of the prescribed fire and applicable smoke management plan, or permit approvals would be obtained before implementing prescribed fires. Prescribed fires offer a long term benefit of reducing the available fuel and thus reducing the potential for future wildland fires.

**Water and Biological Resources**

Prescribed fires and associated activities would result in a reduction of woody vegetation and herbaceous understory. These activities could temporarily increase soil erosion, which could result in impacts to water quality. However, fuels reduction projects would likely be targeted on woody vegetation outside of riparian areas, so streams would generally be protected from disturbance.

**Recreation**

Fire prevention strategies can reduce the potential for man-made fires, such as fires started at campgrounds, or at transportation corridors. Prescribed fires could result in area closures during and after fires, depending on location and timing of projects. The closures would likely be temporary and would not have a noticeable impact on recreation opportunity. The burned areas could have a diminished visual quality which could also affect user experience.

**Cultural and Paleontological Resources**

Investigations and/or clearances would be required prior to conducting fuels reduction activities, such as prescribed fires, in areas where there are known cultural or paleontological resources. Therefore, impacts are expected to be avoided.

**Grazing**

Livestock grazing can reduce the accumulation of fine fuels and break up their continuity in grazing allotments. This is a beneficial impact to fire management.

## 4.17.3 Impacts and Mitigation for Alternative A

### 4.17.3.1 Fire Management Actions

**Wildland Fire**

Under Alternative A, current wildland fire management direction, suppression guidelines, and general guidance for prescribed vegetation treatments would continue as described in the 1984 Hollister RMP. Alternative A would allow for prescribed fire to provide mosaic patterns of vegetation to protect soil, watersheds, and wildlife, especially mature chaparral dwellers. Prescribed fire would be used to reduce the risk of wildland fire or catastrophic fire through fuels management. Range improvement burning would be conducted on a 10- to 20-year rotation, and fuels reduction burns would be conducted on a 20- to 30-year rotation. Prescribed fire for wildlife habitat improvement would annually burn 5 to 7 percent of a management unit over a 10-year rotation period. Under Alternative A, the HFO may annually burn up to 100 acres using prescribed fire. The decadal goal for the HFO management lands is to burn less than 1000 acres, including both prescribed fire and wildfire. Prescribed fire and smoke management would be conducted in compliance with State fire and air pollution laws and BLM policy. Acceptable burn days would be determined in coordination with State and local agencies and minimized April through September.

**Wildfire**

Approximately 85 percent of all wildfires in the Planning Area have been human-caused. Under Alternative A, the annual goal for wildland fire management in all FMUs is to suppress all fire starts 90 percent of the time before 10 acres are burned, regardless of the cause of ignition. The Hollister FMP does not allow for WFUs in the Planning Area to achieve management goals. The decadal goal for wildland fire is 1000 acres and is a combination or prescribed fire and wildfire.

San Joaquin Management Area

Human-caused fire starts have been 90 and 84 percent in the San Joaquin Valley South Continued and San Joaquin Valley South FMUs, respectively.

San Benito Management Area

Eighty-three percent of the fires have been human caused in the Hernandez Valley FMU.

**Non-fire Fuels Management**

The decadal goal for HFO management lands is to mechanically treat up to 1000 acres equally spread over 10 years.

San Joaquin Management Area

The annual and decadal goals for mechanical treatment in the San Joaquin Valley South Continued and the San Joaquin Valley South FMUs are 15 and 35 acres and 150 and 350 acres, respectively, in the San Joaquin Management Area.

San Benito Management Area

The annual and decadal goals for mechanical treatment in the Hernandez Valley FMU are 12 and 125 acres, respectively.

**Post-fire and Non-fire Fuel Treatment Rehabilitation and Monitoring**

Alternative A does not specify post-fire and non-fire fuel treatment rehabilitation and monitoring.

#### 4.17.3.2 Impacts from Other Resource Programs

Fire management could result in impacts to other resources, including air quality, water and biological resources, recreation opportunity, and cultural and paleontological resources. These are described in subsection 4.7.2.2.

Alternative A would promote a moderate amount of annual prescribed fire target acres. While the potential impacts from prescribed fire activities are lessened as compared to other alternatives, the threat of wildfire and associated impacts on these resources is then greater.

Livestock grazing can reduce the accumulation of fine fuels and break up their continuity in grazing allotments. Under Alternative A, 57,633 public acres would be grazed in 14 allotments at intensity of 7,547 animal unit months (AUMs).

#### 4.17.3.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. Under Alternative A, these include protection of vegetative resources, and prescribed burns.

All Alternatives would require that the HFO comply with new fire management guidance provided by recent Federal wildfire management policy. This guidance includes newly developed fire and fuels management strategies and tactics to comply with the Federal Wildland Fire Management Plan Policy and Program Review (1995 and 2001) and the National Fire Plan: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy and Implementation Plan (2002). Current Federal policy requires that fire management plans developed for all acres of burnable vegetation on HFO management land comply with these documents and be linked closely with approved resource management plans. This recent policy provides for improved correlation and communication among local, State, and Federal agencies with fire and fuels management responsibilities, which ultimately would reduce the risk of wildfire to life and property and reintroduce fire as a natural component of ecosystems, as appropriate.

### 4.17.4 Impacts and Mitigation Common to Alternatives B through G

#### 4.17.4.1 Fire Management Actions

**Wildland Fire**

Under Alternatives B through G, CCMA fire management would be consistent with the Hollister FMP and comply with current Federal wildland fire policy. The FMP would guide the use of prescribed fire in the Planning Area. The HFO would collaborate with Federal and State land managers, Fire Safe Councils, and private landowners to develop cross-boundary fire management strategies, including the design and implementation of prescribed fire and fuels management projects, and to identify high priority wildfire risk areas. The HFO also would work with WUI communities to reduce wildfire risk and implement a

public outreach program to reduce the frequency of human-caused fires. Prescribed fire would be used to mimic the natural role of fire in ecosystems to enhance resource values and to reduce wildfire risks in sensitive areas such as the WUI, critical habitats, and cultural sites. Coordination with Federal, State, and local agencies would minimize smoke in the WUI.

Fire suppression and fuels management activities would minimize impacts on the environment, especially surface water, cultural and paleontological resources, and sensitive habitats. Prescribed fire and smoke management would be consistent with State fire and air pollution laws and BLM policy. Acceptable burn days would be determined in coordination with State and local agencies and would be minimal from April through June.

**Wildfire**

Alternatives B through G would require developing appropriate management responses to wildland fire, reducing human-caused fires, collaborating with communities to reduce fire risk, and prohibiting the use of heavy equipment and fire retardants in natural and culturally sensitive areas. Similar to Alternative A, Alternatives B through G would require that wildland fire management suppress all fire starts 90 percent of the time before 10 acres are burned, regardless of ignition source.

**Non-Fire Fuels Management**

Alternatives B through G would require the HFO to collaborate with Federal and State agencies with wildland fire management responsibilities, Fire Safe Councils, communities, and private landowners, where such interaction would be beneficial, to develop cross-boundary fuels management strategies to reduce the risk of fire.

**Post-fire and Non-fire Fuel Treatment and Monitoring**

Alternatives B through G would require post-fire and non-fire fuels treatment rehabilitation and monitoring. This means establishing a monitoring system that inventories pre-burn species composition and resulting post-fire response; monitoring the effects of fire/fuels treatment; and adjusting the Hollister FMP as needed.

Monitoring after a wildfire, prescribed fire, or non-fire fuels management treatment would identify the need for rehabilitation action. The need for post-fire or fuels treatment rehabilitation would be considered on a case-by-case basis, depending on location and resources to be protected.

### 4.17.4.2 Other Management Actions

Fire management could result in impacts to other resources, including air quality, water and biological resources, recreation opportunity, and cultural and paleontological resources. These are described in subsection 4.7.2.2, and in more detail below.

Under Alternatives B through G appropriate rehabilitation and monitoring action would be defined in prescribed fire and fuels treatment plans; however, emergency rehabilitation such as slope stabilization, reestablishment of appropriate native plant species, invasive weed abatement, and/or protection of vegetation and natural and cultural resources may be needed following a wildfire.

Livestock grazing under Alternatives B, C, D, and E would reduce the accumulation of fine fuels and break up their continuity in grazing allotments. However, excluding grazing from the Serpentine ACEC under Alternative F and the entire CCMA under Alternative G would have the opposite effect of increasing density of vegetation and fine fuels in allotments, which would have a major long-term negative impact on fire management in CCMA.

#### 4.17.4.3 Mitigation

Mitigation measures are contained in the management actions in Chapter 2. For Alternatives B through G, measures include prevention strategies, coordination with public agencies, and monitoring. Additionally, all alternatives would require that the HFO comply with new fire management guidance provided by recent Federal wildfire management policy. This guidance includes newly developed fire and fuels management strategies and tactics to comply with the Federal Wildland Fire Management Plan Policy and Program Review (1995 and 2001) and the National Fire Plan: A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy and Implementation Plan (2002). Current Federal policy requires that fire management plans developed for all acres of burnable vegetation on HFO management land comply with these documents and be linked closely with approved resource management plans. This recent policy provides for improved correlation and communication among local, State, and Federal agencies with fire and fuels management responsibilities, which ultimately would reduce the risk of wildfire to life and property and reintroduce fire as a natural component of ecosystems, as appropriate.

### 4.17.5 Cumulative Effects

The assessment area for cumulative effects for fire and fuels management includes the CCMA itself, and adjacent areas under direct protection of CALFIRE and/or BLM. Prescribed fire and non-fire treatments would provide mosaic patterns of vegetation to protect soil, watershed, and wildlife, and to reduce the risk of wildland fire in the WUI or catastrophic fire. They can also improve rangeland health. These improvements could have beneficial off-site impacts to downstream water quality, vegetation, and wildlife habitat.

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 for fire suppression activities in the area.

Present actions in the CCMA described in the Section 3.7 include management activities on BLM lands near Laguna Mountain and on Condon Peak are similar to the remainder of the BLM lands within the CCMA, including construction of fuelbreaks, prescribed burning, and mechanical treatments including vegetation clearance around structures.

Future actions include non-native species abatement and wildlife habitat management efforts that should improve resources conditions throughout CCMA over time. Future development of private land parcels within the CCMA could increase the amount of wildland urban interface in the area, although the human health risks and the difficulty of securing potable water in the area will likely limit the amount of private development.

Plans are currently being finalized to abandon the Beaver Dam Fire Station from the Hwy. 25 location in south San Benito County. This would move two fire engines and a water tender further away from the CCMA and increase response times to the CCMA 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.

Long-term off-site benefits of prescribed fire include reducing the occurrence or severity of wildfire. Appropriate wildland fire and fuels management would reduce the chance of wildfire igniting on HFO land and moving onto private or other public lands. Smoke that occurs with prescribed fire would be managed to meet local air quality standards to minimize impacts on sensitive off-site areas. Hazardous fuels management may reduce particulate matter production, thus minimizing air quality impacts

Adverse off-site impacts could occur if prescribed fire turns to wildfire that may damage cultural and sensitive habitat or result in loss of grazing forage or damage to the WUI. The degree of impact would depend on the type and severity of loss. Forage damage would be a short-term loss, but WUI loss could be long-term in nature and economically costly. Fuels management risks are usually minimal in comparison with prescribed fire because the threat of escape is less. One caveat is that using herbicides can damage non-target vegetation and contaminate surface water.

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 BLM and CALFIRE, have provided adequate fire suppression protection, which is anticipated to continue in the future. The closure of the Beaver Fire Station would lengthen suppression response times to the CCMA, which may adversely affect fire suppression success. However, this would 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.

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# 4.18 Lands and Realty

For ease of reference, the management goals from Chapter 2 are reiterated here:

- The goal for lands and realty management is to provide lands, interests in land, and authorizations for public and private uses while maintaining and improving resource values and public land administration.

## 4.18.1 Introduction

Land tenure adjustments and land use authorizations are BLM activities that would occur for all alternatives. Alternative A represents the "No Action" alternative required by NEPA, and would reaffirm current management under the existing 1984 RMP (BLM 1984) and its associated amendments (1986, 1999, 2006). All alternatives would maintain existing land use authorizations and rights of ways in CCMA for private land owners, communication sites, and mining claims. Alternatives E, F and G would emphasize protection of human health and safety by incorporating mitigation measures into land use authorizations for rights-of-ways and communication sites in CCMA to reduce exposure to airborne asbestos fibers.

Alternative A would emphasize acquisition of lands in the Serpentine ACEC and the Tucker Zone. Alternatives B and C would make those lands in the Tucker Zone and other public lands in the San Benito River and Condon Zones available for disposal, while pursuing acquisition from willing sellers in the Serpentine ACEC. Conversely, Alternative D emphasizes acquisition of lands to support new recreation opportunities in the Tucker, Condon, and Cantua Zones. Alternatives E and F would further restrict public access and development in the ACEC and only authorize new facilities outside the ACEC. Alternative G would make the same lands available for disposal as Alternatives B and C, while pursuing acquisition from willing sellers in the Serpentine ACEC.

Management actions within the lands and realty program are administrative in nature and require subsequent analysis at the project level to determine site-specific resources issues ad alternatives for implementation. Therefore, there would be no direct environmental impacts to the human environment under any alternatives. Other programs and resources would be affected by failure to complete the required resources screening and analysis prior to any land use authorization, acquisition, exchange, or disposal.

## 4.18.2 Overview of Impacts

### 4.18.2.1 Lands and Realty Management Actions

**Land Disposal, Acquisition, and Exchanges**

For all alternatives, direct impacts upon lands and realty program would be administrative in nature. The management actions would assure more efficient management of public lands and greater preservation and enhancement of biological resources in important areas.

**Land Use Authorizations**

For all alternatives, direct impacts upon lands and realty program would be administrative in nature. The management actions would assure some level of land use authorizations including development opportunities for energy and minerals, utility corridor, wind energy, and telecommunications. The varying degrees of access allowed in the ACEC and elimination of a county road network would directly impact landowners within the ACEC. The BLM would provide reasonable access and the landowners would be required to pay annual rent for their access.

#### 4.18.2.2 Other Management Actions

**Other Resources and Resource Uses**

Overall, impacts from other management actions would primarily be related to land use authorizations. Special areas like WSA's, ACEC/RNA's, or the existence of special status plants or animals, wetlands, and cultural resources, among other things, can limit the availability of those areas for certain land use authorizations like rights-of-ways or energy and mineral development. The potential increase of land use permits for renewable energy development would also increase the administrative burden on the BLM.

#### 4.18.2.3 Mitigation

Mitigation measures for land acquisitions and disposal would be specified in BLM guidance and in compliance with the Federal Land Policy and Management Act of 1976 (FLPMA) and other Federal laws and regulations that address the screening criteria and transfer of contaminated properties. Authorizations and permits would specify site specific mitigation measures to reduce or eliminate potential impacts to air quality, soil, water, biological, recreation, visual, rangeland, energy and minerals, cultural, paleontological, social/economic, transportation/access, hazardous materials, and public safety resources.

### 4.18.3 Impacts and Mitigation for Alternative A

#### 4.18.3.1 Lands and Realty Management Actions

**Land Disposal, Acquisition, and Exchanges**

Under the no action alternative, existing management actions would have a minor adverse impact on administration of lands and realty because they would only allow acquisition of lands for efficient management of public lands and to reduce conflicts with other public and private landowners within the CCMA. Land tenure adjustments would be implemented if the FLPMA and other applicable Federal laws and regulations are met, and if the BLM management objectives for the management areas, such as impacts or loss to species/habitats or other resource impacts, are not compromised.

**Land Use Authorizations**

Management of resources would be maintained at current levels. This alternative would not modify allowable uses to address emerging issues on public lands; however, this alternative would incorporate new human health risk information into BLM's public outreach and education asbestos hazard information program and guidance for management of natural and heritage resource, livestock grazing, energy and minerals, or lands and realty established after the 1984 Hollister RMP, as amended.

Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative

purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities. Private landowners would continue to use the BLM and County transportation network to access their private lands.

#### 4.18.3.2 Other Management Actions

**Other Resources and Resource Uses**

As described above, impacts from other management actions would primarily be related to land use authorizations. Under Alternative A, there would be no new areas of special designation (ACEC, Wilderness, etc.) and the existing ACEC and WSAs would remain. This impact on availability of land use authorizations would be negligible, however, because over the next 15 to 20 years, no more than 15 wells are planned to be drilled and a combined total of 74 acres of Federal lands disturbed (includes permanent and temporary disturbance). This estimate is based on oil and gas potential outlined in the Hollister Field Office Reasonably Foreseeable Development Scenario (Appendix VIII).

#### 4.18.3.3 Mitigation

Use permits and requests for ROWs and other uses would be considered on a case-by-case basis, including the level and type of impacts that would require appropriate and applicable mitigation measures.

### 4.18.4 Impacts and Mitigation Common to Alternatives B and C

#### 4.18.4.1 Lands and Realty Management Actions

**Land Disposal, Acquisition, and Exchanges**

Under these alternatives, approximately 3,300 acres of land would be available for disposal in the Tucker, San Benito River, and Condon Zones. These lands are currently difficult to manage because they are disjunct from other public lands and have little or no existing public access. Therefore, making these lands available for disposal would have negligible adverse impacts on lands and realty, and moderate long-term benefits for management efficiency because BLM would be able to consider exchange or purchase of lands to acquire inholdings with high biologic, geologic or cultural resource values. In general the public land pattern would be consolidated and access to public lands would be improved.

**Land Use Authorizations**

Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities Private inholders would continue to utilize the BLM and County transportation network as principle means of access to their private lands. BLM would consider ROW applications on a case by case basis.

### 4.18.5 Impacts and Mitigation for Alternatives D & E

#### 4.18.5.1 Impacts from Lands and Realty Management Actions

**Land Disposal, Acquisition, and Exchanges**

Under Alternative D, none of the 3,300 acres in the Tucker, Condon, and San Benito River zones would be available for disposal. Retention of these lands would have minor adverse impacts on management efficiency and public access because all of these parcels have no existing (or reasonably foreseeable) public access. Otherwise, Alternatives E and F would have the same effects as Alternatives B and C.

**Land Use Authorizations**

Allowable uses would be somewhat restricted with access limited to the county road system under alternative D. CCMA private landowners would be able to utilize the county roads to drive all or most of the distance to their property The landowners who are not able to drive the entire distance to their private property on county roads would be required to obtain a ROW from BLM for driving on non-county roads across BLM land. Driving on non-county roads would be limited to ingress and egress of private property owned by the ROW holder. Use of the county roads under alternative E would be limited to R11. R11 is that portion of the county road from New Idria straight through to the locked gate accessing Joaquin Rocks. Landowners accessing their property through Clear Creek would require a ROW for all or most of the distance to their private property.

Obtaining a ROW would require submitting a Standard Form 299 "Application for Transportation and Utility Systems and Facilities on Federal Lands" to the Hollister Field Office with a map displaying the location of the private property (including APN) and the proposed route of travel. There are three fees involved for processing ROWs. The processing fee is required to reimburse the United States in advance for the cost of processing the application. The monitoring fee reimburses the BLM for monitoring the construction, operation, maintenance, and termination of the project, including protection and rehabilitation of the public lands involved. The third fee is the annual rent. The Hollister FO would GPS the routes of travel and determine the distance across BLM land. Annual rent is determined by multiplying the number of acres (rounded up to next tenth of an acre) included in the ROW by the rental rate for the appropriate county zone. Approximately 18 private landowners would need to obtain ROW from BLM to access their private lands under Alternative D. Approximately 22 private landowners would need to obtain ROW from BLM to access their private lands under Alternative E.

Example: A ROW 20 feet wide and 5 miles long would be 20 X 5(5280) = 528,000 sq ft/43560(sq ft/acre) = 12.12 acres (rounded up to the next tenth ) = 12.20 acres X $46.21(2009 San Benito County Zone 5 rate) = $563.762 (rounded to the nearest cent) = $563.76.

Impacts from new activities, expanded rights-of-way (ROWs), or construction of utility sites and related facilities outside of designated or established corridors would vary depending on the approval of applications with appropriate mitigation measures. Similarly, allowable impacts from permit applications for apiary, commercial filming, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect impact on other resources; however, such actions would benefit the administrative efficiency of BLM activities

## 4.18.6 Impacts and Mitigation for Alternative F & G

### 4.18.6.1 Lands and Realty Management Actions

**Land Disposal, Acquisition, and Exchanges**

See subsection 4.18.4.1 above.

**Land Use Authorizations**

Emphasis would be on authorization of multiple uses outside the ACEC, where appropriate. Allowable use restrictions would minimize exposure to airborne asbestos emissions, reduce risk to public health and safety, and land use authorizations would provide limited resource use or commodity production, as appropriate.

Under these alternatives, private inholders would use the BLM's administrative route network as principle means of access to their private lands. Approximately 24 private landowners would need to obtain ROW from BLM to access their private lands under Alternatives F & G. Obtaining a ROW would require submitting a Standard Form 299 "Application for Transportation and Utility Systems and Facilities on Federal Lands" to the Hollister Field Office with a map displaying the location of the private property (including APN) and the proposed route of travel. There are three fees involved for processing ROWs. The processing fee is required to reimburse the United States in advance for the cost of processing the application. The monitoring fee reimburses the BLM for monitoring the construction, operation, maintenance, and termination of the project, including protection and rehabilitation of the public lands involved. The third fee is the annual rent. The Hollister FO would GPS the routes of travel and determine the distance across BLM land. Annual rent is determined by multiplying the number of acres (rounded up to next tenth of an acre) included in the ROW by the rental rate for the appropriate county zone.

Example: A ROW 20 feet wide and 5 miles long would be 20 X 5(5280) = 528,000 sq ft/43560(sq ft/acre) = 12.12 acres (rounded up to the next tenth ) = 12.20 acres X $46.21(2009 San Benito County Zone 5 rate) = $563.762 (rounded to the nearest cent) = $563.76.

Compared to existing conditions, impacts of new utility sites and corridors within existing designated or established corridors would be localized and temporary during construction, but also could be long term and permanent to the natural resources in and near the corridor. These impacts would be mitigated with appropriate measures. Permits for apiary, commercial filming, wind energy development, or other uses would be considered on a case-by-case basis with appropriate mitigation measures. Closing and rehabilitation of roads not required for administrative purposes and resolution of unauthorized uses of public lands would have an indirect effect on other resources; however, they would benefit the administrative efficiency of BLM activities.

## 4.18.7 Cumulative Effects

Potential cumulative impacts, are expected to be minor, and would largely depend on the sales, exchanges, and acquisitions carried out under this RMP/EIS. For example, acquisitions of areas with high recreation potential could result in moderate beneficial cumulative impacts to recreation and travel management. Additionally, land use authorizations including communications, utility corridors, and energy development, could also result in minor long-term beneficial cumulative impacts to local social and economic conditions.

Cumulative impacts from management of lands and realty under the Preferred Alternative would benefit other resources, such as aesthetics, water quality, and biological resources as a result of land tenure adjustments and restrictions on land use authorizations. These impacts combined with impacts from previous land acquisitions and improvements, as well as the existing land uses and impacts, would cause localized and permanent cumulative impacts on those resources. These impacts are described in the respective resource section in Chapter 4.

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# 5.0 CONSULTATION AND COORDINATION

## 5.1 Introduction

This document has been prepared with input from interested agencies, organizations, and individuals. Public involvement is a vital component of the Resource Management Planning (RMP) process and Environmental Impact Statement (EIS) preparation for vesting the public in the effort and allowing for full environmental disclosure. Guidance for implementing public involvement is codified in 40 CFR 1506.6 and 43 CFR 1610, thereby ensuring that BLM makes a diligent effort to involve the public in the preparation of RMPs EISs. Public involvement for the Hollister RMP is primarily being conducted in two phases, as follows:

- Public scoping prior to NEPA analysis to obtain public input on issues, the scope of the analysis, and to develop the proposed alternatives, and
- Public review and comment on the Draft RMP/EIS, which includes analyzing possible environmental impacts and identifying the final preferred alternative for the Proposed Plan and Final EIS.

A summary of the public scoping process is presented in Section 5.2, below.

## 5.2 Outreach & Public Involvement

### 5.2.1 Notice of Intent

BLM published the Notice of Intent To Prepare a Resource Management Plan for the Clear Creek Management Area, California, and Associated Environmental Impact Statement in the Federal Register (Volume 72, Number 172) on September 6, 2007. The NOI states, "The purpose of the public scoping process is to determine relevant issues that will influence the scope of the environmental analysis and EIS alternatives…The major issues that will be addressed in this planning effort include: impacts to public safety and human health from naturally-occurring asbestos and past mining activities; designation and management of special designations; ecosystem management and desired conditions; wildland and prescribed fire management; livestock grazing; motorized and non-motorized recreation management; lands available for disposal or of interest for acquisition; and potential for energy development."

### 5.2.2 Advertisements and Announcements

The NOI states, "Opportunities to participate will occur throughout the planning process. To ensure local community participation and input, public scoping meetings will be held, at a minimum, in three towns strategically located in or near the planning area. Early participation by all interested parties is encouraged and will help guide the planning process and determine the future management of public lands. All activities where the public is invited to attend will be announced at least 15 days prior to the event in local news media."

Pursuant to the NOI, BLM issued a news release on September 6, 2007 announcing three public scoping workshops for the CCMA RMP/EIS, which were held in Hollister, San Jose, and Coalinga, California. In conjunction with the release of the EPA Asbestos Exposure and Human Helath Risk Assessment on May 1, 2008, BLM announced three more public scoping meetings in Hollister, San Jose, and Santa Clara, California.

### 5.2.3 Project Website

A website, http://www.blm.gov/ca/st/en/fo/hollister/clear_creek_management_area/CCMA_RMP.html, was established to provide public information on the CCMA RMP/EIS. It provides background information on the BLM's land use planning process, a downloadable version of the CCMA RMP/EIS Scoping Report, and links to BLM Federal Register notices and BLM news releases, plus a form for people to email comments directly to the BLM's Hollister Field Office.

### 5.2.4 Public Meetings

#### 5.2.4.1 Scoping Workshops

Three public scoping workshops were held during September and October 2007 to raise awareness of the pending release of the EPA's CCMA Asbestos Exposure and Human Health Risk Assessment, and initiate public involvement in the BLM's CCMA RMP/EIS land use planning process. These early meetings included a BLM presentation to provide context for the proposed project and an information package that included materials to introduce the concept of 'scoping,' the CCMA RMP/EIS planning criteria, comment sheets, and other supplementary information on the National Environmental Policy Act (NEPA) and BLM's land use planning policy.

Although attendance during the September and October 2007 meetings was low, over 1000 members of the public, mainly off-highway vehicle users, discussed the future management of the CCMA at three additional public scoping meetings held from May-June 2008 in Santa Clara, Hollister, and San Jose. The meeting with the highest turnout (approx. 600) was held at the Santa Clara Convention Center on May 9, 2008 following the release of the EPA's risk assessment, and included a presentation by EPA staff to explain the results of the EPA study and answer questions from the public.

During the workshops people were encouraged to take extra information packages and comment sheets and distribute them to interested individuals that were not able to attend the meetings. While comments have been accepted throughout the preparation of the CCMA RMP/EIS, BLM only accepted written comments during the scoping process to ensure that issues presented in the CCMA RMP/EIS Scoping Report reflect the genuine concerns of the public.

BLM's official scoping comment period began September 6, 2007, with the publication of the NOI in the Federal Register (Volume 72, Number 172). The comment period was extended to June 21, 2008, due to a delay in the release of the EPA risk assessment, which had been expected in November 2007.

A majority of the public comments were submitted during the scoping workshops on flip charts and 'scoping worksheets'; although BLM received many written letters and emails that reflect the interest of numerous agencies and constituents who did not attended the public meetings and workshops.

In particular, BLM received responses from the American Motorcycle Association, Blue Ribbon Coalition, California Off Road Vehicle Association, California Association of 4-Wheel Drive Clubs, California Native Plant Society, California Federation of Mineralogical Societies, a consortium of other local motorcycle clubs, and the Department(s) of Parks and Recreation and Toxic Substances Control.

#### 5.2.4.2 Socioeconomic Workshops

Social and economic strategy workshops will be held to discuss social and economic issues and concerns associated with the range of alternatives in the Draft CCMA RMP/EIS and to increase public involvement in the land use planning process. The focus of these workshops is to assist in characterizing existing conditions and trends in local communities and the wider region that may affect and be affected by land use planning decisions.

The workshops also provide an opportunity for local government officials, community leaders, and other citizens to discuss regional economic conditions, trends, and strategies with BLM managers and staff. The workshops assist in identifying the ways public land resources are integrated into the local economy and way of life, and identifying opportunities for collaborative, stewardship-based management proposals. The workshops would also devote some time to introducing participants to economic concepts, the sources of economic data, the data itself, and the processes of economic analysis.

BLM anticipates participation at the socioeconomic workshops to include local ranchers/landowners, residents, elected public officials, Native Americans, and area recreationists. Information obtained at these meetings will be incorporated into the Social and Economic analysis for the CCMA Proposed RMP and Final EIS.

### 5.2.5 Other Outreach and Consultation

A number of potential partnerships exist that could help BLM broaden involvement in the planning process and widen acceptance and ownership in the future management of public lands. Agreements with local counties and communities will continue to be utilized and explored for activities and needs such as planning, transportation, emergency services, law enforcement, infrastructure, and tourism. BLM will seek to incorporate management actions in the CCMA RMP/EIS that would compliment adjacent communities.

The BLM Hollister Field Office has existing agreements with several Federal, State, and local agencies to assist in the management of public land resources in the Planning Area. These agencies include:

- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- California Department of Toxic Substances Control
- California State Office of Historic Preservation
- California Department of Forestry & Fire Protection (CALFIRE)
- California Department of Fish and Game
- California Regional Water Quality Control Board
- Monterey Bay Unified Air Pollution Control Districts

The Tachi Yokut Tribe of the Santa Rosa Rancheria is the only federally recognized Native American group in the Planning Area. Representatives of the tribe are aware of BLM's CCMA RMP/EIS land use planning process. In general, they support BLM's conservation goals in the Planning Area provided that they are informed of any potential impacts to cultural resources or other traditionally used natural resources. Non-federally recognized California Indian tribes that were notified and/or consulted include members of several Ohlone/Costanoan tribal groups. Members of these tribes also utilize the Planning Area for cultural and Native American traditional uses. Consultation between BLM officials in the Hollister Field Office and tribal representatives are being conducted for this EIS and many other activities or proposed actions within the Planning Area. The BLM will continue to provide an opportunity for the Tachi Yokut Tribe and Ohlone/Costanoan tribal members to provide input to the CCMA RMP/EIS throughout the planning process.

## 5.3 List of Preparers

A number of individuals formed the Management Team, Core Team, and Interdisciplinary Team for development and/or review of the Draft CCMA RMP/EIS. Other BLM staff acted on an ad-hoc basis to support development and review efforts.

**Management Team**

The management team was responsible for overall direction and completion of the RMP. This includes assuring availability of the Core and ID Team members for completion of the RMP; reviewing and approving progress in completing the Draft RMP/EIS; fully participating in all public involvement and collaborative activities; and ensuring the integrity of the process and subsequent management direction is maintained.

| | |
|---|---|
| Hollister Field Office Manager | Rick Cooper |
| Hollister Associate Field Manager | George Hill |
| State Office Representative | Sandra McGinnis |

**Project Manager and Core Team**

The Project Manager is responsible to the Field Office Manager that comprises the BLM's administrative coverage for the analysis area. The Project manager is responsible for day-to-day guidance for development of the RMP, coordinating schedules of staff in all phases of the planning effort, working with Core Team Leads and public to facilitate public involvement, and ensuring the RMP and associated EIS are prepared within the technical and procedural quality standards provided by the BLM's planning policy and applicable laws and regulations.

The Core Team is responsible for coordinating with the Project Manager in preparation for all phases of the process and all sections of the analytical and guiding documents, assuring consistency throughout the RMP development, and fully participating in all public involvement and collaborative efforts.

Project Manager and Core Team members include:

| | |
|---|---|
| Project Manager | George Hill |
| GIS and Database Manager | Eric Wergeland |
| Environmental Planning Specialist (Planning and Environmental Coordinator) | Sky Murphy |
| Outdoor Recreation Planner | David Moore |

**Interdisciplinary Team**

The Interdisciplinary Team is responsible for assisting the Core Team in preparing the necessary sections of the RMP including: preparing specific sections of the EIS/RMP; and coordinating data deliverables for GIS analysis and reviewing for technical adequacy.

Interdisciplinary Team members include:

| | |
|---|---|
| Recreation and Travel Management | David Moore |

| | |
|---|---|
| Public Health & Safety and HAZMAT | Sky Murphy |
| Vegetation | Ryan O'Dell |
| Fish and Wildlife | Michael Westphal |
| Special Status Species | Ryan O'Dell & Michael Westphal |
| Air Quality | Sky Murphy |
| Water Resources | Michael Westphal |
| Soils | Ryan O'Dell |
| Special Designations (ACEC/RNA, WSA, WSR) and Visual Resources Management | Sky Murphy |
| Livestock Grazing | Stacey Schmidt |
| Energy & Minerals | Timothy Moore |
| Cultural & Paleontological Resources | Erik Zaborsky |
| Fire Management | Mario Marquez |
| Social/Economic Conditions & Environmental Justice | Sky Murphy |
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## Acronyms

AEHHRA asbestos exposure and human health risk assessment
ACEC area of critical environmental concern
AML abandoned mine lands
AMP allotment management plan
AMR appropriate management response
APCD air pollution control district
APE area of potential effect
ARPA *Archaeological Resources Protection Act*
ATCM airborne toxic control measures
ATSDR Agency for Toxic Substances and Disease Registry
ATV all-terrain vehicle
AUM animal unit month
BACTs best available control technologies
BLM Bureau of Land Management
BMP best management practice
CAA *Clean Air Act (as amended)*
CABE (*Camissonia benitensis)* San Benito evening primrose
CALFIRE California Department of Forestry and Fire Protection
CASHE Compliance Assessment Safety Health Environment
CCMA Clear Creek Management Area
CDC Center for Disease Control
CDFG California Department of Fish and Game
CDPR California Department of Parks and Recreation
CERCLA *Comprehensive Environmental Response and Liability Act*
CEQ Council on Environmental Quality
CFR Code of Federal Regulations
CNPS California Native Plant Society
CWA *Clean Water Act*
DOT Department of Transportation
DTSC California Department of Toxic Substances Control
EIS environmental impact statement
ELCR excess lifetime cancer risk
EPA Environmental Protection Agency
ESA *Endangered Species Act*
FAR functioning at risk
FLPMA *Federal Land Policy and Management Act*
FMP fire management plan
FMU fire management unit
GIS geographic information system
HAZMAT hazardous materials
HFO Hollister Field Office
IMP *Interim Management Policy for Lands under Wilderness Review*
IPM integrated pest management
mph miles per hour
IRIS Integrated Risk Information System
NEPA *National Environmental Policy Act*

NHPA *National Historic Preservation Act*
NIOSH National Institute for Occupational Safety and Health
NPL National Priorities List
NOA naturally occurring asbestos
NOI notice of intent
NOx nitrogen oxides
NRHP National Register of Historic Places
NWSRS National Wild and Scenic Rivers System
OEHHA Office of Environmental Health Hazard Assessment
OHV off-highway vehicle
OHVTF Off-highway Vehicle Trust Fund
OSHA Occupational Safety and Health Administration
PA Programmatic Agreement
PCM phase contrst microscopy
PCME phase contrast microscopy equivalent
PFC proper functioning condition
PILT payments in lieu of taxes
$PM_{2.5}$ particulate matter less than 2.5 micrometers in diameter
$PM_{10}$ particulate matter less than 10 micrometers in diameter
PPE personal protective equipment
RAWS remote automated weather station
RFD reasonably foreseeable development
RMIS Recreation Management Information System
RMO route management objective
RMP resource management plan
RNA research natural area
ROD record of decision
SARA *Superfund Amendments and Reauthorization Act*
SHPO State Historic Preservation Officer
SRMA special recreation management area
SUV sport utility vehicle
SVRA state vehicle recreation area
T&E threatened and endangered
TEM transmission electron microscopy
TMDL total maximum daily load
UCL upper confidence limit
US United States
USDI U.S. Department of the Interior
USGS U.S. Geological Survey
USFWS U.S. Fish and Wildlife Service
UTV universal terrain vehicle
VOC volatile organic compound
VRM visual resources management
WFU wildland fire use
WHO World Health Organization
WSA wilderness study area

# Glossary

**Acceptable Risk Range –** The Environmental Protection Agency Superfund program defines the acceptable risk range for exposure to a carcinogen, like asbestos, as 10-4 (1 in 10,000) to 10-6 (1 in 1,000,000) excess lifetime cancer risk. Exposures which are calculated to cause more than 1 in 10,000 excess cancers are considered to be of concern and may require action to reduce the exposure and resulting risk.
**Asbestos –** The name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such a thermal insulation, chemical and thermal stability, and high tensile strength.
**Adaptive Management –** An iterative process, designed to experimentally compare selected management actions by evaluating alternative hypotheses about the ecosystem being managed. Adaptive management consists of three parts: management actions, monitoring, and adaptation. Management actions are treated as experiments subject to modification. Monitoring is conducted to detect the effects of the management actions. Finally, management actions are refined in response to the enhanced understanding of how the ecosystem responds.
**Aggregate –** Any combination of sand, gravel, and crushed stone in its natural or processed state.
**Allowable uses –** analyzed under the range of alternatives for recreation in the Draft CCMA RMP/EIS are defined as follows:

- Non-motorized – Non-motorized recreation includes hiking, backpacking, bird and wildlife viewing, equestrian use, environmental education, sightseeing, picnicking and photography. Non-motorized recreation does not include activities listed as motorized or mechanized recreation.
- Mechanized – Mechanized recreation includes cycling, mountain biking, hang gliding, and rock climbing using assistive devices.
- Motorized – Motorized recreation includes the use of off-highway vehicles (OHVs), as described in the Transportation and Access section (2.16), and vehicle touring.
- Shooting – Shooting, for purposes of this document, includes all non-hunting discharge of firearms, but excludes use of paintball devices.

**Alluvium –** Unconsolidated rock or sediment deposited by flowing water including gravel, sand, silt, clay, and various mixtures thereof.
**Alternative –** One of at least two proposed means of meeting planning objectives.
**Animal Unit –** One mature (1,000-pound) cow or the equivalent, based on an average forage consumption of 26 pounds of dry matter per day. For authorization calculation purposes, an animal unit is one cow and her calf, one horse, or five sheep or goats. Depending on the composition and weight of animals in the herd, actual forage use may vary.
**Animal Unit Month (AUM) –** The amount of forage needed to sustain one cow, five sheep, or five goats for 1 month.
**Annual Plant –** A plant that completes its life cycle within a single growing season. Also see PERENNIAL PLANT.
**Appropriate Management Response (AMR) –** The response to a wildland fire based on an evaluation of risks to firefighters and public safety; the circumstances under which the fire occurs, including weather and fuel conditions; natural and cultural resource management objectives; protection priorities; and values to be protected. The evaluation must also include an analysis of the context of the specific fire within the overall local geographic area or national wildland fire situation.
**Archaeological Resources Protection Act of 1979 (ARPA) –** A federal law that prohibits the removal, disturbance, sale, receipt and interstate transportation of archaeological resources obtained illegally (without permits), from federal or Indian lands and authorizes agency permit procedures for investigations of archaeological resources on lands under the agency's control.
**Area of Critical Environmental Concern (ACEC) –** An area of BLM-administered land where special management attention is needed to do the following: to protect and prevent irreparable damage to

important historic, cultural, or scenic values and to fish and wildlife or other natural systems or processes; or to protect life and provide safety from natural hazards.

**Archaeological Site –** Any place where human-made or modified artifacts, features, or ecofacts are found.

**Arid region -** A region where precipitation is insufficient to support any but drought-adapted vegetation.

**Artifact** – A discrete or portable object manufactured or modified by humans. Some common artifact categories include lithic, ceramic, organic, and metal objects.

**Authorized Officer –** Any Bureau of Land Management employee who has been delegated the authority to perform defined duties.

**Available Forage (or available forage species) –** Forage that can be grazed and still allow sustained forage production on rangeland. Available forage may or may not be authorized for grazing.

**Best Management Practice (BMP) –** Practices based on current scientific information and technology that, when applied during the implementation of management actions, ensure that adverse impacts are minimized. BMPs are generally tailored to site-specific conditions, in order to represent the most effective and practical means to achieve management goals for a given site.

**Biological Diversity (Biodiversity) –** The full range of variability within and among living organisms and the ecological complexes in which they occur. Biological diversity encompasses ecosystem or community diversity, species diversity, and genetic diversity. In this document, *biodiversity* refers to species richness defined as a number of species in a given habitat or location across habitats.

**Biological Opinion –** A document that includes the following: the opinion of the U.S. Fish and Wildlife Service or the National Marine Fisheries Service as to whether a federal action is likely to jeopardize the existence of a species listed as threatened or endangered, or destroy or adversely modify designated critical habitat, a summary of the information on which the opinion is based, and a detailed discussion of the effects of the action on listed species or designated critical habitat.

**Biomass –** The total amount of living plants and animals above and/or below ground in an area at a given time; plant material that can be burned as fuel.

**Biota –** The animal and plant life of a given region.

**BLM Sensitive Species –** Species designated by a state director, usually in cooperation with the state agency responsible for managing the species and state natural heritage programs, as sensitive. They are those species that: (1) could become endangered in or extirpated from a state. Or within a significant portion of or distribution; (2) are under status review by the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listed, proposed, candidate, or State listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are State listed but which may be better conserved through application of BLM sensitive species status.

**Browse –** The part of leaf and twig growth of shrubs, woody vines, and trees available for animal consumption; the act of consuming browse.

**California Department of Fish and Game (CDFG) –** The California state agency whose mission is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. CDFG maintains native fish, wildlife, plant species, and natural communities for their intrinsic and ecological value and their benefits to people. This includes habitat protection and maintenance in a sufficient amount and quality to ensure the survival of all species and natural communities. CDFG is also responsible for the diversified use of fish and wildlife, including recreational, commercial, scientific, and educational uses.

**Canopy –** The vertical projection downward of the aerial portion of shrubs and trees, usually expressed as a percent of the ground so occupied.

**Catastrophic Wildfire –** Fire that burns more intensely than the natural or historical range of variability, thereby causing unacceptable erosion, fundamentally changing the ecosystem, or destroying communities of rare or threatened species or habitat.

**Chaparral –** A vegetation community consisting of dense and often thorny shrubs and small trees.

**Code of Federal Regulations –** The official legal compilation of regulations directing Federal Government agencies.

**Collaboration –** A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands. Collaboration may or may not involve an agency as a cooperating agency.
**Communication Site –** A hilltop or favorable signal receiving and transmitting location where a collection of facilities are located. A facility consisting of a small building and tower, used for transmitting or receiving radio, television, telephone, or other electronic signals.
**Component (Cultural Resources) –** An association of all the artifacts from one occupation level and one time period at a site.
**Composition (Species Composition) –** The proportions of plant species in relation to the total in a given area. Composition may be expressed as cover, density, and weight.
**Containment –** The status of a wildfire suppression action signifying that a control line has been completed around the fire and any associated spot fires, which can reasonably be expected to stop the fire's spread.
**Connectivity –** The degree to which habitats for a species are continuous or interrupted across a spatial extent, where habitats defined as continuous are within a prescribed distance over which a species can successfully conduct key activities, and habitats defined as interrupted are outside the prescribed distance.
**Cooperating Agency –** An agency that helps the lead federal agency develop the environmental analysis for a proposed major action. U.S. Council on Environmental Quality regulations implementing the National Environmental Policy Act (NEPA) define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA. Any North American Indian tribe or federal, state, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency. Cooperating agency status is generally formalized through a memorandum of understanding between BLM and the cooperating agency.
**Critical Habitat –** (1) The specific areas within the geographical area currently occupied by a species, at the time it is listed in accord with the Endangered Species Act, on which are found physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon determination by the Secretary of the Interior that such areas are essential for the conservation of the species.
**Cultural Resource –** Any definite location of past human activity that is identifiable through field survey, historical documentation, or oral evidence. This includes archaeological or architectural sites, structures, or places; and places of traditional cultural or religious importance to specified groups, whether or not represented by physical remains.
**Cultural Site –** A physical location of past human activities or events, more commonly referred to as an archaeological site or a historic site. Such sites vary greatly in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features.
**Cumulative Impacts –** The effect on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.
**Dispersed Recreation –** Recreation activities that do not require developed sites or facilities.
**Disposal Areas –** Broad areas of public lands where BLM generally intends to dispose of existing public lands, either by land exchange or sale.
**Easement –** The right to use land in a certain way granted by a landowner to a second party.
**Ecofact –** Bones, vegetal matter, pollen, shells, modified soils, or other archaeological finds that though not human manufactured, give important clues as to human behavior or the environmental context of such behavior.
**Ecological Processes** – Processes that include the water cycle (the capture, storage, and redistribution of precipitation) energy flow (conversion of sunlight to plant and animal matter) and the nutrient cycle (the cycle of nutrients, such as nitrogen and phosphorus through the physical and biotic components of the environment). Ecological processes functioning within a normal range of variation at an ecological site will support specific plant and animal communities.
**Ecosystem –** A dynamic complex of plant, animal, fungal, and microorganism communities and their associated nonliving environment interacting as an ecological unit.

**Effects** – Effects and impacts in the regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Effects include

- Direct effects, which are caused by the action and occur at the same time and place and
- Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate and are related effects on air and water and other natural systems, including ecosystems.

**Endangered Species –** Any species defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range. Also see THREATENED SPECIES.

**Entry –** An application to acquire title to public lands.

**Environmental Impact Statement (EIS) –** A detailed written statement required by the National Environmental Policy Act for major Federal actions significantly affecting the quality of the human environment. An EIS addresses: (i) The environmental impact of the proposed action, (ii) Any adverse environmental effects which cannot be avoided should the proposal be implemented, (iii) Alternatives to the proposed action, (iv) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

**Environmental Justice –** The fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income in developing, implementing, and enforcing environmental laws, regulations, and policies.

**Ephemeral Stream –** A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table.

**Erosion –** The wearing away of the land surface or soil by running water, waves, or moving ice and wind, or by such processes as mass wasting and corrosion (solution and other chemical processes). "Accelerated erosion" generally refers to erosion in excess of what is presumed or estimated to be naturally occurring levels, and which is a direct result of human activities.

**Ethnographic -** Related to the branch of cultural anthropology that deals with the scientific investigation of living cultures. The main ethnographic data collection technique is participant observation–living with the people being investigated with the intention of full immersion in their culture. Such research is called ethnography.

**Exotic –** All species of plants and animals not naturally occurring, either presently or historically, in any ecosystem of the United States.

**Federal Land Policy And Management Act (FLPMA) –** Public Law 94-579, the act that (1) established, for the BLM, standards for managing the public lands including land use planning, sales, withdrawals, acquisitions, and exchanges; (2) authorized the setting up of local advisory councils representing major citizens groups interested in land use planning and management, (3) established criteria for reviewing proposed wilderness areas, and (4) provided guidelines for other aspects of public land management such as grazing.

**Federal Register –** The Federal Government's official daily publication for rules, proposed rules, and notices of federal agencies and organizations, as well as executive orders and other presidential documents.

**Fireline** (Control Line) – An inclusive term for all constructed or natural barriers, and treated fire edges used to control a fire. Also called a fire trail.

**Fire Management Plan** – A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan. The fire management plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

**Fire Management Unit –** A fire planning unit in which preparedness strategies are designed to meet watershed or resource management objectives, designated by logical fire control or containment criteria such as watershed basins, sub-basins, ridgetops, topographic features, roads, or vegetation changes.

**Fire Regime –** A combination of components that characterize fire in a potential natural vegetation group, including frequency, intensity, seasonality, and extent.
**Fire Retardant –** Any substance except plain water that by chemical or physical action reduces flammability of fuels or slows their rate of combustion.
**Forage –** All browse and herbage that is available and acceptable to grazing animals or that may be harvested for feed**;** the act of consuming forage.
**Forb –** Any broad-leafed herbaceous plant that is not a grass, sedge, or rush.
**Fuel Load (in fire ecology) –** The oven-dry weight of fuel per unit area, usually expressed in tons/acre.
**Fuel Model –** A standardized description of fuels available to a fire based on the amount, distribution, and continuity of vegetation and wood. This information is used for rating fire danger and predicting fire behavior.
**Geographic Information System (GIS)** – A computer application used to store, view, and analyze geographical information, especially maps.
**Grazing Permit or Lease –** A contractual agreement between BLM and another party that permits grazing of a specific number and class of livestock for a specified period on a defined rangeland. The permit allows grazing use of public land, subject to permit stipulations and annual adjustment based on current rangeland condition.
**Ground Cover**– Plants or plant parts, living or dead, on the surface of the ground.
**Groundwater –** Subsurface water that is in the zone of saturation. The top surface of the ground water is the water table. Groundwater is the source of water for wells, seepage, and springs.
**Guzzler –** A device for collecting and storing precipitation for use by wildlife or livestock. A guzzler consists of an impenetrable water collecting area, a storage facility, and a trough from which animals can drink.
**Habitat –** A specific set of physical conditions that surround a species, group of species, or a large community. Wildlife management considers the major constituents of habitat to be food, water, cover, and living space.
**Herbaceous –** Of, relating to, or having the characteristics of a vascular plant that does not develop woody tissue; nonwoody vegetation such as grasses and forbs.
**Historic District –** An area that generally includes within its boundaries a significant concentration of properties linked by architectural style, historical development, archaeologically associated sites or a past event.
**Initial Attack –** The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire.
**Infiltration –** The downward entry of water into the soil or other material.
**Inholdings –** Parcels of land owned or managed by someone other than BLM but surrounded in part or entirely by BLM-administered land.
**Interim Management Policy for Lands under Wilderness Review (IMP) (BLM 1995) –** BLM's strategy for managing wilderness study areas following their recommendation for designation but before Congress designates them as wilderness or releases them to multiple use management.
**Intermittent Stream –** A stream or reach of a stream that does not flow year round and that flows only when it receives baseflow solely during wet periods or it receives groundwater discharge or protracted contributions from melting now or other erratic surface and shallow subsurface sources. See EPHEMERAL STREAM.
**Invasive Species –** An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.
**Land Use Allocations –** The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the planning area, based on desired future conditions.
**Land Use Plan –** A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of the Federal Land Policy and Management Act; an assimilation of land-use-plan-level decisions developed through the planning process outlined in 43 CRF 1600, regardless of the scale at which the decisions were developed. Also see RESOURCE MANAGEMENT PLAN.

**Leasable Minerals –** Minerals whose extraction from federally managed land requires a lease and the payment of royalties. Leasable minerals include coal, oil and gas, oil shale and tar sands, potash, phosphate, sodium, and geothermal steam.
**Lithic Scatter–** Pertaining to or composed of stone flakes created by human flint knapping that are dispersed on the ground; a type of archaeological resource.
**Litter –** The uppermost layer of organic debris on the soil surface, essentially the freshly fallen or slightly decomposed vegetal material.
**Locatable Minerals –** Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of l872 (as amended). Locatable minerals include valuable deposits of gold, silver, and other uncommon minerals not subject to lease or sale.
**Location** – The act of taking or appropriating a parcel of mineral land, including the posting of notices, the recording thereof when required, and marking the boundaries so they can be readily traced.
**Mineral Entry –** The filing of a claim on public land to obtain the right to any minerals it may contain.
**Mineral Estate –** The ownership of the minerals at or beneath the land's surface.
**Mineral Materials –** Materials such as common varieties of sand, stone, gravel, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Mineral Materials Act of 1947, as amended.
**Mining Claims –** Portions of public lands claimed for possession of locatable mineral deposits by locating and recording under established rules and pursuant to the Mining Law of 1872.
**Mining Law of 1872 (General Mining Law) –** The federal act that, with its amendments, formed the framework for the mining of locatable minerals on the public lands. This law declared that "valuable" mineral deposits rather than simply "mineral deposits" were to be free and open to exploration and purchase, limited individual claims to 20 acres, required $100 worth of assessment work yearly, and allowed milling or processing claims of 5 acres or less to be entered on nonmineral lands.
**Multiple Use –** The management of the public lands and their resources so that they are used in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output".
**National Ambient Air Quality Standards–** The allowable concentrations of air pollutants in the ambient (public outdoor) air specified in 40 CFR 50. National ambient air quality standards are based on the air quality criteria and divided into primary standards (allowing an adequate margin of safety to protect the public health including the health of "sensitive" populations such as asthmatics, children, and the elderly) and secondary standards (allowing an adequate margin of safety to protect the public welfare). Welfare is defined as including effects on soils, water, crops, vegetation, human-made materials, animals, wildlife, weather, visibility, climate, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.
**National Environmental Policy Act of 1969 (NEPA) –** The federal law, effective January 1, 1970, that established a national policy for the environment and requires federal agencies: (1) to become aware of the environmental ramifications of their proposed actions, (2) to fully disclose to the public proposed federal actions and provide a mechanism for public input to federal decision making, and (3) to prepare environmental impact statements for every major action that would significantly affect the quality of the human environment.
**National Historic Preservation Act (NHPA) of 1966, as amended –** A federal statute that established a federal program to further the efforts of agencies and individuals in preserving the Nation's historic and cultural foundations. The National Historic Preservation Act: (1) authorized the National Register of Historic Places, (2) established the Advisory Council on Historic Preservation and a National Trust Fund to administer grants for historic preservation, and (3) authorized the development of regulations to require

federal agencies to consider the effects of federally assisted activities on properties included in or eligible for the National Register of Historic Places. Also see NATIONAL REGISTER OF HISTORIC PLACES and SECTIONS 106 and 110 OF THE NATIONAL HISTORIC PRESERVATION ACT.

**National Register of Historic Places (NRHP) –** The official list, established by the National Historic Preservation Act, of the Nation's cultural resources worthy of preservation. The National Register lists archaeological, historic, and architectural properties (i.e., districts, sites, buildings, structures, and objects) nominated for their local, state, or national significance by state and federal agencies and approved by the National Register Staff. The National Park Service maintains the National Register. National Register eligible property is referred to as an historical, cultural, archaeological, or listed property. Also see NATIONAL HISTORIC PRESERVATION ACT.

**National Wild And Scenic Rivers System (NWSRS) –** A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historical, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) recreation—rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past, (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads, and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails with watersheds or shorelines essentially primitive and waters unpolluted.

**Native Species –** A plant or animal species that naturally occurs in an area and was not introduced by humans.

**Niche** – The place of an organism in its biotic environment; the position or function of an organism in a community of plants or animals; a microhabitat.

**Non-Impairment of Wilderness Values Criteria –** A set of criteria regulating land use to protect the wilderness values and characteristics of an area until Congress determines whether to preserve it as a wilderness.

The nonimpairment criteria are as follows.

- The use, facility, or activity must be temporary. (This means a temporary use that does not create surface disturbance or involve permanent placement of facilities may be allowed if such use can easily and immediately be terminated upon wilderness designation.

- When the use, activity, or facility is terminated, the wilderness values must not have been degraded so far as to significantly constrain the area's suitability for preservation as wilderness.

The only permitted exceptions to the nonimpairment criteria are the following:

- wildfire or search and rescue emergencies,
- reclamation to minimize impacts of violations and emergencies,
- uses and facilities that are considered grandfathered or valid existing rights under the Interim Management Policy for Lands under Wilderness Review,
- uses and facilities that clearly protect or enhance the land's wilderness values or are the least needed for public health and safety, and
- reclamation of pre-Federal Land Policy and Management Act impacts.

**Notice of Intent (NOI)** - a notice that an environmental impact statement will be prepared and considered. The notice shall briefly: (a) Describe the proposed action and possible alternatives. (b) Describe the agency's proposed scoping process including whether, when, and where any scoping meeting will be held. (c) State the name and address of a person within the agency who can answer questions about the proposed action and the environmental impact statement.

**Noxious Plant (Weed) –** An unwanted plant specified by federal or state laws as being undesirable and requiring control. Noxious weed refers to any plant that, when established, is highly destructive, competitive, or difficult to control by cultural or chemical practices. Noxious weeds are usually non-natives and highly invasive.

**Off-Highway Vehicle (OHV) –** Many different types of OHV are operated on federal lands. In general, this includes any motorized track or wheeled vehicle designed for cross-country travel over natural terrain. For the purposes of this report, an OHV is any motorized vehicle capable of, or designed for, cross-country travel immediately on or over land, not including personal watercraft, snowmobiles, or aircraft. OHVs used on federal lands include off-highway motorcycles, all-terrain vehicles, utility terrain vehicles, dune buggies, swamp buggies, jeeps, and rock crawlers. These vehicles may be used for various purposes, ranging from trail and open-area riding to hunting and accessing mining claims, hobby gem and mineral collection, or in-holdings (private or state-owned lands inside the boundaries of federal lands). OHVs exclude (1) any non-amphibious registered motorboat; (2) any fire, emergency, or law enforcement vehicle while being used for official or emergency purposes; and (3) any vehicle whose use is expressly authorized by a permit, lease, license, agreement, or contract issued by an authorized officer or otherwise approved.

**Paleontological Resources –** The remains of plants and animals preserved in soils and sedimentary rock. Paleontological resources are important for understanding past environments, environmental change, and the evolution of life.

**Particulate Matter –** Fine liquid (other than water) or solid particles suspended in the air, consisting of dust, smoke, fumes, and compounds containing sulfur, nitrogen, and metals.

**Pasture –** A subunit of a grazing allotment established and managed generally by building fences or, less commonly, by actively herding livestock.

**Payment in Lieu of Taxes (PILT) –** Federal payments to local governments to offset their inability to collect taxes for federally owned land.

**Perennial Plant –** A plant species with a life-cycle that characteristically lasts more than two growing seasons and persists for several years. Also see ANNUAL PLANT.

**Planning Criteria** – The constraints or ground rules that guide the developing of a resource management plan. The criteria determine how the planning team develops alternatives and ultimately selects a Preferred Alternative.

**Plio-Pleistocene** – An epoch in Earth history from about 2-5 million years to 10,000 years ago, when the Earth experienced a series of glacial and interglacial periods.

**Population –** A group of interbreeding individuals of the same species often occupying the same geographical area

**Preferred Alternative** – The alternative in this EIS that BLM has initially selected because it best fulfills BLM's mission and responsibilities and offers the most acceptable resolution of the planning issues and management concerns.

**Prescribed Fire (Burning) –** The planned application of fire to rangeland vegetation and fuels under specified conditions of fuels, weather, and other variables to allow the fire to remain in a predetermined area to achieve such site-specific objectives as controlling certain plant species; enhancing growth, reproduction, or vigor of plant species; managing fuel loads; and managing vegetation community types.

**Prey Base –** Populations and types of prey species available to predators, for example fish species and populations available to river otters.

**Primitive Recreation –** Recreation that occurs in a natural-appearing environment and that allows visitors to achieve solitude and isolation from human civilization. Primitive recreation may include hunting, horseback riding, wildlife viewing, nature study, photography, hiking, and backpacking.

**Public Lands –** Any land administered by the Secretary of the Interior through the U.S. Bureau of Land Management or by the Secretary of Agriculture through the U.S. Forest Service.

**Rangeland –** A type of land on which the native vegetation, climax, or natural potential consists predominately of grasses, grasslike plants, forbs, or shrubs. Rangeland includes lands revegetated naturally or artificially to provide a plant cover that is managed like native vegetation. Rangelands may consist of natural grasslands, savannas, shrublands, moist deserts, tundra, alpine communities, coastal marshes, and wet meadows.

**Rangeland Health –** The degree to which the integrity of the soil, vegetation, water, and air, as well as the ecological processes of the rangeland (land) ecosystem, are balanced and sustained. Integrity is defined as maintenance of the structure and functional attributes characteristic of a locale, including normal variability.

**Rangeland Health Assessment –** An estimate or judgment of the status of ecosystem structures, functions, or processes, within a specified geographic area (preferably a watershed or a group of contiguous watersheds) at a specific time. Rangeland health is assessed by gathering, synthesizing, and interpreting information, from observations or data from inventories and monitoring. An assessment characterizes the status of resource conditions so that the status can be evaluated relative to land health standards. An assessment sets the stage for an evaluation. An assessment is not a decision.
**Raptors –** Birds of prey, such as eagles, owls, and hawks.
**Record of Decision –** A document signed by a responsible official recording a decision that was preceded by the preparing of an environmental impact statement.
**Recreation Management Zone –** In recreation management, an area with four defining characteristics: (1) it serves a different recreation niche within the primary recreation market, (2) it produces a different set of recreation opportunities and facilitates attaining different experiences and benefit outcomes, (3) it has a distinctive recreation setting character, and (4) it requires a different set of recreation provider actions to meet primary recreation market demand.
**Resource Advisory Council (RAC) –** Advisory councils appointed by the Secretary of the Interior and consisting of representatives of major public land interest groups (e.g. commodity industries and recreation, environmental, and local area interests) in a state or smaller area. RACs advise BLM, focusing on a full array of multiple use public land issues. RACs also help develop fundamentals for rangeland health and guidelines for livestock grazing.
**Resource Management Plan (RMP) –** A land use plan as described by the Federal Land Policy and Management Act. The RMP generally establishes in a written document: (1) land areas for limited, restricted or exclusive use; designations, including ACEC designations; and transfer from BLM administration; (2) allowable resource uses (either singly or in combination) and related levels of production or use to be maintained; (3) resource condition goals and objectives to be attained; (4) program constraints and general management practices needed to achieve the above items; (5) need for an area to be covered by more detailed and specific plans; (6) support actions, including such measures as resource protection, access development, realty action, and cadastral survey., as needed to achieve the above; (7) general implementation sequences, where carrying out a planned action depends on prior accomplishment of another planned action; and (8) intervals and standards for monitoring and evaluating the plan to determine its effectiveness and the need for amendment or revision. It is not a final implementation decision on actions that require further specific plans, process steps, or decisions under specific provisions of law and regulations.
**Restoration** – The act of restoring healthy but lacking key attributes and at-risk states of vegetation alliances, vegetation associations, and ecological sites to a healthy state with its original community structure, natural complement of species, and natural functions.
**Right-of-Way (ROW) –** A permit or an easement that authorizes the use of public lands for specified purposes, such as pipelines, roads, telephone lines, electric lines, communication sites, reservoirs, and the lands covered by such an easement or permit.
**Riparian –** Area, zone, and/or habitat adjacent to streams, lakes, or other natural free water, which have a predominant influence on associated vegetation or biotic community; pertaining to or situated on or along the bank of a stream or other water body.
**Riparian Area/Riparian Zone –** Terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial or intermittent water, high water tables, and soils that exhibit some wetness characteristics. These terms are normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs, and wet meadows.
**Riparian Species –** Plant species occurring within the riparian zone. Obligate species require the environmental conditions within the riparian zone; facultative species tolerate the environmental conditions and therefore may also occur away from the riparian zone.
**Riparian Vegetation –** Plant communities in the riparian zone consisting of riparian species.
**Runoff –** The portion of precipitation or irrigation on an area that does not infiltrate (enter the soil) but is discharged by the area.
**Saleable Minerals –** High volume, low-value mineral resources, including common varieties of rock, clay, decorative stone, sand, and gravel.

**San Andreas Fault –** The geologic transform fault that runs a length of roughly 800 miles through California.
**Scoping –** An early and open process for determining the scope of issues to be addressed in an environmental impact statement and the significant issues related to a proposed action.
**Season of use (livestock grazing) –** The primary season of the year (winter, spring, summer, or fall) that livestock grazing occurs within a given area or allotment.
**Section 106 of the National Historic Preservation Act –** The section of the National Historic Preservation Act that requires that federal agencies having direct or indirect jurisdiction over a proposed federal, federally assisted, or federally licensed undertaking, before approving the spending of funds or issuing a license, consider the effect of the undertaking on any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places, and give the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. Also see NATIONAL HISTORIC PRESERVATION ACT and NATIONAL REGISTER OF HISTORIC PLACES, and SECTION 110 OF THE NATIONAL HISTORIC PRESERVATION ACT.
**Section 110 of the National Historic Preservation Act –** The section of the National Historic Preservation Act that concerns the managing of federally owned historic properties. Among other provisions, Section 110 requires each federal agency to establish a program to locate, inventory, protect, restore and nominate to the Secretary of the Interior Standards all properties under its control that appear to qualify for the National Register of Historic Places. Also see NATIONAL HISTORIC PRESERVATION ACT, NATIONAL REGISTER OF HISTORIC PLACES, and SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT.
**Sedimentation –** The act or process of depositing sediment from suspension in water; all the processes by which particles of rock material are accumulated to form sedimentary deposits.
**Sediment Load**– The amount of sediment, measured in dry weight or by volume, that is transported through a stream cross-section in a given time. Sediment load consists of sediment suspended in water and sediment that moves by sliding, rolling, or bounding on or near the streambed.
**Seeding –** The planting of seeds to revegetate the land after a disturbance; an area that has been revegetated by seeding.
**Seral Stages –** The development stages of ecological succession.
**Soil Compaction –** Compression of the soil, resulting in reduced soil pore space (the spaces between soil particles), decreased movement of water and air into and within the soil, decreased soil water storage, and increased surface runoff and erosion.
**Soil Fertility –** The ability of a soil to support plant growth by providing water, nutrients, and a growth medium.
**Soil Profile –** A vertical section of the soil from the surface through all of its horizons.
**Species –** From Section 3(15) of the Federal Endangered Species Act: “The term 'species' includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.” A population of individuals that are more or less alike and that can breed and produce fertile offspring under natural conditions.
**Species Composition –** The proportions of plant species in relation to the total on a given area. It may be expressed in terms of cover, density, or weight.
**Stabilization (Cultural Resource)** – Protective techniques usually applied to structures and ruins to keep them in their existing condition, prevent further deterioration, and provide structural safety without significant rebuilding. Capping mud-mortared masonry walls with concrete mortar is an example of a stabilization technique.
**Standards for Rangeland Health –** A description of conditions needed to sustain public land health; relates to all uses of the public land. These standards address soils, streams, water quality, riparian-wetlands, and biodiversity.
**State Historic Preservation Officer (SHPO) –** The state official authorized to act as a liaison to the Secretary of the Interior for implementing the National Historic Preservation Act of l966.
**Substrate** – Mineral and organic material forming the bottom of a waterway or water body; the base or substance upon which an organism is growing. Used in: 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).

**Succession –** The progressive replacement of plant communities on an ecological site that leads to the climax community. Early seral stages are normally dominated by perennial grasses and annual as well as perennial forbs with few shrubs. During mid seral the woody species that the site supports such as shrubs and trees begin to make an obvious appearance, and annual forbs are dominated by perennial forbs. During late seral the shrubs normally dominate the cover on the site, but the perennial grasses still provide the most annual production on into the potential natural community.
**Taylor Grazing Act** – An act passed in 1934 that provides for the regulation of grazing on the public lands (excluding Alaska) to improve rangeland conditions and stabilize the western livestock industry.
**Threatened Species –** Any species defined through the Endangered Species Act (ESA) as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Also see ENDANGERED SPECIES.
**Traditional Cultural Property–** A property that is eligible for the National Register of Historic Places because of its association with a living community's cultural practices or beliefs that are important in maintaining the continuing community's cultural identity.
**Trailhead –** The terminus of a (motorized or non-motorized) trail accessible by motor vehicle from public roadways.
**Trespass –** Any occupancy, use, or development of the public lands or their resources of the United States without authority.
**Understory –** Plants growing under the canopy of other plants. Understory usually refers to grasses, forbs, and low shrubs under a tree or brush canopy.
**Upland Game –** A term used in wildlife management to refer to hunted animals that are neither big game nor waterfowl. Upland game includes such birds as grouse, turkey, pheasant, quail, and dove, and such mammals as rabbit and squirrel.
**Uplands –** Lands at higher elevations than alluvial plains or low stream terraces; all lands outside the riparian wetland and aquatic zones.
**Utility Corridor –** A parcel of land, without fixed limits or boundaries, which is being used as the location for one or more utility rights-of-way.
**Valid Existing Rights (mining) –** Locatable mineral development rights that existed when the Federal Land Policy and Management Act (FLPMA) was enacted on October 21, 1976. Some areas are segregated from entry and location under the Mining Law to protect certain values or allow certain uses. Mining claims that existed as of the effective date of the segregation may still be valid if they can meet the test of discovery of a valuable mineral required under the Mining Law. Determining the validity of mining claims located in segregated lands requires BLM to conduct a validity examination and is called a "valid existing rights" determination.
**Vascular Plants –** Any of various plants, such as the ferns and seed-bearing plants, in which the phloem transports sugar and the xylem transports water and salts.
**Vernal Pools**- perched wetlands which are seasonally to semi-permanently flooded depressions typically occurring on sites with poor drainage.
**Viable Population –** A wildlife or plant population that contains an adequate number of reproductive individuals to appropriately ensure the long-term existence of the species.
**Viewshed –** The entire area visible from a viewpoint.
**Vigor –** The capacity for natural growth and survival of plants and animals.
**Visual Resource Management (VRM) –** The inventory and planning actions to identify visual values and establish objectives for managing those values and the management actions to achieve visual management objectives.
**Visual Resource Management (VRM) Classes –** Categories assigned to public by scenic quality, sensitivity level, and distance zones. Each class has an objective that prescribes the amount of modification allowed in the landscape.
**Water Right –** A right to use, in accord with its priority, a certain portion of the waters of the state for irrigation, power, domestic use or another similar use.
**Watershed –** An area of land from which water drains toward a single stream. The watershed is a hydrologic unit often used as a physical-biological unit and a socioeconomic-political unit for planning and managing natural resources.

**Wetlands –** Areas characterized by soils that are usually saturated or ponded; i.e., hydric soils, and that support mostly water-loving plants; i.e. hydrophytic plants. Wetlands generally include swamps, marshes, bogs, and similar areas.
**Wilderness –** An area of undeveloped federal land retaining its primeval character and influence, without permanent improvement or human habitation, that is protected and managed so as to preserve its natural conditions and that (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.
**Wilderness Study Area (WSA) –** A roadless area that has been inventoried and found to be wilderness in character, has few human developments, and provides outstanding opportunities for solitude and primitive recreation, as described in Section 603 of the Federal Land Policy and Management Act of 1976 and in Section 2(c) of the Wilderness Act of l964.
**Wilderness Values –** Values established in the Wilderness Act, such as solitude and naturalness.
**Wildland Fire –** Any non-structure fire that occurs in the wild. Three distinct types of wildland fire have been defined and include wildfire, wildland fire use, and prescribed fire.
**Wildland Fire Use –** The application of the appropriate management response to naturally ignited wildland fires to meet specific resource management objectives in predefined designated areas outlined in fire management plans.
**Withdrawal** – An action that restricts the use of public lands by removing them from the operation of some or all of the public land or mining laws.
**Woodland** – A forest community occupied mainly by noncommercial species.
**Xeric -** Characterized by, or adapted to an extremely dry habitat.

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# Appendix I - Maps

Map 1 Planning Area Locator Map

Map 2 Air Management Districts

Map 3 Vegetation Communities

Map 4 Special Status Species

Map 5 Soils Map

Map 6 Fire Management Units

Map 7 Special Designations

*Areas of Critical Environmental Concern*

*Research Natural Area*

*Wilderness Study Area*

*Wild & Scenic Rivers*

Map 8 Visual Resource Management Classifications

Map 9 Livestock Grazing Allotments

Map 10 Reasonable Foreseeable Oil and Gas Development Potential

Map 11 Wind Energy Potential

Map A – Alternative A

Map B – Alternative B

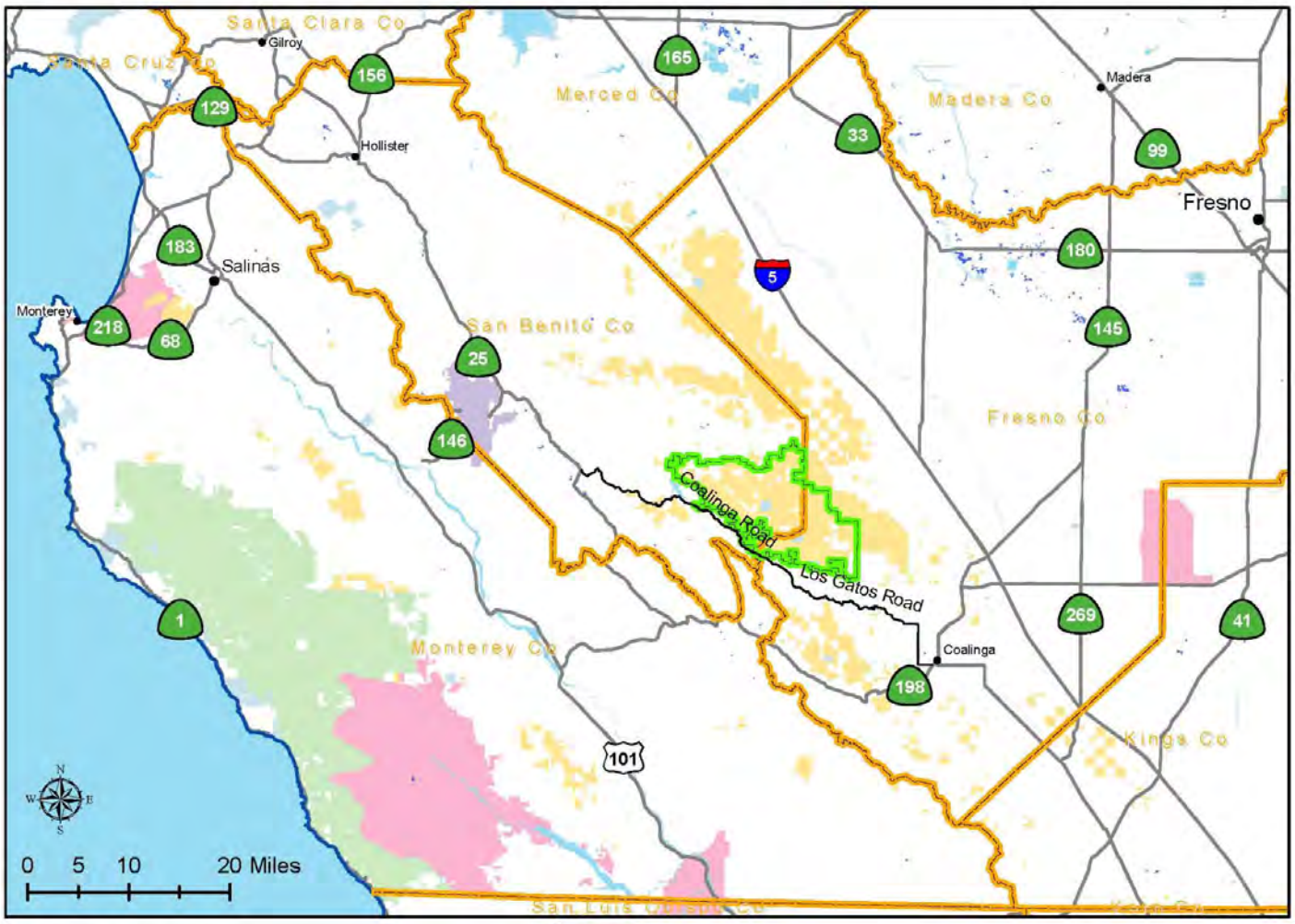
Map C – Alternative C

Map D – Alternative D

Map E – Alternative E

Map F – Alternative F

Map G – Alternative G



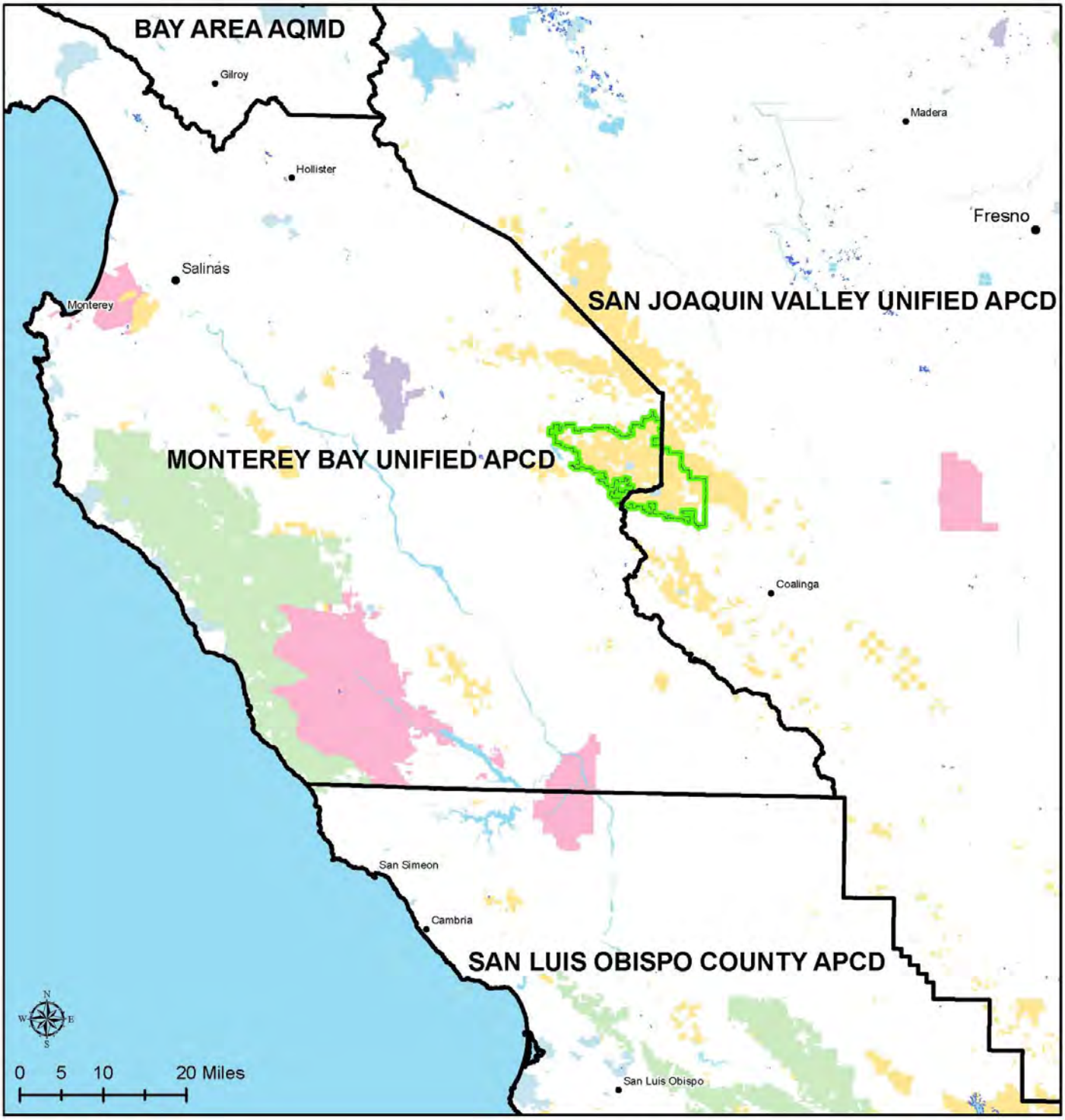

## Map 1 Legend

CCMA boundary

### Land Status

#### AGENCY

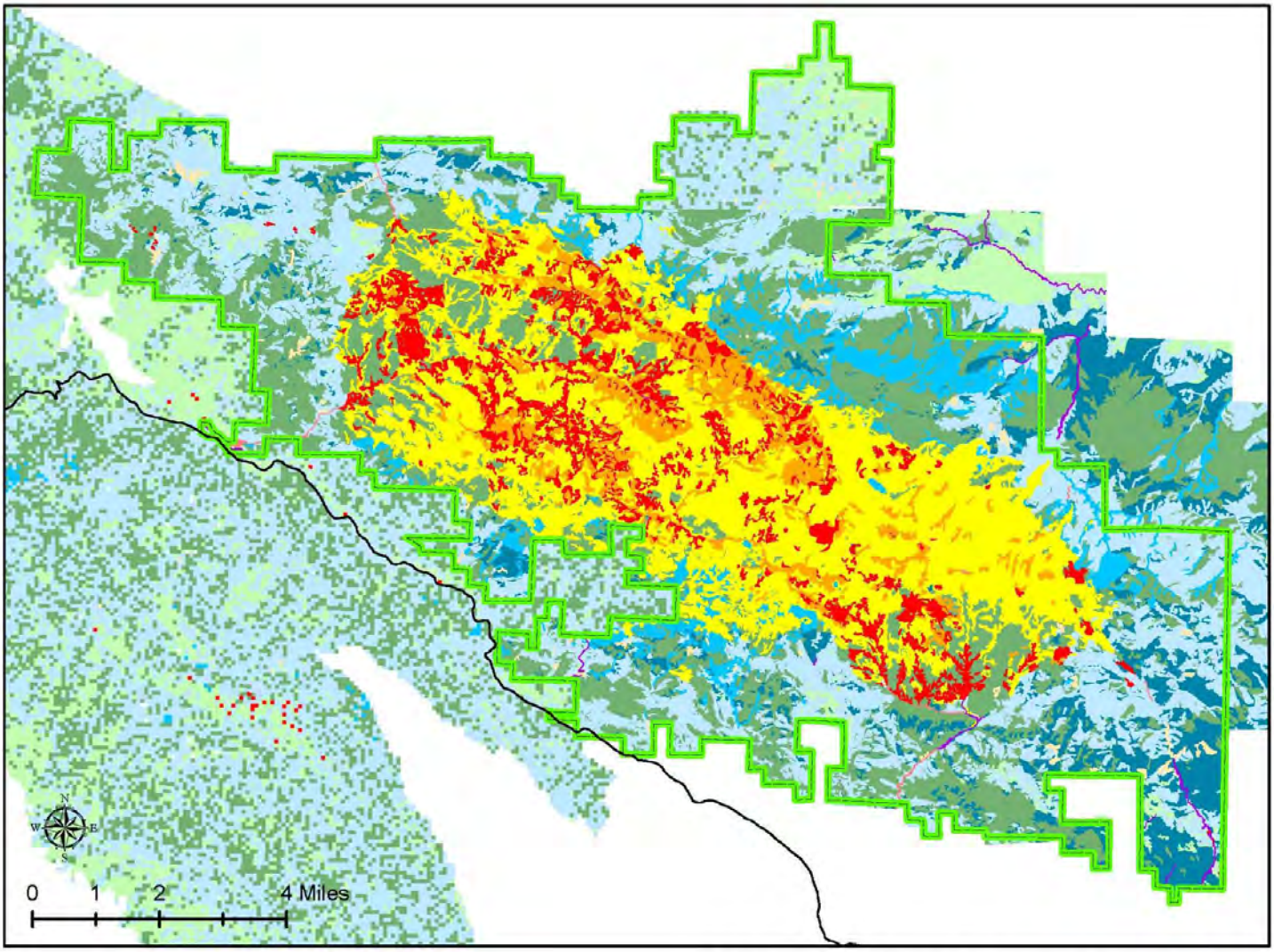
- Bureau of Land Management
- US Forest Service
- National Park Service
- Military
- State




# Air Managment Districts

**Map 2 Legend**

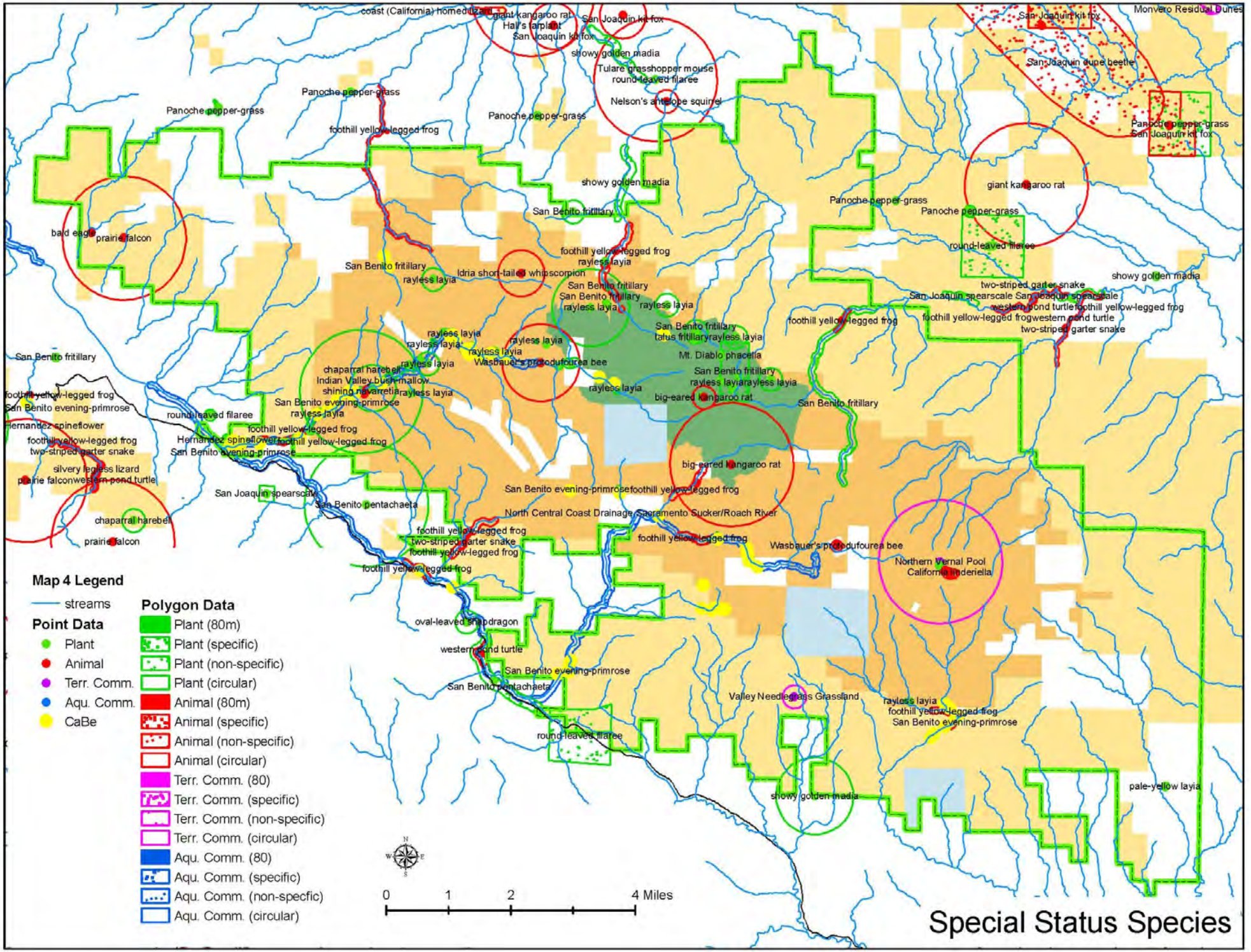
- CCMA boundary
- Air District Boundary

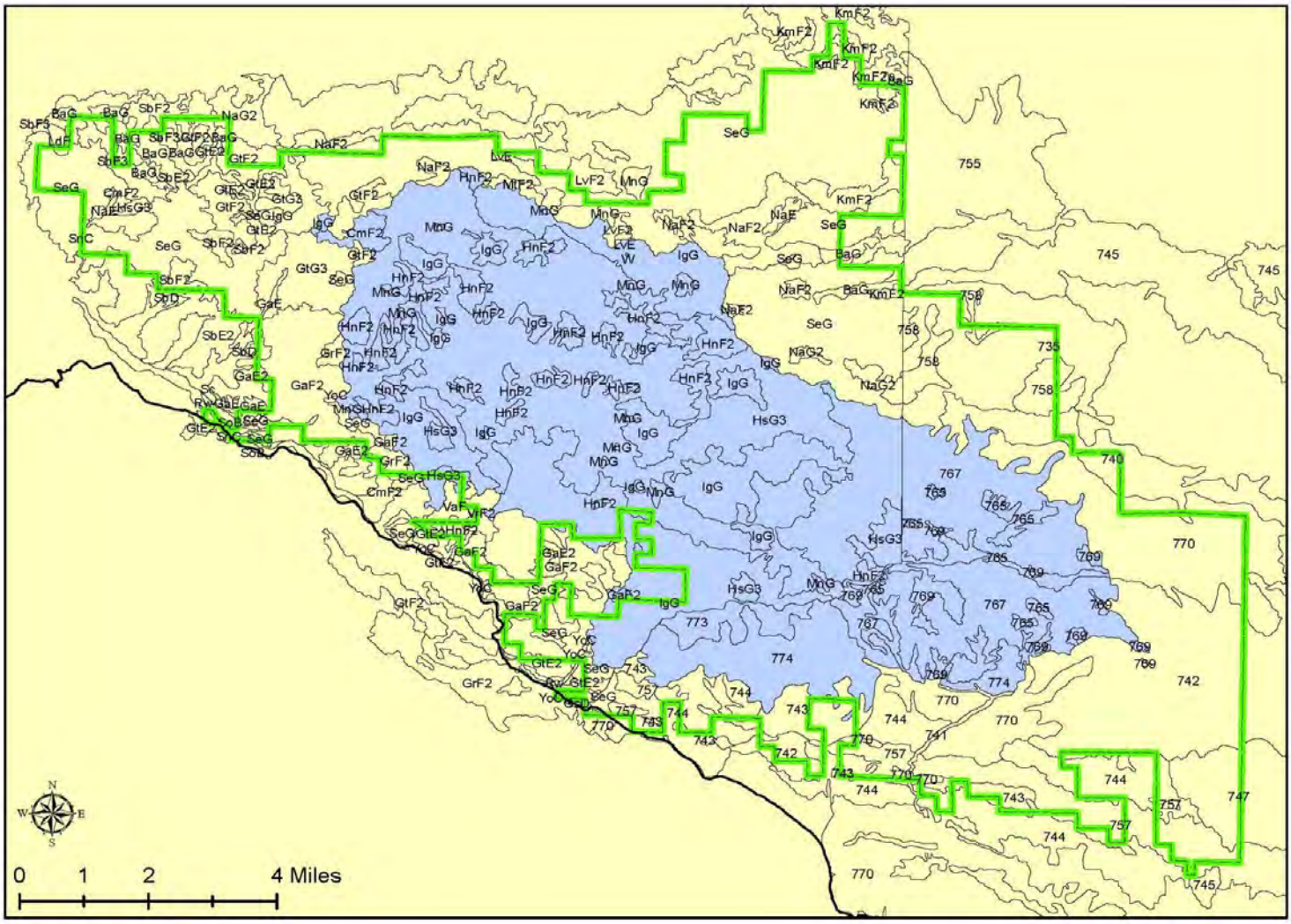



# Vegetation Communities

## Map 3 Legend

- CCMA boundary
- Serpentine willow
- Coulter pine
- Leather oak
- Serpentine barren
- Foothill pine
- Chamise-wedgeleaf ceanothus
- Mixed willow
- California annual grassland
- Mixed saltbush
- Blue oak
- Interior live oak
- California buckwheat





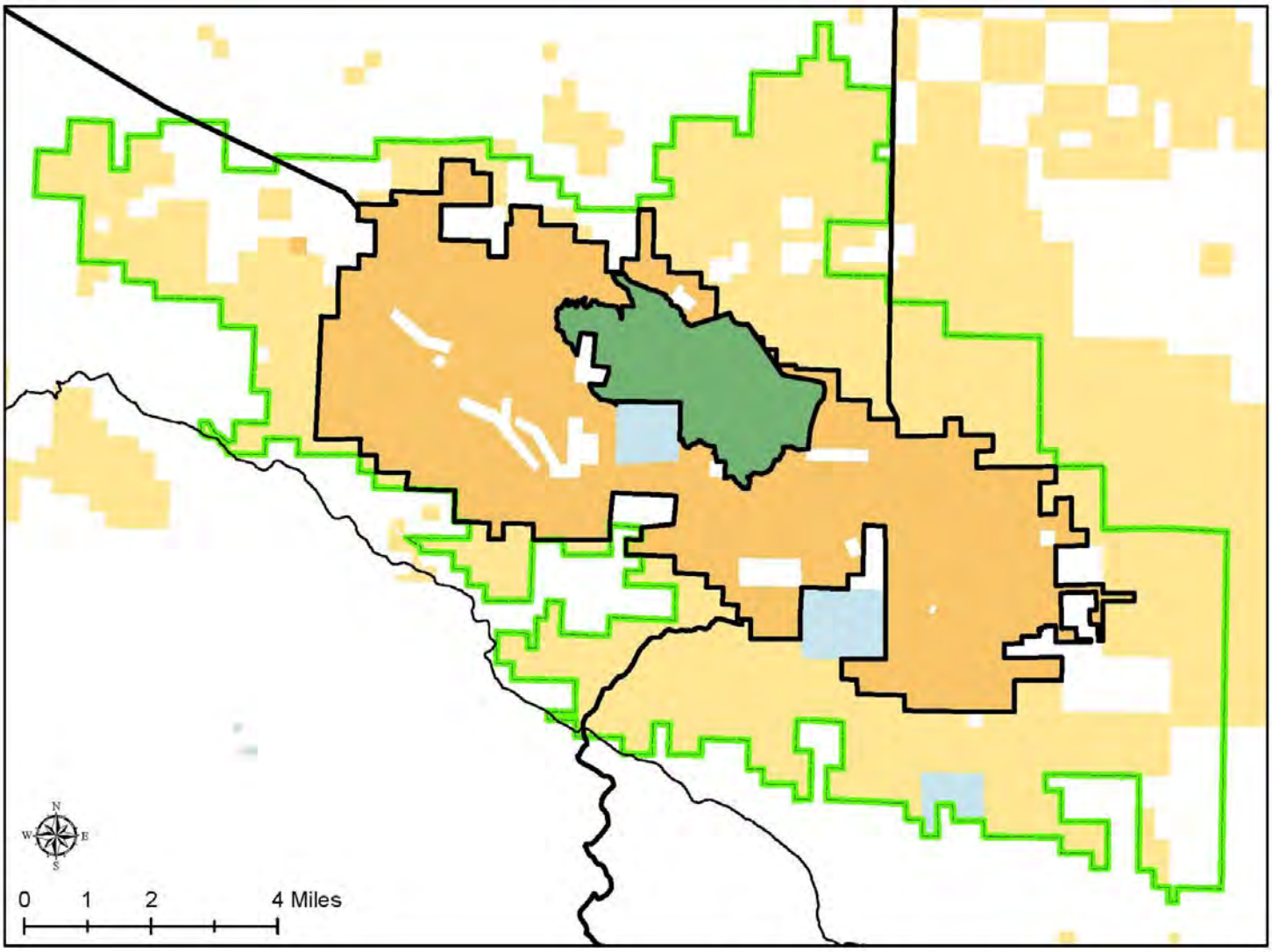

**Map 5 Legend**

**Soil category**

non-serpentine

serpentine

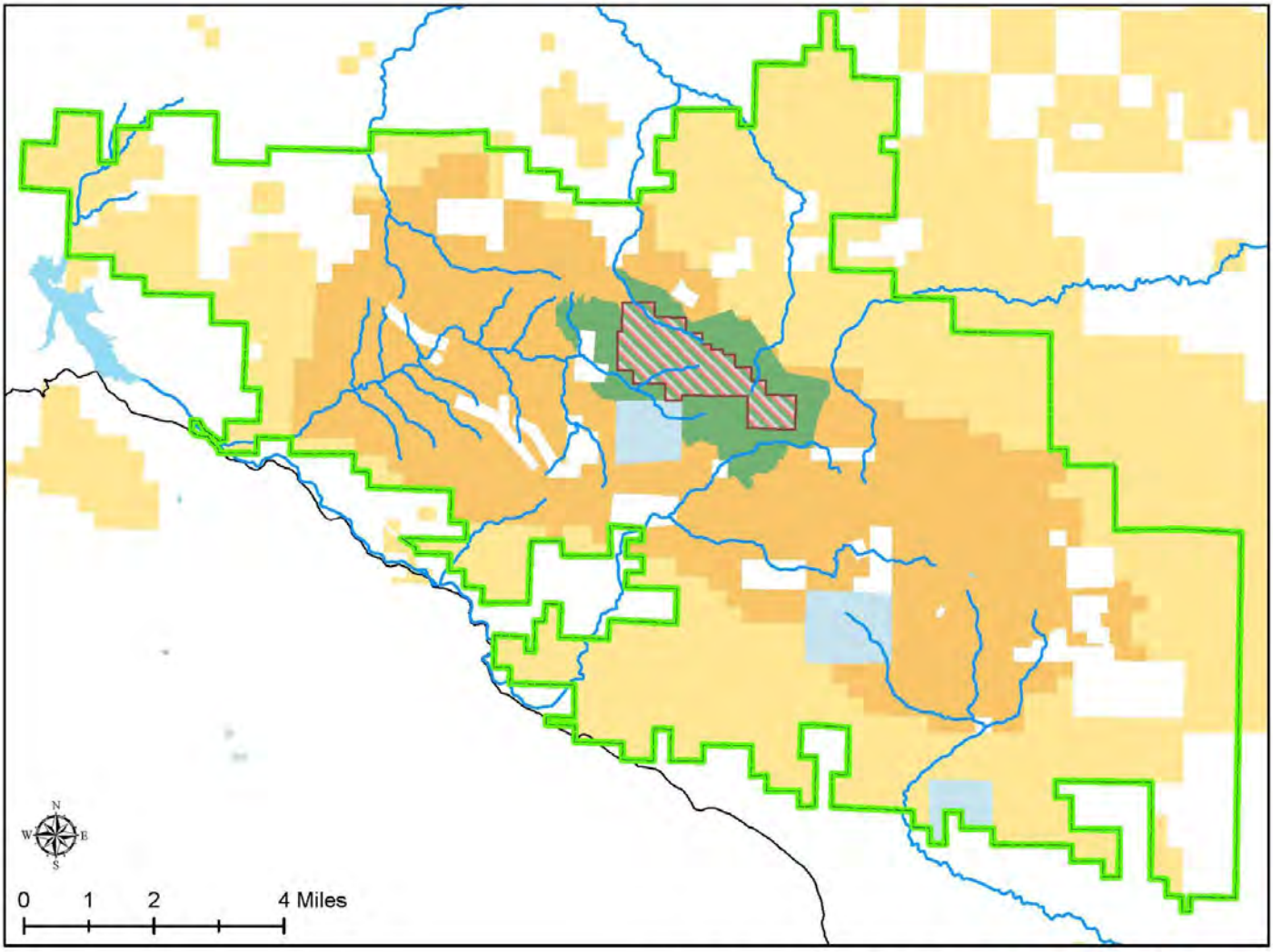
# Soils




Fire Management Units

## Map 6 Legend

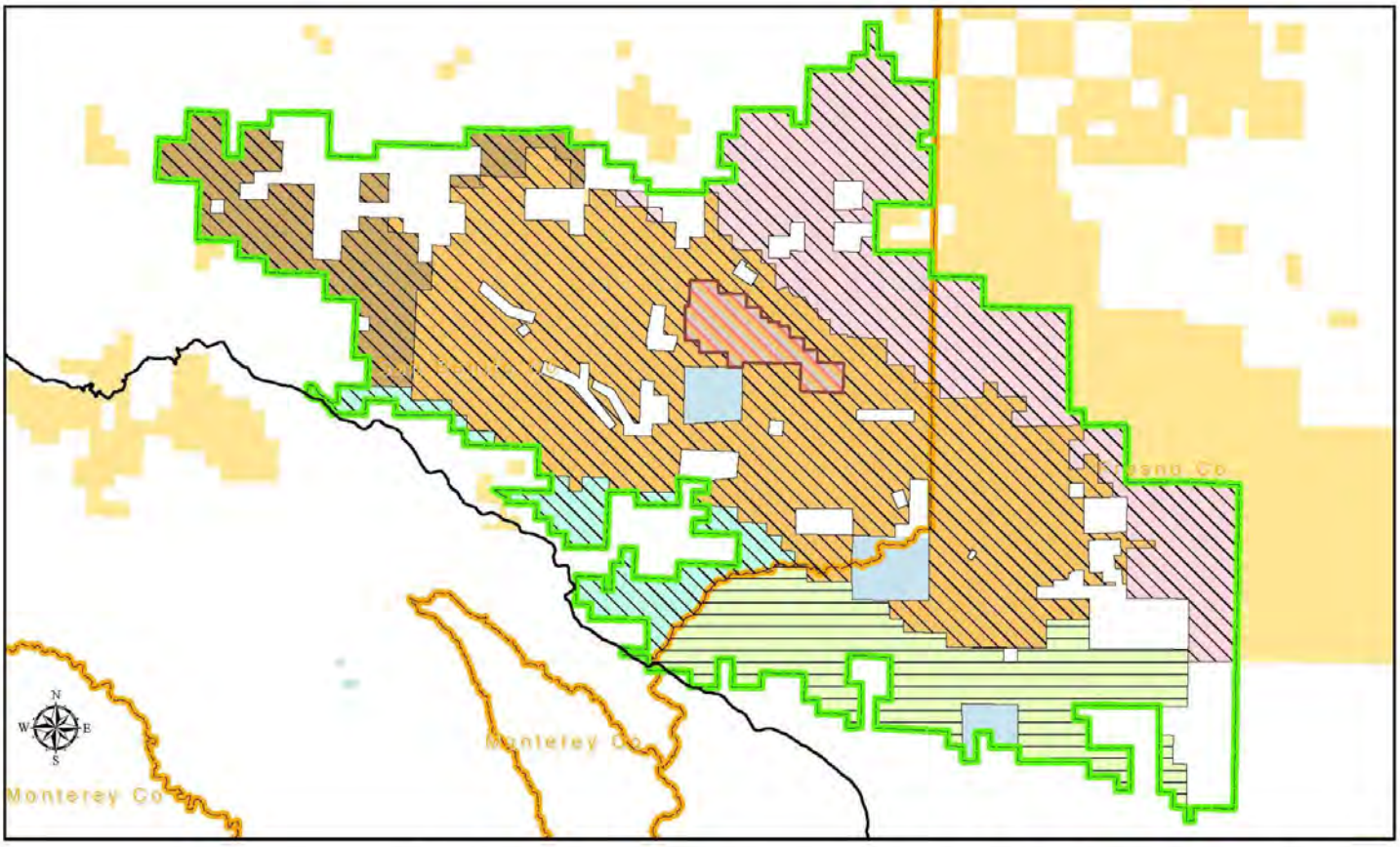
- Fire Management Unit boundaries
- CCMA boundary
- San Benito Mtn Research Natural Area
- Area of Environmental Concern (asbestos)




# Special Management Areas

## Map 7 Legend

- Wild & Scenic River Inventory (APP VI)
- CCMA boundary
- Wilderness Study Area
- San Benito Mtn Research Natural Area
- Area of Environmental Concern (asbestos)

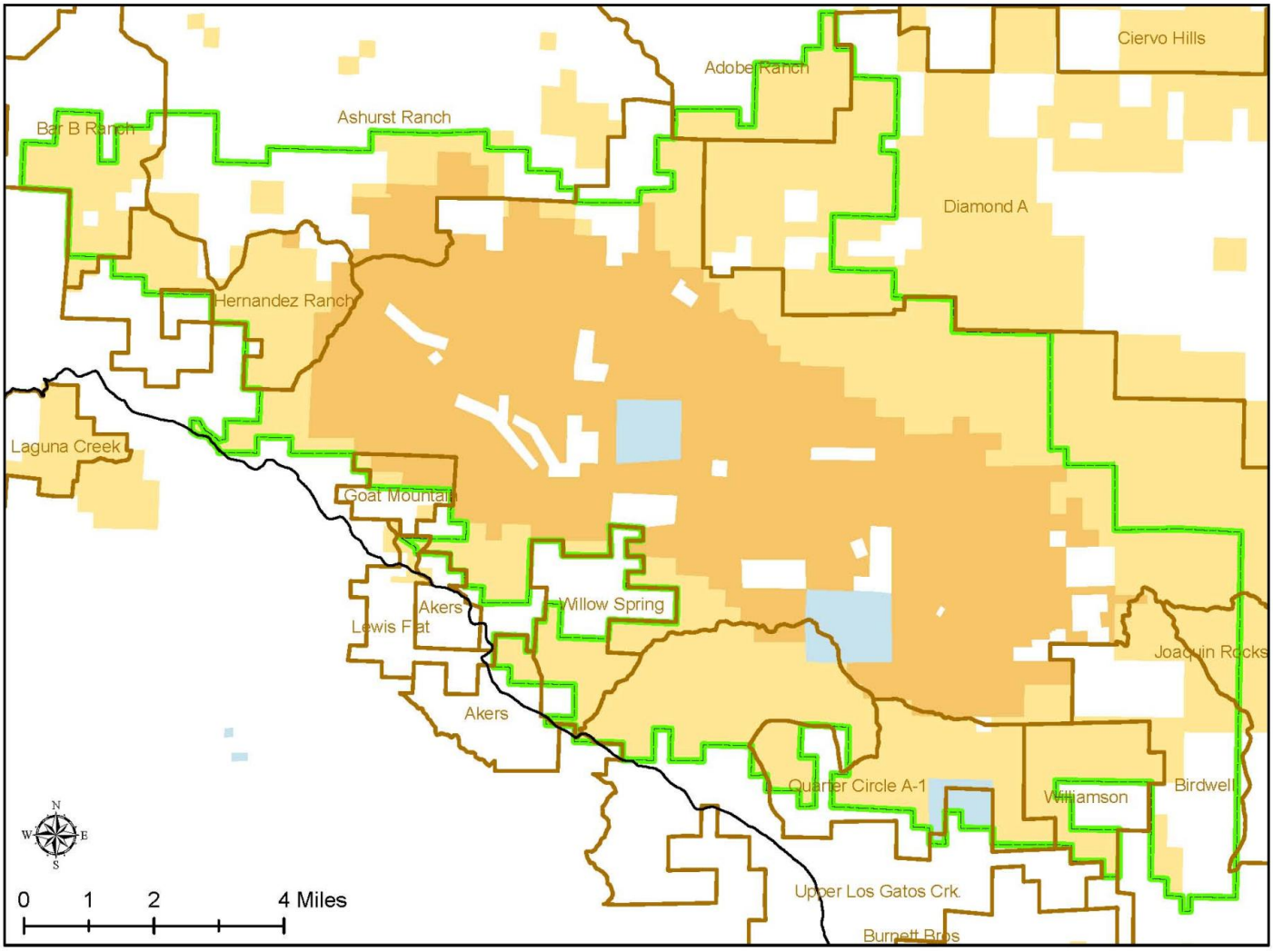



0 1 2 4 Miles

# VRM Classifications

## Map 8 Legend

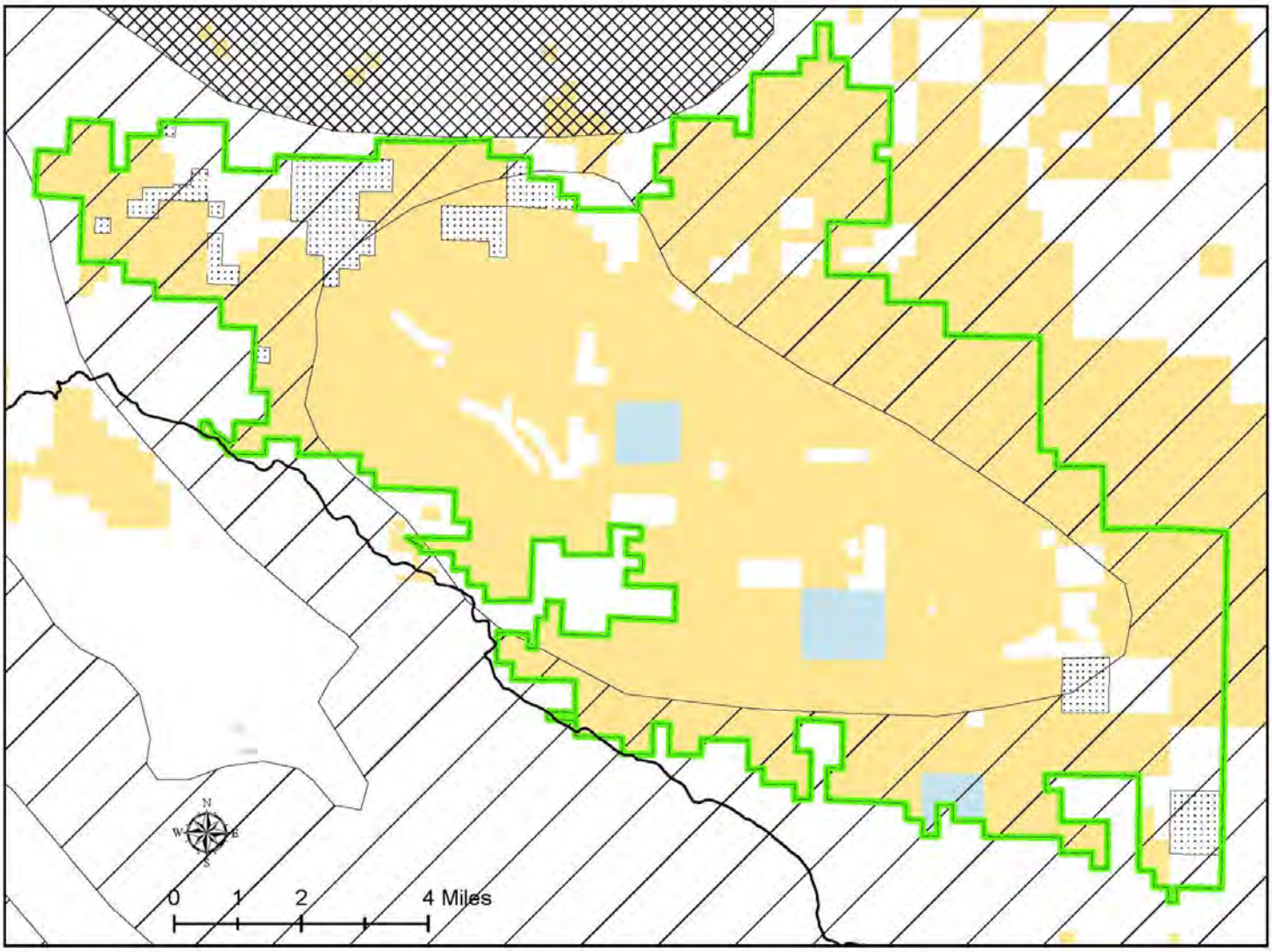
- VRM class 1
- VRM class 3
- VRM class 4




# Livestock Grazing Allotments

## Map 9 Legend

- CCMA boundary
- Allotments
- Area of Environmental Concern (asbestos)




## Map 10 Legend

# Oil & Gas Potential

CCMA boundary

### Oil & Gas Potential

High

Moderate

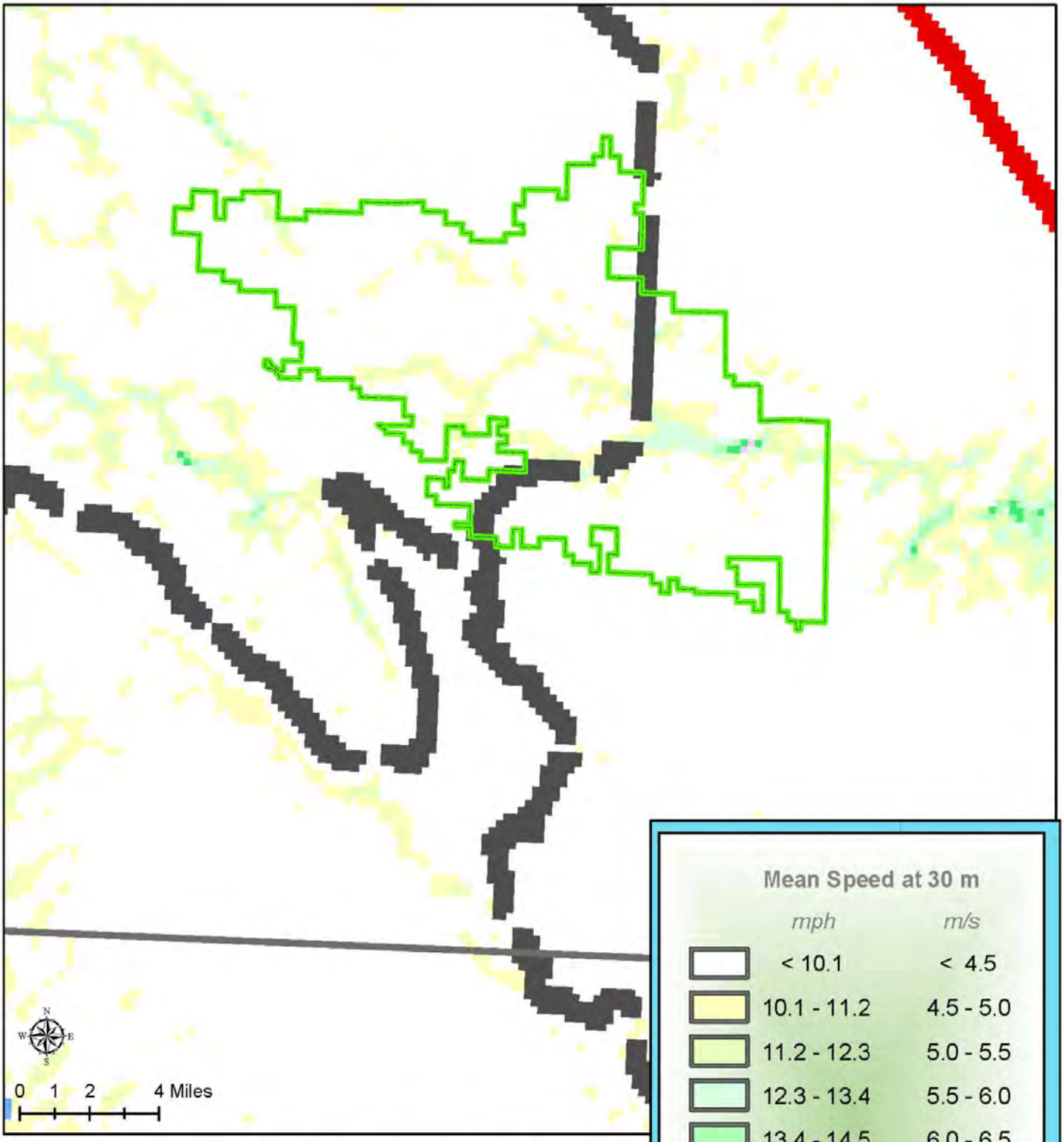
None

### Land Status

Bureau of Land Management

State

split estate




# Wind Energy Potential

**Map 11 Legend**

CCMA boundary

New Idria Road

Clear Creek Road

Coalinga Road

Los Gatos Road

Superfund Atlas Operable Unit

Superfund Coalinga Operable Unit

**Map A Legend**

- San Benito River Zone
- Condon Peak/ White Creek Zone
- Cantua Zone
- Tucker Mountain Zone
- Hazardous Asbestos Area (HAA)
- Area of Environmental Concern (asbestos)
- San Benito Mtn Research Natural Area
- Dry Season Routes
- County Road
- OHV Route Network
- CCMA boundary

# Alternative A

**Management objective**

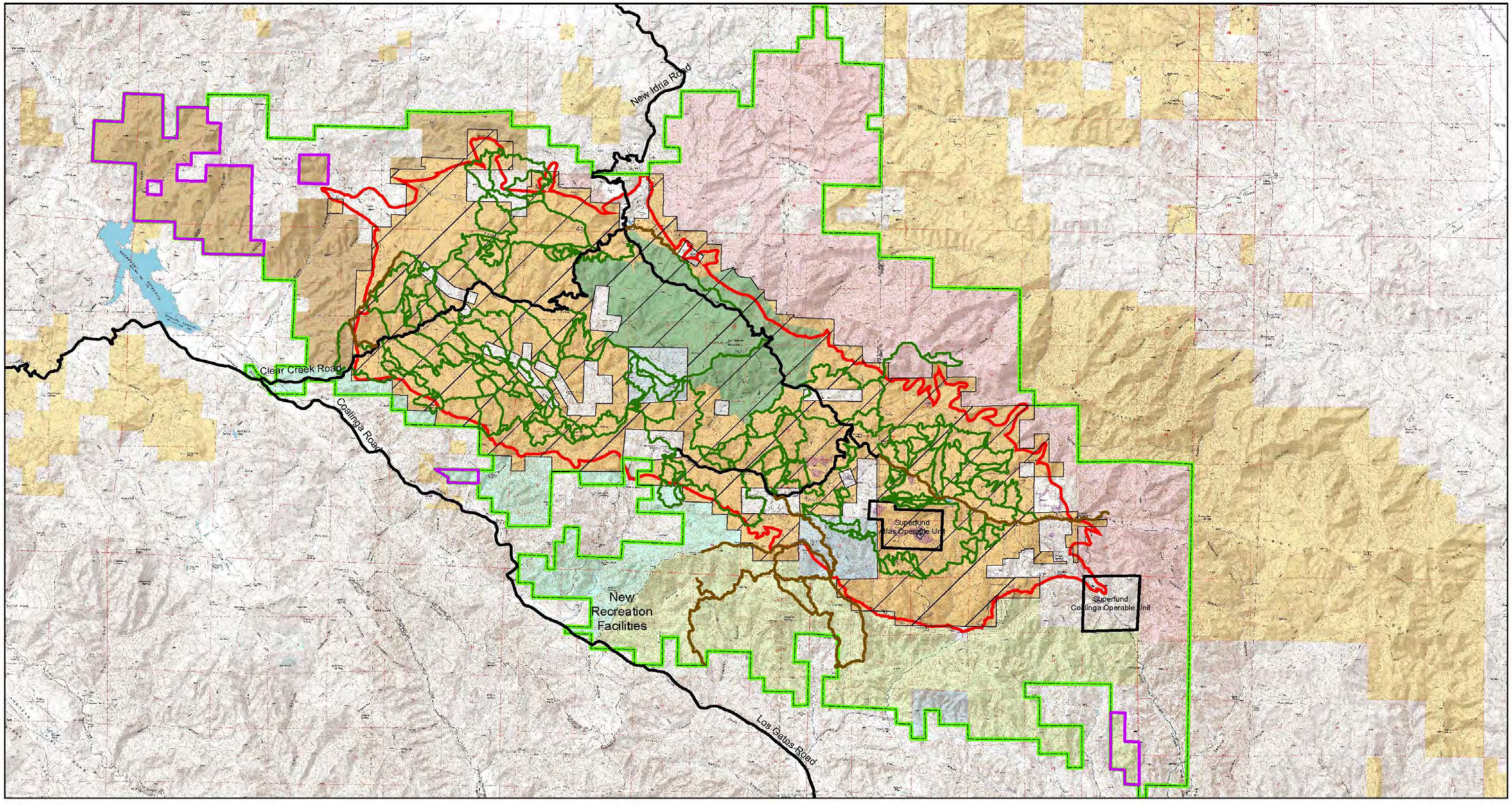
- Resume current management designation (before temporary closure)

US Department of the Interior
BUREAU OF LAND MANAGEMENT
Hollister Field Office
Hollister, California
(831) 630-5000
www.ca.blm.gov/hollister

**Date Prepared: 5/12/2009**
**Project: Map_A.mxd**

0 1 2 4 Miles

N




**Map B Legend**

- San Benito River Zone
- Condon Peak/ White Creek Zone
- Cantua Zone
- Tucker Mountain Zone
- Hazardous Asbestos Area (HAA)
- Possible disposal
- Area of Environmental Concern (asbestos)
- San Benito Mtn Research Natural Area
- Dry Season Routes
- County Road
- OHV Route Network
- CCMA boundary

# Alternative B

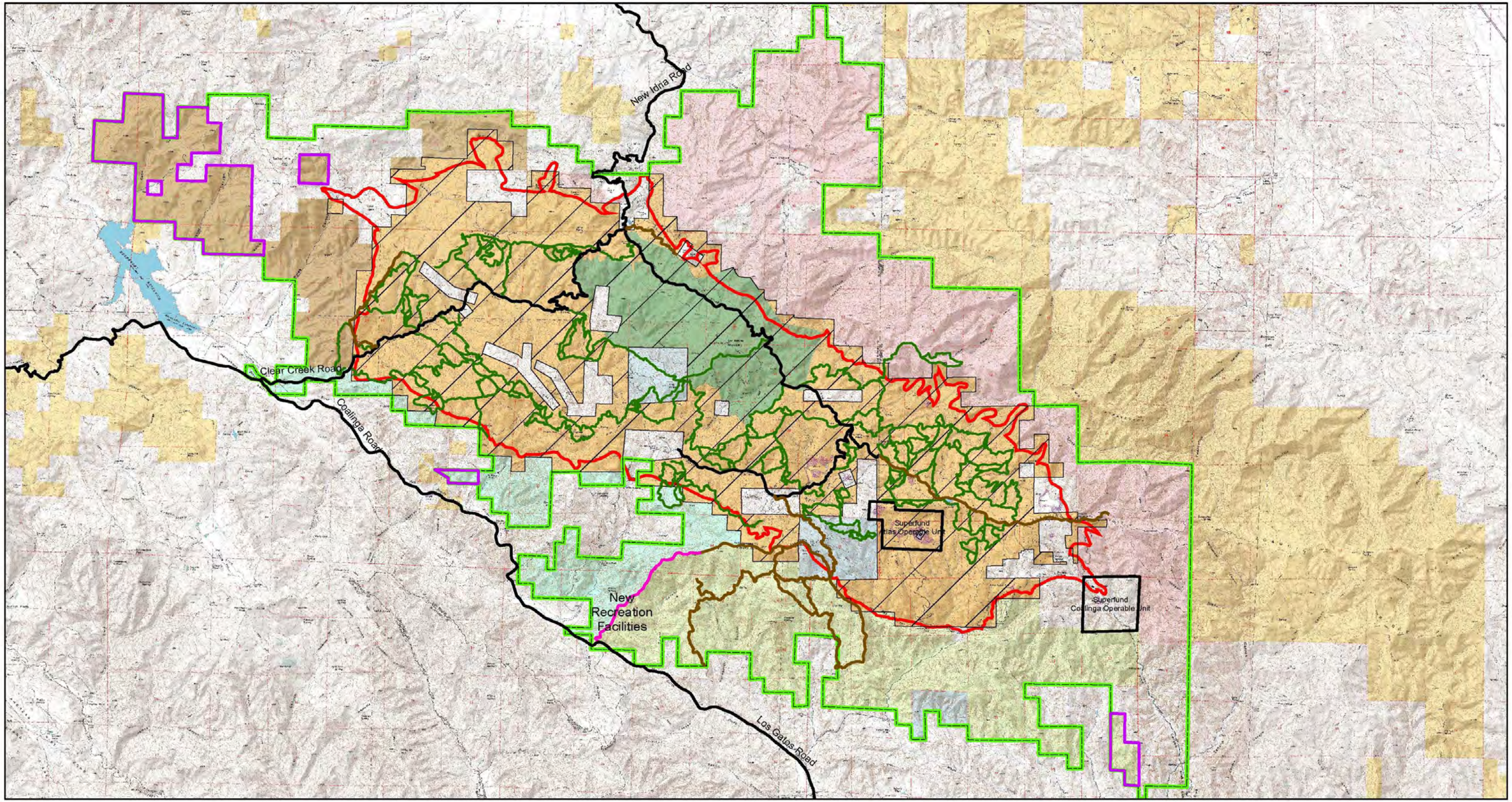
**Management objective**

Area open to OHV use on routes shown (number of days per person limited to reduce total asbestos exposure)

US Department of the Interior
**BUREAU OF LAND MANAGEMENT**
**Hollister Field Office**
**Hollister, California**
**(831) 630-5000**
**www.ca.blm.gov/hollister**
**Date Prepared: 5/12/2009**
**Project: Map_A.mxd**

0 1 2 4 Miles

N




**Map C Legend**

- San Benito River Zone
- Condon Peak/ White Creek Zone
- Cantua Zone
- Tucker Mountain Zone
- Hazardous Asbestos Area (HAA)
- Possible disposal
- Area of Environmental Concern (asbestos)
- San Benito Mtn Research Natural Area

- Dry Season Routes
- County Road
- Single Track Trail
- Route Construction Proposal
- CCMA boundary

# Alternative C

**Management objective**

Area Open to Motorcycle use for Adults only on routes shown

US Department of the Interior
BUREAU OF LAND MANAGEMENT
Hollister Field Office
Hollister, California
(831) 630-5000
www.ca.blm.gov/hollister
Date Prepared: 5/12/2009
Project: Map_A.mxd

0 1 2 4 Miles

N

New Idria Road

New Recreation Facilities

Clear Creek Road

Coalinga Road

Superfund Atlas Operable Unit

New Recreation Facilities

Superfund Coalinga Operable Unit

Los Gatos Road

## Map D Legend

- San Benito River Zone
- Condon Peak/ White Creek Zone
- Cantua Zone
- Tucker Mountain Zone
- Hazardous Asbestos Area (HAA)
- Area of Environmental Concern (asbestos)
- San Benito Mtn Research Natural Area

- Dry Season Routes
- County Road
- Potential Public Route
- Route Construction Proposal
- CCMA boundary

# Alternative D

**Management objective**

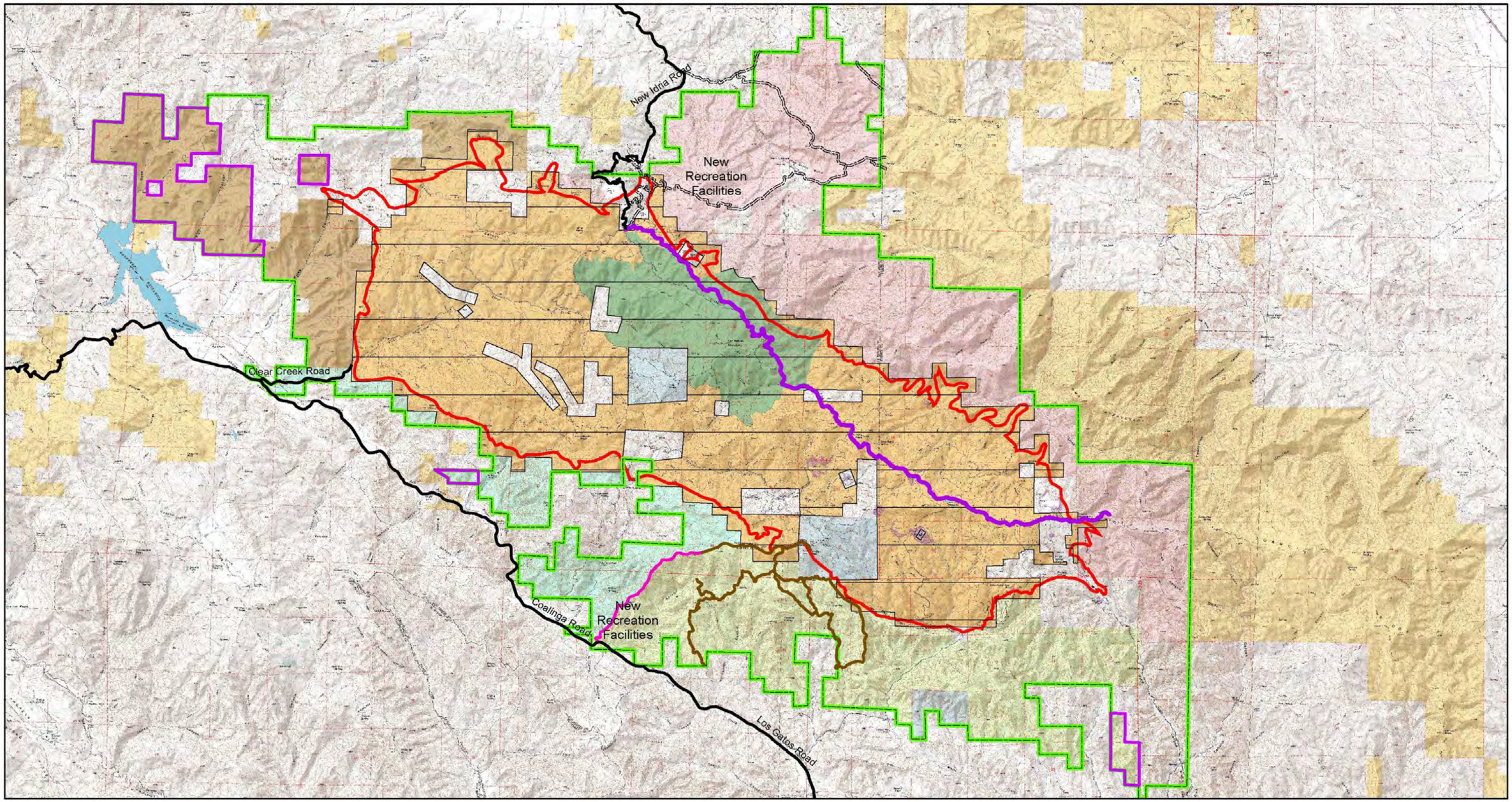
- Area open to Full-Size vehicles on routes shown
- New OHV recreation areas

US Department of the Interior
**BUREAU OF LAND MANAGEMENT**
**Hollister Field Office**
Hollister, California
(831) 630-5000
www.ca.blm.gov/hollister

**Date Prepared: 5/12/2009**
**Project: Map_A.mxd**

0 1 2 4 Miles

N




**Map E Legend**

- San Benito River Zone
- Condon Peak/ White Creek Zone
- Cantua Zone
- Tucker Mountain Zone
- Hazardous Asbestos Area (HAA)
- Possible disposal
- Area of Environmental Concern (asbestos)
- San Benito Mtn Research Natural Area

- Limited Vehicle use area (Scenic Route)
- Full size vehicle and ATV on these routes only
- Potential Public Route
- Route Construction Proposal
- CCMA boundary

# Alternative E

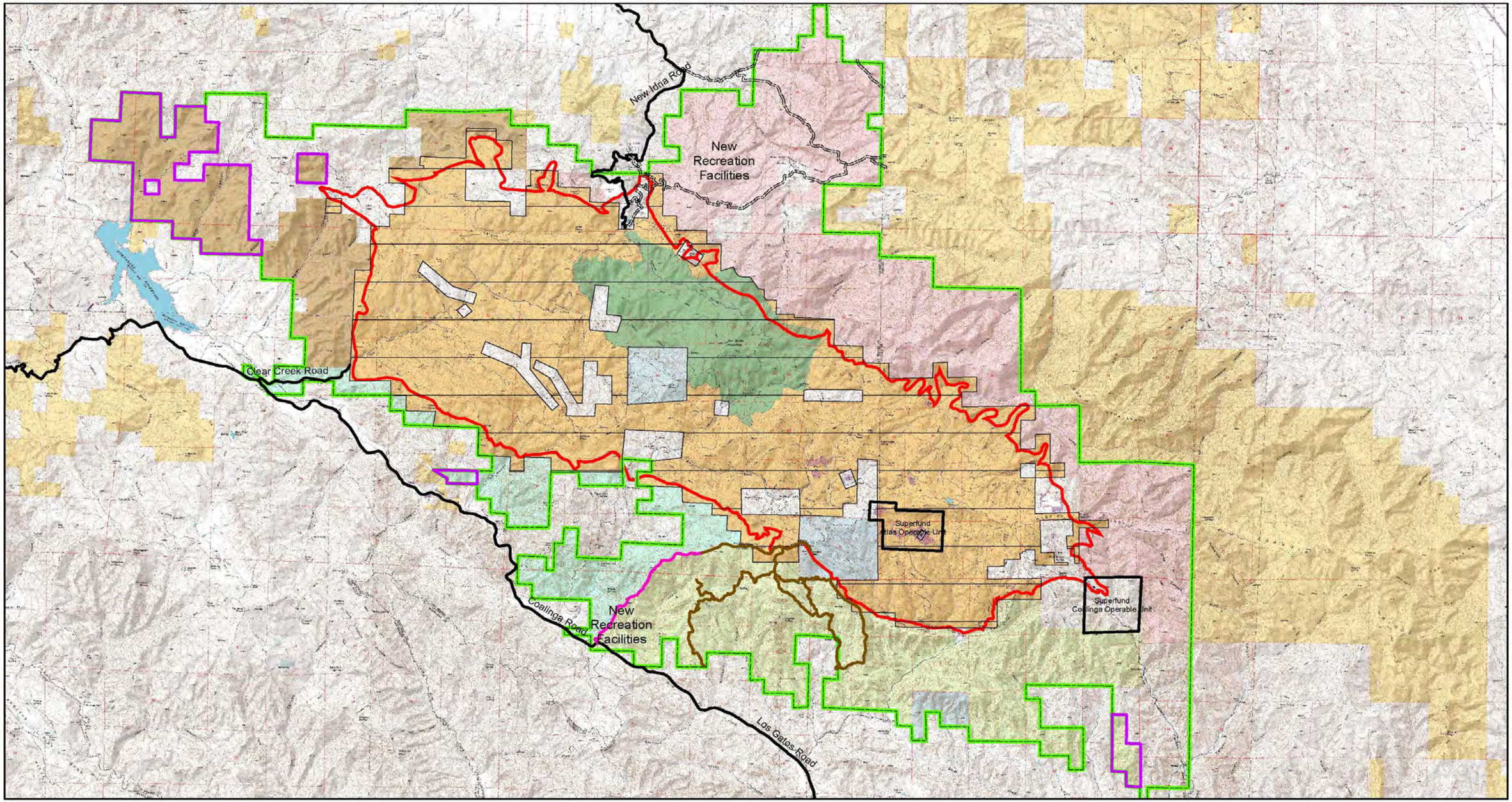
**Management objective**

- Areas open to foot traffic only

US Department of the Interior
BUREAU OF LAND MANAGEMENT
Hollister Field Office
Hollister, California
(831) 630-5000
www.ca.blm.gov/hollister
Date Prepared: 5/12/2009
Project: Map_A.mxd

0 1 2 4 Miles

N




**Map F Legend**

- San Benito River Zone
- Condon Peak/ White Creek Zone
- Cantua Zone
- Tucker Mountain Zone
- Hazardous Asbestos Area (HAA)
- Possible disposal
- Area of Environmental Concern (asbestos)
- San Benito Mtn Research Natural Area

- Potential Public Route
- Full size vehicle and ATV on these routes only
- Route Construction Proposal
- CCMA boundary

# Alternative F

**Management objective**

- Areas open to foot traffic only

US Department of the Interior
**BUREAU OF LAND MANAGEMENT**
**Hollister Field Office**
Hollister, California
(831) 630-5000
www.ca.blm.gov/hollister
**Date Prepared: 5/12/2009**
**Project: Map_A.mxd**

0 1 2 4 Miles

N

New Idria Road

Clear Creek Road

Coalinga Road

Superfund Silica Operable Unit

Superfund Coalinga Operable Unit

New Recreation Facilities

Los Gatos Road

**Map G Legend**

- San Benito River Zone
- Condon Peak/ White Creek Zone
- Cantua Zone
- Tucker Mountain Zone
- Hazardous Asbestos Area (HAA)
- Possible disposal
- Area of Environmental Concern (asbestos)
- San Benito Mtn Research Natural Area

- Route Construction Proposal
- Full size vehicle and ATV on these routes only
- CCMA boundary

# Alternative G

**Management objective**

Area closed, Authorized access only

US Department of the Interior
BUREAU OF LAND MANAGEMENT
Hollister Field Office
Hollister, California
(831) 630-5000
www.ca.blm.gov/hollister
Date Prepared: 5/12/2009
Project: Map_A.mxd

0 1 2 4 Miles

N

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# Appendix II – Route Designation Methodology

## A. Route Designation Criteria

HOLLISTER FIELD OFFICE
CLEAR CREEK MANAGEMENT AREA
ROUTE DESIGNATION WORKSHEET

1. Route Number:
2. Route Characteristics
    a. Length
    b. Continuity
    c. Description
    d. Trail Maintenance Objective
3. Topographic Map(s):

| EVALUATION CRITERIA | | | | |
|---|---|---|---|---|
| Level | Criteria Name | Criteria Value1 | Determination Date | Mitigation |
| Tier 1 | Private/state lands/mines | | | |
| Tier 1 | Sensitive species and Cultural | | | |
| Tier 1 | RNA/WSA | | | |
| Tier 1 | Barrens Interface | | | |
| Tier 1 | Riparian Areas | | | |
| Tier 2 | Erosion, Soil Loss Standard | | | |
| Tier 3 | OHV use/use spectrum | | | |
| Tier 4 | Transportation/manageability | | | |
| Tier 4 | Admin Use/ROW's | | | |
| Tier 4 | Route Proliferation/redundancy | | | |
| Tier 4 | Route Continuity | | | |

4. ROUTE DESIGNATION:
    (If Limited, Describe Limitation)

5. ROUTE DESIGNATION DATE:

6. Other Proposed Actions

7. Route Specific Rationale:

8. Land Use Plan Conformance:

9. Decision Criteria: Includes all criteria identified in 43 CFR 8342.1 parts (a) through (d) and the Proposed Action.

**HOLLISTER FIELD OFFICE**
**CLEAR CREEK MANAGEMENT AREA**
**ROUTE EVALUATION CRITERIA and DATA ELEMENT DICTIONARY**

**Introduction**: The following criteria represent the data on which decisions about the authorized recreation use of routes is based. The data element dictionary describes the allowed responses for each criterion. The information on each route will be entered into an electronic database for analysis and query.

**Route Designation Criteria**

The criteria have been combined into four tiers, roughly corresponding to the criteria's likelihood of requiring route closure. Where possible, mitigation measures are discussed that can be used to reduce the expected motorized OHV impacts under each criterion. Mitigation, as used in the process, refers to management actions that BLM can undertake to alleviate the effects of OHV use with respect to the designation criteria.

**Tier One**

These factors can individually result in a closure decisions for a given route. Nevertheless, some of the detrimental characteristics identified by these criteria can be successfully mitigated, given sufficient funding, staffing, and recreation interest.

**Private Land, State Lands and Mines**

Private and state lands occur throughout the CCMA. To date, managed routes have been maintained to reduce erosion by the Bureau without regard to ownership unless the Bureau has specifically been asked to assist in preventing OHV and other uses. Where routes desirable for recreation traverse private land, the Bureau will seek clarification from landowners about whether or not they wish to allow for OHV use. Should a landowner request it, the Bureau will close routes that traverse non-Bureau lands by closing the route back to the nearest intersections. The Bureau will seek reciprocal rights-of-way with private landowners as appropriate to provide access on primary route connectors. Reroutes to avoid non-Bureau lands will be evaluated under a separate Environmental Analysis, given sufficient recreation interest, adequate staff and sufficient funds. Mines will be avoided by closing routes leading to or through mined areas to avoid subjecting recreation users to increased levels of hazardous materials.

***Mitigation***. The Bureau will seek reciprocal rights-of-way with private landowners as appropriate to provide access on primary route connectors. Possible mitigation for mined lands will be to sufficiently prevent off route travel. Complete fencing of a route, to prevent public access to hazardous mine areas can be considered mitigation. Route closure due to private/state lands can possibly be avoided by building a new portion of route. New route construction is not analyzed under this DEIS.

**Sensitive Species and Cultural Resources**

Federal laws and BLM policy require protection of sensitive resources, such as threatened and endangered species and their habitat and cultural resources. Areas that OHV recreation may adversely impact are best protected from such use by avoidance. These types of resources are best

protected by not having routes bisect occupied or moderate- to high-potential habitat. Sensitive species and their habitat are also best protected by distance and adequate natural barriers. Cultural resources are similarly sensitive to OHV use impacts and can be managed in a manner analogous to sensitive plants and animals.

***Mitigation***. While avoidance is the preferred method to manage OHV use impacts, several strategies have also been documented to be successful in protecting sensitive resources. A combination of well-designed erosion control structures and corridor fencing has greatly reduced OHV use impacts to San Benito evening-primrose along the Clear Creek Canyon Road. It is not currently practical to eliminate the county road from the trail system. It is a well established route and OHV use impacts can generally be ameliorated by corridor fencing. Elsewhere, routes should be selected that do not bisect sensitive species habitat or cultural resources.

**SBMRNA/ACEC/WSA**

The management of the expanded San Benito Mountain Research Natural Area (approximately 4,147 acres), including the Wilderness Study Area (WSA) CA-040-309 (1500ac), requires more restrictive use of OHV's. Pursuant to 43 CFR 8342.1(d) routes shall be located in Research Natural Areas only if the authorized officer determines that off-road vehicle use in such locations would not adversely affect the natural, esthetic, scenic, or other values for which the area was established. All affected routes were evaluated following the criteria presented for the SBMRNA/ACEC designation and are consistent with the SBMRNA/ACEC expansion criteria.

***Mitigation***. The primary objective of WSA management is to return the WSA's natural character essentially unaltered by humans during the time it is being managed as a WSA. The existing WSA designation allows vehicle use only on the county route (R011) and the "Ridge Route," now called R010, R012 and R013. No other routes will be considered within this 1500 acre area. For the existing RNA and proposed expanded RNA, designated routes may need to be fenced or otherwise limited to reduce potential impacts of OHV use off the designated route. No mitigation for considering additional routes is possible for the WSA, since only the current routes are authorized.

**Interface with Closed and Proposed Closed Barrens**

A number of barrens have been closed along riparian corridors and within the WSA. Routes through barren areas are particularly susceptible to route proliferation and off route vehicle use. Routes through closed barrens will be avoided where possible.

***Mitigation***. Construction of fence or other barriers that control off-route use can be considered as mitigation for this criterion. Reroutes to avoid a particular barren or to change the location of the route to minimize impacts can also be considered.

**Riparian Areas**

Riparian areas provide specialized habitat for several sensitive species and can act to filter sediments. Therefore, riparian areas are to be avoided and impacts from OHV use minimized to the extent practicable. Historically, a number of trails used streams as the primary route of travel and resulted in impacts to sensitive resources. This past practice is too destructive to be continued. Routes crossing streams can also be resource impairing, therefore the number of such crossings should be minimized. Sediment modeling conducted by PTI Environmental Services identified a number of sub-watersheds within the Clear Creek watershed that are projected to contribute particularly high levels of sediment

into Clear Creek. It is especially important that these sub-watersheds be evaluated for opportunities to reduce sediment delivery into an active drainage.

***Mitigation.*** Impacts to riparian zones can be minimized by reducing the number of stream crossings, changing their location and/or orientation of the crossing to the stream, or by changing the actual crossing by appropriate hardening or utilizing bridges. In using these mitigation measures, it is important to design stream crossings that maintain an adequate flow rate so as to discourage yellow-legged frogs from attaching egg masses at these high use areas.

**Tier Two**

Criteria within this tier can also result in closure of a route. However, given sufficient recreation interest and available funds, actions can be taken to ameliorate most potential negative effects.

**Erosion and Soil Loss Standards**

Routes can cause erosion within the route tread, and through concentrated runoff, to off-tread locations. The data for this criterion is gathered following guidance found in the California State Soil Loss Standards. Besides requirements for signing, route design, and soil sustainability, the standards also require corrective actions within specified timeframes.

***Mitigation.*** Many of the implementation strategies are designed to reduce route use impacts, direct and indirect. Most maintenance and corrective actions are relatively inexpensive and can be accomplished in a timely manner with existing staff. Some corrective actions will need to be carefully justified by comparing costs with benefits. Other problem areas can be avoided by constructing reroutes.

**Tier Three**

The criteria within this tier describe the level of recreation interest of a given route, and whether it contributes to the recreation opportunity and diversity of recreation experience within the entire CCMA.

**OHV Use/Recreation Spectrum**
Route selection will consider linking visitor desires with recreation opportunities. Nearly all routes have some recreation value. Nevertheless, it is important that the open route network contributes to achieving the CCMA plan's resource condition objectives. Routes should be selected that provide a wide spectrum of recreation use throughout the CCMA and provide a variety of difficulty levels. Consideration will be given to the level of recreation interest, providing a diversity of trail types and experiences, and allowing for a variety of recreation activities.

**Tier Four**

This tier describes criteria focused on basic issues of route management, including maintenance, conflicting uses, official and administrative use, existing rights-of-way, and contribution to the overall route network. Consideration may be given, weighing of the costs of managing routes versus the recreation benefits of those routes.

**Route Management Objective (RMO)**

While the trail maintenance objective will not trigger a decision on whether to open or close a route, the objective does impact the cost (personnel and equipment) of keeping a route open. Similarly, the manageability of a route does not necessarily affect the resource impacts of its use, assuming the route is adequately managed. However, routes that are difficult to manage/maintain will be costly and given current budget constraints may need to be closed for this reason alone. Changing a route's management objective may sufficiently reduce the cost of its maintenance to allow for OHV use.

***Mitigation.*** The primary way to mitigate the effect of this criteria on route closure are to reduce costs of maintenance, through either improved efficiency or use of volunteers, or by reducing the level of required maintenance by changing the route management objective.

**Administrative Use/Rights of Way**

This criterion considers non-recreation uses of a route such as access to a communication site, access to state or private lands, authorized uses, and valid existing rights-of-way. Recreation may not always be appropriate for these maintained routes. When this is the case, the route will be Limited to Administrative Use. Administrative use designations will not be available for casual recreation use. Use will be restricted to permittees, licensees, rights-of-way holders, Federal government and its' authorized representatives. These routes differ from closed routes in that they will be regularly maintained and will not be considered for reclamation.

***Mitigation.*** Designation as administrative use with appropriate restrictions may reduce potential OHV impacts.

**Proliferation and Redundancy**

Route proliferation is clearly prohibited by the 1999 ROD. To the extent practicable, route designations should be used to reduce route proliferation. As it applies to this criterion, route proliferation pertains to whether the individual route may contribute to unauthorized use and the creation of new routes, or whether unauthorized use itself created the route. Determining whether or not a route is redundant requires considering several factors, including, RMO/trail type, proximity to sensitive resources, resource and user conflicts, proliferation, and contribution to route network.

***Mitigation.*** Route proliferation can be reduced in some situations by barrier construction. Beyond the scope of this Final EIS is the possibility of rerouting a portion of a route to take advantage of existing natural or human-made barriers.

**Route Continuity**

Recreation use of OHV's is the dominant form of recreation in the CCMA. However, a variety of recreation uses need to be accommodated through the route designation process. On a given trail, these various uses may be in conflict, possibly creating safety concerns in addition to visitor frustration. Some routes are dead ends which are advantageous for some uses, such as hunting or camping, but may result in route proliferation at the dead end by OHV use. Logically connecting routes are emphasized when considering recreational OHV use. Certain dead end routes and spur routes may be desirable with appropriate limitations on the use or types of vehicles.

***Mitigation.*** Rather than arbitrarily close all dead end routes, BLM may install signs letting users know the route is a dead end, closed ahead, or designating certain limitations on OHV use.

**DATA ELEMENT DICTIONARY**

**Tier 1**

**1. Private/state lands/mines**

| Code | Definition |
|---|---|
| 11000 | All BLM. |
| 11010 | Some private, use o.k. |
| 11020 | Some state, use o.k. |
| 11030 | Some mine, use o.k. |
| 11040 | Some private and state, use o.k. |
| 11050 | Some private and mine, use o.k. |
| 11060 | Some state and mine, use o.k. |
| 11070 | Some private, state and mine, use o.k. |
| 11119 | Some private, use NOT o.k. |
| 11129 | Some state, use NOT o.k. |
| 11139 | Some mine, use NOT o.k. |
| 11149 | Some private and state, use NOT o.k. |
| 11159 | Some private and mine, use NOT o.k. |
| 11169 | Some state and mine, use NOT o.k. |
| 11179 | Some private, state and mine, use NOT o.k. |
| 11111 | Some private, use UNKNOWN. |
| 11121 | Some state, use UNKNOWN. |
| 11131 | Some mine, use UNKNOWN. |
| 11141 | Some private and state, use UNKNOWN. |
| 11151 | Some private and mine, use UNKNOWN. |
| 11161 | Some state and mine, use UNKNOWN. |
| 11171 | Some private, state and mine, use UNKNOWN. |
| 11212 | Some private, POTENTIAL MITIGATION |
| 11222 | Some state, POTENTIAL MITIGATION. |
| 11232 | Some mine, POTENTIAL MITIGATION. |
| 11242 | Some private and state, POTENTIAL MITIGATION. |
| 11252 | Some private and mine, POTENTIAL MITIGATION. |
| 11262 | Some state and mine, POTENTIAL MITIGATION. |
| 11272 | Some private, state and mine, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**2. Sensitive species and Cultural**

| Code | Definition |
|---|---|
| 12000 | No known conflicts. |
| 12010 | Plants nearby, use o.k. |
| 12020 | Animals nearby, use o.k. |
| 12030 | Cultural nearby, use o.k. |
| 12040 | Plants and animals nearby, use o.k. |
| 12050 | Plants and cultural nearby, use o.k. |
| 12060 | Animals and cultural nearby, use o.k. |

| | |
|---|---|
| 12070 | Plants, animals and cultural nearby, use o.k. |
| 12119 | Plants nearby, use NOT o.k. |
| 12129 | Animals nearby, use NOT o.k. |
| 12139 | Cultural nearby, use NOT o.k. |
| 12149 | Plants and animals nearby, use NOT o.k. |
| 12159 | Plants and cultural nearby, use NOT o.k. |
| 12169 | Animals and cultural nearby, use NOT o.k. |
| 12179 | Plants, animals and cultural nearby, use NOT o.k. |
| 12212 | Plants nearby, POTENTIAL MITIGATION. |
| 12222 | Animals nearby, POTENTIAL MITIGATION. |
| 12232 | Cultural nearby, POTENTIAL MITIGATION. |
| 12242 | Plants and animals nearby, POTENTIAL MITIGATION. |
| 12252 | Plants and cultural nearby, POTENTIAL MITIGATION. |
| 12262 | Animals and cultural nearby, POTENTIAL MITIGATION. |
| 12272 | Plants, animals and cultural nearby, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**3. RNA/WSA**

| Code | Definition |
|---|---|
| 13000 | No known conflicts. |
| 13010 | RNA nearby, use o.k. |
| 13020 | WSA nearby, use o.k. |
| 13030 | RNA and WSA nearby, use o.k. |
| 13119 | RNA nearby, use NOT o.k. |
| 13129 | WSA nearby, use NOT o.k. |
| 13139 | RNA and WSA nearby, use NOT o.k. |
| 13212 | RNA nearby, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**4. Barrens Interface**

| Code | Definition |
|---|---|
| 14000 | No known conflicts. |
| 14010 | Barren nearby, use o.k. |
| 14119 | Barren nearby, use NOT o.k. |
| 14212 | Barren nearby, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**5. Riparian Areas**

| Code | Definition |
|---|---|
| 15000 | No known conflicts. |
| 15010 | Riparian nearby, use o.k. |
| 15119 | Riparian nearby, use NOT o.k. |
| 15212 | Riparian nearby, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**Tier 2**

**6. Erosion, Soil Loss Standard**

| Code | Definition |
|---|---|
| 16000 | No known conflicts (Green) |
| 16010 | Yellow, use o.k. |
| 16020 | Red, use o.k. |
| 16119 | Red, use NOT o.k. |
| 16212 | Red, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**Tier 3**

**7. OHV use/use spectrum**

| Code | Definition |
|---|---|
| 17000 | No known conflicts – contributes to use spectrum. |
| 17119 | Does NOT contribute to use spectrum. |
| 17010 | Recreation Conflicts – Limited Use o.k. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**Tier 4**

**8. Route Management Objective (RMO)**

| Code | Definition |
|---|---|
| 18000 | No known conflicts – manageable given current RMO and funding/staffing levels. |
| 18119 | Not manageable due to physical conditions, use NOT o.k. |
| 18212 | Not manageable due to physical conditions, POTENTIAL MITIGATION (reroute) |
| 18222 | Not manageable due to RMO, POTENTIAL MITIGATION. |
| 18232 | Not manageable due to funding/staffing, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**9. Admin Use/ROW's**

| Code | Definition |
|---|---|
| 19000 | No known conflicts |
| 19119 | Traverses private, no public access, use NOT o.k. |
| 19129 | Unprotected facility, use NOT o.k. |
| 19212 | Private route, POTENTIAL MITIGATION. |
| 19222 | Unprotected facility, POTENTIAL MITIGATION. |
| 19139 | Other Conflicts (specify below), use NOT o.k. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**10. Route Proliferation/redundancy**

| Code | Definition |
|---|---|
| 110000 | No known conflicts |
| 110119 | Presently excessive route proliferation, use NOT o.k. |
| 110129 | Route is redundant, use NOT o.k. |
| 110212 | Route proliferation, POTENTIAL MITIGATION. |
| 110222 | Route redundant, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**11. Route Continuity**

| Code | Definition |
|---|---|
| 111000 | No known conflicts, promotes OHV continuity/connectivity. |
| 111010 | Dead end route, all use o.k. |
| 111020 | Dead end route, Limited Use o.k. |
| 111119 | Dead end route, OHV use NOT o.k. |
| 111212 | Dead end route, POTENTIAL MITIGATION. |
| 9999 | NO DATA AVAILABLE |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

# B. Barren Designation Criteria

HOLLISTER FIELD OFFICE
CLEAR CREEK MANAGEMENT AREA
BARREN DESIGNATION WORKSHEET

1. Barren Number:
2. Barren Characteristics
   Acres

| Criteria Name | Criteria Value1 | Determination Date | Mitigation |
|---|---|---|---|
| Offsite Sedimentation | | | |
| | | | |
| | | | |
| Soils | | | |
| | | | |
| | | | |
| User Demand | | | |
| Uniqueness of Vegetation | | | |
| | | | |
| Potential for Limiting Use | | | |
| Potential for Impact to T&E | | | |
| Pristine | | | |
| RNA/WSA/SMA | | | |

4. BARREN DESIGNATION:
   (If Limited, Describe Limitation)

5. BARREN DESIGNATION DATE:

6. Other Proposed Actions

7. Barren Specific Rationale:

8. Land Use Plan Conformance:

9. Decision Criteria: Includes all criteria identified in 43 CFR 8342.1 parts (a) through (d) and this RMP/EIS.

**HOLLISTER FIELD OFFICE**
**CLEAR CREEK MANAGEMENT AREA**
**BARREN AREA EVALUATION CRITERIA and DATA ELEMENT DICTIONARY**

**Introduction**: The following criteria represent the data on which decisions about authorized vehicular recreation use of barren areas is based. The data element dictionary describes the allowed responses for each criterion.

## Barren Area Designation Criteria

These criteria were developed through public involvement, staff meetings, and interviews with professionals working in other areas with OHV use. Where possible, mitigation measures are discussed that can be used to reduce the expected motorized OHV impacts under each criterion. The Geomorphic Field Evaluation of Serpentinite Soil Barrens, CCMA (Dynamac Corp., 1998), contains useful data to be considered in the designation process. The objectives of this field evaluation were: 1) to determine the degree of soil erosion and sedimentation taking place within the barrens; 2) to evaluate natural and human influences on sedimentation and erosion within the barrens; and 3) to develop a barren inventory and ranking system. Key information from this study used in this designation process includes; stream orders present, hydrographic position, vegetation cover, vegetation boundary/buffer, amount of gullying, slope, armoring present, sediment trapping features, and contribution of sediment to sub-watersheds with high erosion rates. For the purposes of this document "barrens" are defined as a general term applied to openings in serpentine hillslopes larger than 10 acres which support almost no herbaceous or woody vegetation.

Soils

The serpentine watersheds in the CCMA contain soils formed from highly sheared, and readily eroded, serpentine rock containing abundant chrysotile asbestos. Soils of barren areas are critical for supporting existing plant species and communities, and as potential habitat. Eroded soil is transported down-slope by various erosion processes and contributes to off-site transport of sediments. Vehicle use on these barren slopes disrupts the natural soil crust and surface gravel layer, resulting in increased erosion. The lack of vegetation on these soils and the particular soil characteristics, are part of the reason these areas are desired by many OHV recreation users.

### Erosion and Sedimentation

Concentrated OHV use in any particular area within the CCMA is likely to produce some off-site sedimentation. Resource condition objectives constrain activities leading to erosion and off-site delivery of the eroded material. Methods to reduce off-site sediment transport are avoiding or reducing erosion, assuring that sediment producing activities are adequately separated from active stream channels, and installing structures designed to capture sediments before delivery into active streams. Factors to be considered in evaluating a barren include; the potential for off-site sedimentation, sediment yields to sub-watersheds with high erosion rates, and the feasibility of capturing sediments naturally or with installation of sediment traps. Dynamac's (1998) data for each barren was used in evaluating this criterion.

## Soil Characteristics

While all barrens have some soil characteristics in common, each needs to be evaluated individually. The barren's slope, aspect and position hydrographically, all contribute to the area's suitability and sustainability for concentrated OHV use. Additionally, it is important to review soil depth, and amount of

rock mixed in the soil, and whether an organic layer exists. The degree of armoring is a factor indicating low levels of use and the ability of the barren to sustain itself over time.

Recreation

OHV recreation users have been riding on the barrens with increasingly frequency over the past 40 years. Besides increases in the number of people taking part in OHV related activities, advances in motorcycle performance have contributed to this trend. The barrens within the CCMA provide a wide spectrum of terrain from broad rolling ridgelines to steep hill-climbs. Some of the barren areas are therefore available for even the beginner, while some hill-climbs give professional motorcyclists a challenge.

**User Demand**

Not every barren can provide characteristics of interest to each OHV recreation user. The designation process should keep in mind the desirability of a wide variety of riding experiences and levels of expertise of the OHV user. It is also important to take into account proximity to staging areas. Dispersed opportunities away from the Clear Creek Canyon may also be considered. An additional factor is the ability to provide recreation opportunities on a sustained basis and whether use of the barren would result in a reduction in the quality of the recreation experience compared to the current condition. These factors will be addressed in the written rationale portion of the Designation Record.

Vegetation

The barrens support sparse but diverse communities of vegetation which grows on them. These areas are characterized by a general lack of shrub or tree cover, a sparse but distinctive cover of native annual plants, and a high percentage of exposed bare ground and /or gravel lag. Several of the designation criteria characterize the barons existing condition, and potential for on and off-site disturbance relative to vegetation.

**Uniqueness of Vegetation and Potential for Damage**

All but the most heavily used portions of some barrens have unique assemblages of vegetation. This uniqueness results from the plant's need for special adaptations, to thrive on the especially challenging serpentine soils. Few plants have been able to survive and compete in the presence of the rigors presented by high nickel and low calcium concentrations coupled with harsh climate and intense sunlight. Some barrens are known to provide habitat for special status plants. While special status plant species will be avoided and protected, there may be barrens that can be designated open, when sufficient natural or human-made barriers fully protect special status plant populations. Protection of the plant communities unique to the barren areas are an important consideration.

## Potential for Limiting Use to Designated Areas

Some barrens in the CCMA are adjacent to or provide access to areas that are sensitive (riparian areas, sensitive plant habitat, unique forest communities). Vegetation boundaries are important for confining use to open barrens and providing a buffer from sensitive areas. Protection of sensitive areas adjacent to a barren and limiting route proliferation are important factors in evaluating designation of the barren.

## Potential for Impact to Threatened, Endangered and Special Status Species

Threatened, endangered and special status species shall be protected from the impacts of OHV use. OHV use on adjacent barrens can impact special status species habitat by off-site sediment delivery, riders going outside of the designated open area onto sensitive habitat. Factors considered under this parameter include the presence of sensitive species habitat nearby, the proximity of OHV use to sensitive species and their habitat, and the potential contribution to the degradation of that habitat.

Pristine/Natural Condition

This category seeks to protect the currently least impacted barrens and the San Benito Mountain Research Natural Area and ACEC (including the Wilderness Study Area). In protecting these areas, the Bureau is fulfilling a Resource Condition Objective stated in the Record of Decision (1999) of maintaining intact portions of the ecosystem for proper function and comparison monitoring, and maintaining an aesthetic and wilderness character of some areas of the CCMA.

### Pristine

A small number of barrens in the CCMA have had little or no OHV use. They tend to be characterized by having intact gravel lag, few gullies or rills, and often have reddish or brown soil away from rock outcroppings in contrast to the white soils typical of high OHV use areas. The few remaining intact barrens are critical to maintain for studying contrasts to the effects of concentrated OHV use. Pristine barrens will not be selected for concentrated OHV use. OHV use of non-pristine barrens adjacent to, or near, pristine barrens must be carefully evaluated for the potential to impact pristine barrens.

**SBMRNA/ACEC/WSA**

The San Benito Mountain Research Natural Area and ACEC completely encompass the San Benito Mountain Wilderness Study Area, managed under the Interim Management Guidelines for Wilderness Study Areas. OHV use of barrens within either the WSA or the SBMRNA is incompatible with the values for which these areas were established. It is also important to avoid impacting either of these areas in ways inconsistent with their intended purposes. Barrens that are contiguous to the existing RNA and/or encompassed within the area of the expanded RNA boundary, will not be considered for OHV use in the designation process. An additional factor is whether the barren is within an existing riparian closure or special management area.

## Data Element Dictionary

## *Soil*

**Off-site sedimentation** (Dynamac data plus staff observation)

| Code | Definition |
|---|---|
| 11010 | Off-site transport but sufficiently trapped, few impacts, use o.k. |
| 11119 | Off-site delivery, impacts active channel, use NOT O.K. |
| 11129 | Off-site delivery, impacts sensitive habitat, use NOT O.K. |
| 11139 | Off-site delivery, impacts cultural, use NOT O.K. |
| 11149 | High subwatershed erosion rate, NOT O.K. |
| 11212 | Impacts to active channel, POTENTIAL MITIGATION |
| 11222 | Impacts to sensitive habitat, POTENTIAL MITIGATION |
| 11232 | Impacts to cultural, POTENTIAL MITIGATION |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**Soils** (Dynamac data plus staff observation)

| Code | Definition |
|---|---|
| 12010 | High hydrographic position, use o.k. |
| 12119 | Armoring, use NOT O.K. |
| 12129 | Low hydrographic position, use NOT O.K. |
| 12139 | Steep slope, use NOT O.K. |
| 12212 | Armoring, POTENTIAL MITIGATION |
| 12222 | Low hydrographic position, POTENTIAL MITIGATION |
| 12232 | Steep slope, POTENTIAL MITIGATION |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

## *Recreation*

**User demand**

| Code | Definition |
|---|---|
| 13010 | Recreation opportunity, use o.k. |
| 13119 | No recreation opportunity, use NOT O.K. |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

## *Vegetation*

**Uniqueness of vegetation and potential for damage**

| Code | Definition |
|---|---|
| 14010 | Vegetation cover, use o.k. |
| 14119 | Unique/sensitive species, use NOT O.K. |
| 14129 | Poor vegetation cover for reducing erosion, use NOT O.K. |
| 14212 | Vegetation cover, POTENTIAL MITIGATION |
| 14222 | Unique, POTENTIAL MITIGATION |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**Potential for Limiting Use to Designated Area (Vegetation Boundary)**

| Code | Definition |
|---|---|
| 15010 | Vegetation boundary, use o.k. |
| 15212 | Poor vegetation boundary, POTENTIAL MITIGATION |
| 15119 | Poor vegetation boundary, use NOT O.K. |
| TEXT | TEXT DESCRIPTION OF MITIGATION POTENTIAL |

**Potential for impacts to Sensitive Species**

| Code | Definition |
|---|---|
| 16000 | No conflicts with sensitive species, use o.k. |
| 16010 | Sensitive species nearby, use o.k. |
| 16119 | Sensitive species nearby, use NOT o.k. |
| 16212 | Sensitive species nearby, POTENTIAL MITIGATION |
| TEXT | TEXT DESCRIPTION OF MITIGATION POTENTIAL |

## *Pristine/Natural Condition*

**Pristine**

| Code | Definition |
|---|---|
| 17010 | Does not threaten to impact a nearby pristine area, use o.k. |
| 17119 | Pristine condition, use NOT O.K. |
| 17129 | Likely to threaten pristine area, use NOT O.K. |
| 17212 | Mine area adjacent to barren, POTENTIAL MITIGATION |
| 17139 | Adjacent area of concern, use NOT O.K. |
| 17222 | Adjacent area of concern, POTENTIAL MITIGATION |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

**San Benito Mountain Research Natural Area/WSA/ACEC**

| Code | Definition |
|---|---|
| 18010 | Area not in or potentially threatening to SBMRNA/ACEC, use o.k. |
| 18119 | Area within SBMRNA/ACEC, use NOT O.K. |
| 18129 | Area adjacent to or threatens SBMRNA, use NOT O.K. |
| 18139 | Special management area/existing closure, use NOT O.K. |
| 18212 | Area adjacent to or threatens SBMRNA, POTENTIAL MITIGATION |
| TEXT | TEXT DESCRIPTION OF MITIGATION PROPOSAL |

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# Appendix III - San Benito Mountain Research Natural Area Management Plan

In 1999 (Clear Creek Management Area Plan Amendment and Final FEIS Record Of Decision, 1999), the BLM designated the San Benito Mountain Natural Area as a Research Natural Area (SBMRNA) to encourage research and provide protection of the unique conifer forest and vegetation communities on and around San Benito Mountain. The 1999 ROD also expanded the boundaries of the existing SBMRNA as identified in the Clear Creek Management Area Resource Management Plan Amendment and Route Designation Record of Decision, 2006. This Research Natural Area Management Plan guides management of the SBMRNA and identifies management goals and objectives that will permit natural processes to continue without interference.

## 1.1 Introduction

The Bureau of Land Management establishes and maintains Research Natural Areas (RNAs) for the primary purpose of research and education. RNAs have one or more of the following characteristics (43 CFR 8223 – Research Natural Areas):

- A typical representation of a common plant or animal association;
- An unusual representation of a common plant or animal association;
- A threatened or endangered plant or animal species;
- A typical representation of common geologic, soil, or water features;
- Outstanding or unusual geologic, soil, or water features.

Dr. James R. Griffin of the Hastings Natural History Reservation in Carmel Valley, California made the original recommendation to establish the San Benito Mountain Natural Area in 1970, declaring that "…it would in no way duplicate any North Coast Range serpentine natural area and would be a highly desirable contrast with them." The diverse topography, climate, and serpentine soil types of the SBMRNA support a unique serpentine (ultramafic) vegetation assemblage. Vegetation types found within the SBMRNA include natural serpentine barrens completely devoid of vegetation, serpentine willow/riparian, serpentine chaparral, and mixed conifer forest. The San Benito Mountain mixed conifer forest is the only forest in the world that supports Jeffrey (*Pinus jeffreyi*), Coulter (*Pinus coulteri*), and foothill (*Pinus sabiniana*) pines, and incense cedar (*Calocedrus decurrens*) at the same location. The presence of Jeffrey and Coulter pines in such close proximity has resulted in Jeffrey x Coulter pine hybrids. Other rare plant species that occur within the SBMRNA include the federally-listed threatened San Benito evening primrose (*Camissonia benitensis*), rayless layia (*Layia discoidea*), and talus fritillary (*Fritillaria falcata*).

Serpentine ecosystems are distributed throughout California, primarily in the Sierra Nevada, Klamath Mountains, and Coast Ranges. The diversity of topography, climate, and geologic history has resulted in a wide variety of serpentine vegetation assemblages across the state. The New Idria serpentine mass contains a diverse array of serpentine-associated minerals including

rarities such as fresnoite, neptunite, and benitoite (Coleman 1986). The extremely sheared and pulverized serpentine bedrock weathers to produce nutrient-poor soils with adverse chemistry including heavy metal toxicity (Coleman 1986). The pulverized nature of the bedrock, in combination with the extreme adverse soil conditions have resulted in large areas of naturally barren, erosive landscape. More developed soils support unique vegetation types including serpentine willow/riparian, serpentine chaparral, and mixed conifer forest. The SBMRNA preserves an exceptional example of the Coast Range mixed conifer forest on serpentine soils, as well as the other unique serpentine vegetation types in the area. As such, the presence of relatively undisturbed serpentine soils, unusual and unique plant and animal species, qualifies the area as having outstanding geologic, soil, and ecological features.

## 1.2 Planning

### 1.2.1 Management Goals

The following management goals will contribute to preserving the values for which the SBMRNA was established:

1) To protect the globally unique San Benito Mountain mixed conifer forest ecosystem, special status species, and the adjacent ecotones in their natural state for science research and educational purposes. The San Benito Mountain mixed conifer forest contains conifer tree species that occurs nowhere else together in the world (Griffin 1974; Sawyer and Keeler-Wolf 1995). This forest also contains many serpentine endemic herb and shrub species. The complex geological history of this area has produced exceptionally toxic soils that have influenced forest vegetation composition.

2) To define and create a environment for research designed (1) to investigate and better understand the geology, biology, ecology, and archaeology; (2) to address asbestos related public health issues; and (3) to build an information base for guiding management of this and other serpentine ecosystems on BLM lands. This goal furthers the public interest under Environmental Protection Agency (EPA) guidance regarding naturally-occurring asbestos.

3) To allow uses inside the SBMRNA compatible with the primary purpose of the Research Natural Area for scientific research and education. As a natural laboratory, the SBMRNA will have limited public access to reduce impacts and influences of people on the terrain and vegetation. However, BLM may permit visits guided by BLM personnel and researchers on site for the public. BLM will also specialize in interpretive services for the public so that people may learn about the SBMRNA and its unique characteristics.

### 1.2.2 Management Objectives

Management objectives result in actions that the BLM and the public evaluate as measures of success in attaining the management goals. Because new information will become a part of adaptive management of the SBMRNA and nearby ecosystems, the management objectives may evolve over to time to meet legal requirements and public expectations.

The following list includes management objectives that will contribute to permitting natural processes to continue within the SBMRNA:

1) Include and maintain within management constraints, the core area of the San Benito Mountain forest and a buffer with the transitional chaparral/woodland habitats that border the Forest for the purpose of conservation.

2) Establish SBMRNA boundaries on the basis of watershed or other natural features. The BLM policy for its Research Natural Areas is to "Permit natural processes to continue without interference." and to "Determine the boundaries for all vegetation series representatives. In order to preserve the greatest diversity possible, the boundaries will include a variety of elevation, slope, and aspect features, and should follow natural boundaries."

3) Protect known occurrences and potential habitat of the San Benito evening primrose and provide conditions within the SBMRNA in support of the Recovery Plan that conforms to the Biological Opinion for the San Benito evening-primrose issued by the U.S. Fish and Wildlife Service, September 2, 2005.

4) Protect existing occurrences and habitat of all other known BLM sensitive species that occur within the SBMRNA boundaries.

5) Protect all cultural resources and encourage public partnerships for research and educational use of the SBMRNA.

6) Consult with Native Americans from local tribes for management consistent with traditional Native American culture and for full tribal participation in planning, research and environmental education.

7) Facilitate quality research overseen by a knowledgeable committee selected from: universities and colleges; other private research institutions; the Native American community; federal and State of California government research and regulatory agencies; and public interest groups and advisory committees. The committee will identify research needs and guide proposed research. Establishment and function of the committee shall meet the provisions established by the Federal Advisory Committee Act (FACA).

8) Foster other uses of the SBMRNA that are compatible with its primary purpose. Provide for continued authorized uses such as rights-of-way and easements that are compatible with management values for the SBMRNA.

9) Implement the CCMA Resource Management Plan and Record of Decision as they specifically apply to the San Benito Mountain Research Natural Area for the protection and improvement of soil, air, water, and biological resources.

10) Provide for public safety.

11) Develop a Fire Management Plan for the SBMRNA with a pre-fire season trip with the Hollister Field Office Fire Management Officer (FMO) so that the FMO is aware of the sensitive species habitat locations and vehicle access routes.

12) Develop a barren area monitoring and restoration plan that will enable BLM staff to understand factors that influence erosion rates on serpentine barrens in order to reduce erosion, sediment transport, and restore vegetation buffers.

13) Develop a science agenda to determine characteristics of the unique ecosystem that are important and what the management response will be to changes in these characteristics.

## 1.3 Science Agenda

Science supports the sustainable resource management of the Clear Creek Management Area and provides the objective information upon which BLM managers make choices for the benefit of the public. The BLM does not presume to have sufficient funding for all elements in the Science Agenda for the San Benito Mountain Research Natural Area. People interested in the Science Agenda come from diverse disciplines and interest groups and from diverse government agencies, research institutions, universities in California and other states, and in several instances, internationally.

Biotic and abiotic inventories, monitoring and research proposals will be assessed and conducted over time to fulfill the aforementioned goals and objectives. Development of the Science Agenda will include the following components:

1) Natural resource inventories;
2) Historic research of sociological and ecological events;
3) Vegetation and habitat classification by geology, soil, topography, and climate regime;
4) Monitoring of ecosystem processes, species, and recreation activities;
5) Ecological research;
6) Ecosystem modeling; and
7) Partnerships for accomplishing the science agenda.

### 1.3.1 Natural Resource Inventories

**Serpentine Rock Outcrops and Barrens**

Remote sensing techniques and follow-up ground-truthing will be employed to delineate areas of exposed chrysotile-bearing serpentine outcrops and barrens and quantify chrysotile content (Swayze et al. 2004). The BLM contracted for digital aerial imagery of the entire CCMA in 2004, correlating spectral reflectance data to vegetation and soil types to improve resource inventories.

A database of serpentine rock outcrops and barrens (Dynamac 1998) furnishes a set of reference sites where the BLM can inventory plant, fungi, and animal species found on outcrops and barrens; monitor natural asbestos in the air, water, and soil; and detect and monitor eventual changes stemming from historical OHV recreation play on barrens within the SBMRNA.

**Lichen Species**

Lichens are present on rocks, shrubs, and trees within the SBMRNA. Globally, information about lichens present on serpentine rocks and soil is scarce. Some studies have found lichen species that appear to be unique or endemic to serpentine substrates (Harris et al. 2007; Sirois et al. 1988). Lichen species on serpentine rock respond to the atypical geochemical environment, as well as ranges of humidity/aridity, temperature, and sun exposure. An inventory of lichen species will provide a baseline from which researchers can monitor eventual changes in distribution and frequency within the SBMRNA. Identification of lichens may uncover previously unknown range extensions of rare species and complete the inventory of lichens.

Lichens are useful for detecting heavy metal concentrations and air-born pollutants. Lichens may serve as an indicator of environmental changes relevant to human health and ecosystem function. The serpentine soils within the SBMRNA often contain high levels of mercury, nickel, chromium, and other heavy metals as well as unusual assemblages of vascular plant species. Unusual lichen species may occur as well. The physiological and chemical interactions between lichens and their rock substrates may help researchers to better understand ways to mitigate environments contaminated with heavy metals and asbestos found in the SBMRNA.

**Non-Vascular and Vascular Plant Species and Habitats**

The diversity of rare vascular plants is one of the most remarkable features of the CCMA. Inventories of plant species in the SBMRNA will serve as a baseline for GIS analyses describing the ranges of habitat characteristics in which rare plants currently exist, previously existed, or might exist under BLM management. These inventories will also serve as a baseline for tracking and mapping non-native invasive plants of concern to the BLM and to the California Department of Agriculture.

Existing information sources from herbarium holdings, expert knowledge, and inventory results will describe:

- historically known sites
- historically known sites outside the CCMA, but useful to define critical habitat features inside the CCMA
- delineation of first approximations of suitable habitat for each rare species
- plant searches for suitable and occupied habitats
- refinement of criteria used to delineate suitable and occupied habitats
- identification of habitat locations that have a high probability to sustain populations without directed BLM management or with species-specific directed management.

**Arthropod Species**

Little information exists about the diversity or uniqueness of arthropod species from the Clear Creak Management Area. Given the level of plant endemism within the CCMA, endemism of arthropod species in CCMA serpentine ecosystems is likely. This is supported by insect studies conducted on other serpentine areas of California which found endemic insect species (Dobkin et al. 1987, Gervais and Shapiro 1999, Harrison and Shapiro 1988, Schwartz and Wall 2001). The

isolation and uniqueness of the SBMRNA forest ecosystem provides an island-like condition for endemic evolution: a forest island within a serpentine soil island. Many rare plants found on serpentine have associated arthropod species that are rare and that have unique physiology, such as accumulation of heavy metals (Boyd 2009).

**Bat Species**

Presently, no data are available about bats resident in the SBMRNA or in the rest of the Clear Creek Management Area. BLM lands elsewhere in California with a history of mining have frequently become important habitats for bats. Abandoned mines host bats, mostly as single-species colonies, and perhaps only seasonally as maternity dens, migration rest stops, hibernation sites, and colonial roosts during the day. Many bats species are BLM California species of management concern. In view of the absence of information about bat populations in the SBMRNA and the CCMA, BLM wildlife biologists will conduct inventories to determine whether abandoned mines there are suitable habitat for bats, and in particular rare bats.

**Forest Inventory Analysis and Genetic Variation of Tree Species of the SBMRNA**

Currently, the USDA Forest Service, Pacific Northwest Research Station Forest Inventory and Analysis (FI&A) Program has permanent plots, systematically selected throughout the Pacific Coast States. To understand the changes in the San Benito mountain forest, the BLM can review the data collected from the Forest Service over several decades. In addition, the BLM will "intensify" the number of long-term monitoring plots by random selection of additional plots.

Small isolated populations of conifer tree species in the Central California Coast Region are important globally for genetic resources. The genetic resources from Jeffrey pine, Coulter pine, and incense cedar from San Benito Mountain resemble island-like distributions analogous to that of Monterey pine in the Central Coast Region. The genetic resources of these conifer species may be atypical in comparison with populations of these species in the core areas of their ranges. Ledig (2000) has found that the unique hybrids between Coulter pine and Jeffrey pine from San Benito Mountain, first described by Zobel (1951a, 1951b), may have altered the genetic structure of Coulter pines through introgression.

### 1.3.2 Historical Research

The research agenda here refers to factors and forces that have shaped the SBMRNA into its present form today and provide a point of departure for management into the future. BLM will encourage other government and university researchers as well as interested members of the public to pursue these topics.

**Climate History of the SBMRNA**

Understanding the future development of soils and vegetation types in the SBMRNA requires identification of the processes that have created the current forest in the SBMRNA. Of particular importance to the BLM is to know whether ecological conditions in the past that created the current forest, are similar to diverse modeled scenarios of future climate.

**Fire History of the SBMRNA**

Climate history, in combination with fire frequency, has had and will continue to have a profound effect on the vegetation cover of serpentine soils within the SBMRNA. Tree core analysis and soil sampling, followed by correlation with fire and climate history with information on historical climate, will provide BLM resource managers with the information necessary to model likely outcomes of future fires within the RNA.

Fires in chaparral burn differently than those on forests. Analysis of fire history in chaparral ecosystems such as those by Keeley (2002) in the Sierra Nevada foothills may help BLM managers guide future fire occurrence and protect chaparral vegetation for key vertebrate species that rely on extensive chaparral habitats.

**Inundation History of the SBMRNA**

Several plant species of management concern, most notably the San Benito evening primrose, inhabit alluvial terraces of the SBMRNA in close proximity to seasonal and perennial streams. Rare floodwater events may affect the evening-primrose by resulting in extirpation of isolated suboccurrences through erosion or burial local extinctions and creation of new potential habitat through sediment deposition. Compiling data on the occurrence of flood events and their intensity and impacts would provide threshold of flood conditions under which the species has persisted. If flooding frequency and intensity begins to exceed that threshold, BLM managers will then be able to respond with conservation measures to meet new conditions.

**Human History and Land Use of the CCMA**

The BLM archaeologist at the Hollister Field Office has begun compiling current knowledge about the history of the CCMA before European settlement. Additional interpretive information about the history of settlements and land use is invaluable to the public to understanding the types and variety of ecological impacts and economic benefits generated in the CCMA. Values such as recreation opportunity, biological diversity, and ecosystem sustainability are part of the mix of values that people seek from the CCMA.

### 1.3.3 Vegetation and Habitat Classification

BLM will coordinate completion of ecological site delineation and derived analyses that assist managers in making decisions about, restoration projects after disturbances, habitat suitability and management for targeted wildlife species, and protection measures for plant species composition.

The BLM Hollister Field Office contracted a soil survey for the Clear Creek Management Area that met the 1989 Order 3 Soil Survey standards established by the USDA Natural Resource Conservation Service (NRCS). NRCS is conducting additional soil surveys in 2009 and this data will be included in the Field Office geographic information system. In the time since completion of the Clear Creek soils survey, the NRCS has expanded its portfolio of services to include delineation of ecological sites, that is, sites with uniform patterns of vegetation types and plant and animal species composition linked to soils, topography, and climate. Classification of

vegetation according to correlations with soil types provides important information to resource managers. Information from the ecological site descriptions and delineations help BLM resource managers predict more accurately outcomes of management actions on the soils, plants, and animals of the diverse ecosystems that comprise the Management Area. Ecological site delineation and derived analyses will assist managers in making decisions about restoration projects, habitat suitability and management for targeted wildlife species, and protection measures for plant species composition.

### 1.3.4 Monitoring for Ecosystem Processes

***Ecosystem Processes***

- Rates of Serpentine Soil Formation and Erosion
- Water Erosion and Sediment Deposition under Different Surface Disturbance Regimes
- Rates of Organic Litter Accumulation under Different Vegetation Communities and Over Different Soil Types

***Toxic Minerals Monitoring***

- Wind Erosion and Air Concentrations of Chrysotile Asbestos under Different Surface Disturbance Regimes
- Water Erosion and Stream Loads of Chrysotile Asbestos under Different Surface Disturbance Regimes
- Soil and Water concentrations of Nickel, Chromium, Cobalt, and Mercury

***Monitoring Populations of Cryptic, Rare, and Little-Known Species***

- Lichens in the SBMRNA
- Serpentine Endemic Vascular Plants in the CCMA
- Special Status Plant and Animal Species

**Rates of Serpentine Soil Formation and Erosion**

Soil erosion is of great concern to BLM managers due to the high proportion or natural serpentine barrens within the CCMA and SBMRNA. Long-term monitoring results can provide watershed-scale models of water and sediment flow, as well as changes to stream channel morphology. Water and sediment flows and stream morphology are critical factors in the formation and degradation of rare plant habitat such as the stream terraces frequently occupied by San Benito evening primrose.

Soil erosion can be quantified in two ways including soil depth loss as measured by staff gauge grid established upon the area of interest, or collection (basin or silt fence) of the sediment eroded from a particular area, downhill of that area. Sediment collection is the easiest method. One easy way to measure soil erosion is to establish silt fences at key sites of overland erosion (Robichaud and Brown 2002). These fences can measure changes to sites, especially near habitats for the San Benito evening-primrose, and provide verification for needed restoration

throughout the SBMRNA. BLM will determine locations to establish silt fences in tandem with restoration projects to document the effectiveness of intended improvements.

**Water Erosion and Sediment Deposition**

Maps of surface geology can help BLM managers organize management actions to improve recreation and to conserve species habitats. Understanding the susceptibility of soils (sediment) to erosion helps managers to balance management appropriate to the soil and terrain with the capacity for site stability.

Implementing standardized hydrological monitoring for sediment flows and for water quality will provide objective and comparable measures of the success of ecosystem management in the SBMRNA to minimize sediment flows and erosion. Monitoring erosion may be critical for controlling and improving water flows, water quality, and habitat creation and conservation for rare plant species. Soil loss monitoring determines routes requiring restoration, tread repair, and drainage structures.

**Rates of Organic Matter Accumulation**

Organic matter accumulation is an important factor in soil development and fertility. Pioneer species such as buckbrush (*Ceanothus cuneatus*), manzanita (*Arctostaphylos glauca*, *A. pungens*), and pines (*Pinus sabiniana*, *P. coulteri*, and *P. jeffreyi*) can establish on barren serpentine soils and produce large amounts of leaf litter which decomposes and becomes incorporated into the soil. Increases in soil organic matter improve soil conditions for the establishment of secondary species such as leather oak (*Quercus durata*), silktassel (*Garrya congdonii*), toyon (*Heteromeles arbutifolia*), and many grass and forb species to become established within the serpentine plant community.

Little is known about organic matter cycling and accumulation on the serpentine soils of the SBMRNA. An understanding of organic matter cycling is important in understanding how vegetation becomes established on serpentine soils and how factors such as fire and climate change can affect that. Organic matter accumulation is best measured by establishing permanent study plots.

**Wind Erosion and Chrysotile Asbestos**

Wind erosion and aerial suspension of asbestos presents a human health risk. Some sampling and modeling of human health risk for asbestos under natural conditions has been conducted at the CCMA by research groups and the EPA. Further studies of airborne asbestos originating from the CCMA and the SBMRNA may be warranted.

**Water Erosion and Chrysotile Asbestos**

Water erosion and liquid-suspended transport of asbestos to water sources also presents a human health risk. Water transport of asbestos to the California Aqueduct from the CCMA was detected in 1980. The asbestos was believed to have originated from the Atlas Mine and was transported by water in White Creek to Los Gatos Creek and finally into the aqueduct. The EPA

responded with remediation of the Atlas Mine in order to prevent further introduction of asbestos into the aqueduct. Large quantities of asbestos are transported by water out of the CCMA into streams and rivers annually. Study of quantities and variation in seasonal transport of asbestos in the Clear Creek, Larious Creek, San Carlos Creek, Picacho Creek, Cantua Creek, Pine Canyon, White Creek, and San Benito River watersheds (flows into Hernandez Reservoir) may be warranted.

### Soil and Water Concentrations of Heavy Metals

The serpentine rocks and soils of the CCMA and SBMRNA are laden with heavy metals including nickel, chromium, cobalt, and mercury. Clear Creek is classified as an impaired watershed due to high levels of mercury. Trends in heavy metal cycling in aquatic ecosystems are important to the overall health of the ecosystem. Concentrations of heavy metals often display a seasonal pattern in watersheds. In order to manage watersheds to reduce environmental pollutants, it is important to know what environmental pollutants exist and what their concentrations and seasonal patterns are.

### Lichen Monitoring

Lichens are a sensitive indicator of environmental pollutants. Little is known about the lichen species of the CCMA or SBMRNA. Lichen health can be measured by total cover on rock or woody plant surfaces. Lichen colony growth on rock surfaces can be tracked by measuring its diameter.

### Special Status Species

Inventories described in this document will contribute information about species that scientists and managers may utilize. The uniqueness and comparative ecological isolation of the CCMA, and especially of the SBMRNA, may have created evolutionary conditions for endemism in non-vascular plants, lichens, fungi, and arthropods parallel to species endemism for vascular plants.

#### Strategies for Monitoring Species and Species Group

Many tasks for monitoring species and species groups in the CCMA have been conducted with grant support from the California Department of Parks and Recreation, Off-Highway Motor Vehicle Recreation Division. Monitoring for rare plants, amphibians, raptors, and breeding bird censuses are part of the current CCMA monitoring. Other species groups proposed for monitoring include SBMRNA lichen species, coast horned lizard, bat species, and chaparral bird species.

### Special Status Plant Species

Monitoring for rare plants focuses on serpentine endemic vascular plants. BLM has two types of monitoring and associated research for rare plants. BLM monitors all rare plants listed as threatened or endangered by the US Fish and Wildlife Service and all plants designated by the BLM California State Office as Species of Management Concern. The first priority is to continue conducting field studies for the federally-listed threatened San Benito evening primrose (*Camissonia benitensis*).

*Federally-listed plant species: San Benito evening-primrose*

Complete details of monitoring and field studies for the evening primrose are part of the Recovery Plan for the San Benito evening primrose. Occupied and potential habitat are monitored on a monthly basis during the use season (October - April) and bimonthly (May – September) outside of the primary use season. Plant counts for each suboccurrence are made annually in April. Monitoring results are reported to the Ventura FWS on a quarterly basis.

*Other rare plant species*

CNPS list 1B and list 4 species are sufficiently rare and thought to be adversely susceptible to disturbances stemming from human activities including vehicle travel, mining, and grazing. Many of the CNPS list 1B and list 4 plant species are serpentine endemics. Those include rayless layia (*Layia discoidea*), San Benito fritillary (*Fritillaria viridea*), talus fritillary (*Fritillaria falcata*), Mariposa cryptantha (Cryptantha mariposae), Guirado's goldenrod (*Solidago guiradonis*), Hernandez bluecurls (*Trichostemma rubisepalum*), Serpentine leptosiphon (*Leptosiphon ambiguus*), San Benito monardella (*Monardella antonina* ssp. *benitensis*), Carlotta Hall's lace fern (*Aspidotis carlotta-halliae*), South Coast Range morning glory (*Calystegia collina* ssp. *venusta*), and Andrew's bedstraw (*Galium andrewsii* ssp. *gatense*). Other species often grow on nonserpentine soils, but grow on serpentine soils within the CCMA. Those species include Mt. Diablo phacelia (*Phacelia phacelioides*), chaparral harebell (*Campanula exigua*), Santa Cruz Mountains pussypaws (*Calyptridium parryi* var. *hesseae*), benitoa (*Benitoa occidentalis*), San Benito thorn mint (*Acanthomintha obovata* ssp. *obovata*), Brewer's clarkia (*Clarkia breweri*), Sulphur flower buckwheat (*Eriogonum umbellatum* var. *bahiiforme*), One-sided monkeyflower (*Mimulus fremontii*), and Santa Clara thorn mint (*Acanthomintha lanceolata*). BLM staff will track selected populations that natural resource specialists see as particularly susceptible to human-caused disturbances.

**Special Status Animal Species**

*Foothill Yellow-legged Frog*

The foothill yellow-legged frog is considered a BLM sensitive species and is a federal species of concern. Although this frog species is declining over its entire range, the populations in the Clear Creek serpentine streams and riparian habitat appear to be self-sustaining. The foothill yellow-legged frog depends on aquatic and terrestrial habitat; however, it is rarely encountered far from permanent water. Herpetological surveys were conducted at CCMA in 1992, and BLM staff developed a monitoring protocol for the foothill yellow-legged frogs in 2001. Additional transects were added to monitoring efforts in 2003, and BLM will continue to conduct surveys annually.

*South Coast Horned Lizard*

In the most southern coastal counties of California, the South Coast horned lizard populations are declining rapidly as urbanization (Fisher et al. 2002) and the non-native Argentine ant (Suarez et al. 2000, 2002) spreads over the range of the lizard.

The herpetological surveys conducted in 1992 recorded sightings of this terrestrial species, however, no formal monitoring plan has been developed to date. The BLM Hollister Field Office will work closely with the BLM El Centro Field Office and the US Geological Survey in developing a monitoring plan. A review of monitoring methods is needed to adapt other horned lizard monitoring protocols from desert and chaparral ecosystems for the forest-chaparral mosaic characteristic of the CCMA. The BLM Hollister Field Office will develop a baseline inventory and monitoring protocol for the coast horned lizard.

*Populations of Birds of Special Management Concern*

Populations of passerine birds in chaparral and chaparral-forest birds are of particular concern because these habitats are increasingly rare and fragmented. Johnson and Cicero (1985) also note that the high-elevation San Benito Mountain mixed conifer forest provides habitat islands for several bird species found nowhere else in the Central Coast Range. Changes in the populations of unusual nesting bird species may be initial indicators that the conifer forest habitat in the SBMRNA is changing.

At the highest elevations in and around the SBMRNA, BLM will coordinate long-term monitoring for breeding populations of the following species: mountain quail (*Oreortyx pictus*), olive-sided flycatcher (*Contopus cooperi*), gray flycatcher (*Empidonax wrightii*), Hammond's flycatcher (*E. hammondii*), California thrasher (*Toxostoma redivivum*), rufous-crowned sparrow (*Aimophila ruficeps*), Bell's sage sparrow (*Amphispiza belli* spp. *belli*), and black-chinned sparrow (*Spizella atrogularis*). Additionally, the BLM will continue long-standing monitoring for raptor species and the breeding bird survey in the CCMA.

*Rare Bat Species*

Potential bat habitat with the SBMRNA including abandoned mine shafts, rock outcrops with large crevices, and tree hollows will be surveyed for rare bat species of concern. Identified bat habitat will be monitored seasonally.

### 1.3.5 Research and Field Studies

The following types of studies may be undertaken within the RNA:

- Distribution of Heavy Metals and Asbestos and Their Cycling Patterns in the Clear Creek Management Area
- Effects of Chrysotile Asbestos on the Health of BLM Employees and Recreation Visitors to the CCMA
- Tree Seed Collection and Ex Situ Tree Breeding
- Demography of Conifer Populations / Analysis of Aerial Photographs
- Identification of Invertebrates that Impact Tree Growth
- Reforestation Practices to Restore Logged and Burned Forests on Serpentine Soils
- Rates of Natural Regeneration of Chaparral Shrub Species on High-Elevation Sites with Serpentine Soils
- Plant, Lichen, and Animal Adaptations to Adverse Physical Conditions Imposed by Serpentine Soils Including Drought and High Shrink-Swell and Adverse Chemical

Conditions Including Macronutrient Deficiency (Nitrogen, Phosphorus, Potassium, Sulfur, Calcium), Macronutrient Toxicity (Magnesium), Micronutrient Deficiency (Molybdenum), Micronutrient Toxicity (Nickel, Cobalt), and other heavy metal toxicity (Chromium, Mercury)

- Revegetation of Serpentine Barrens and other Drastically Disturbed Serpentine Substrates such as Asbestos Mine Tailings
- Invasions by Non-Native Plants and Animals: Ecosystem Resistance and Management Response for Control on Serpentine and Nonserpentine Soils

#### 1.3.5.1 Ecosystem Modeling

One of the most important elements of land management is ecosystem modeling. Computer-based models are important to management because they incorporate knowledge and data to approximate future outcomes, within intervals of error and defined risks. As new information from inventories, monitoring, and research become available, BLM resource managers may adapt models of the Clear Creek Management Area to reflect these new findings. In this way, modeling becomes a catalyst for changes to improve land management.

Depending on the environmental and social concerns of people, the store of predictive models for the Clear Creek Area can be quite large. Based on the topics covered thus far, the following four models are a few of key models that researchers and managers could develop or adapt for simulating future conditions in the CCMA resulting from a program of management actions:

Model 1. Modeling Natural and Human-Initiated Risks to Long-Term Viability for Species of Management Concern, with special reference to the San Benito evening primrose;

Model 2. Modeling Air Quality Impacts in the CCMA under Alternate Management Scenarios, with special reference to the transport of air-borne asbestos, mercury, nitrogen- and sulfur-based gases, and ozone;

Model 3. Modeling Soil Movement in the CCMA under Alternate Management Scenarios, with reference to the frequency and severity of naturally occurring and human-facilitated erosion; and

Model 4. Modeling the Development of Forest Vegetation on San Benito Mountain and Changes in the Animal Species Populations, under different interacting scenarios of global (climate change) to local (recreation) impacts.

#### 1.3.5.2 Partnerships

Funding for science at BLM to improve land management has not been a fiscal priority in the recent past. BLM cannot depend on internal funding to initiate or support many of the elements of the Science Agenda. Without investment, tasks for inventories, monitoring protocols, and field research in the San Benito Mountain Research Natural Area would proceed slowly.

The BLM Hollister Field Office staff, and especially its natural resource and recreation specialists, can contribute their time and other in-kind services to scientists and researchers who wish to conduct research. The Field Office staff can continue to foster a setting of engaged inquiry with scientists and researchers at the many government agencies and universities located in the counties that surround the Clear Creek Management Area.

One important step to facilitating environmental studies in the CCMA has been assistance agreements and memoranda of understanding between the BLM California State Office and the University of California and California State University systems, established in 2003. At present, the BLM works with the California state natural resource agencies and other federal agencies to collaborate on joint watershed planning. The BLM also currently works with researchers from the University of California and California State University systems on studies of serpentine plant tolerance and evolution and serpentine barrens revegetation. Such efforts improve lines of communications between BLM employees and interested scientists from regulatory and research agencies and universities.

In the course of researching and preparing the Science Agenda for the SBMRNA, the BLM Hollister Field Office staff found the institutions listed below active in research that is occurring directly in the CCMA or bearing directly on the management issues of the CCMA. The BLM commits itself to working to promote the research work of these institutions in the CCMA and to expanding the roster of institutions involved. By promoting science in the CCMA, BLM promotes improvement of its own management to remain responsive to social and environmental needs for sustainable and robust ecosystems.

## Educational Institutions

University of California System: Berkeley, Davis, Santa Cruz, Merced
California State University System: San Francisco, San Jose, Stanislaus
Stanford University
University of Utah

## California State Agencies

Department of Fish and Game
Department of Forestry and Fire Prevention
Department of Parks and Recreation, Off-Highway Vehicle Recreation Division
Department of Water Resources (Water Resources Board)

## US Federal Agencies

Environmental Protection Agency
National Science Foundation
US Department of Agriculture, Forest Service, Pacific Northwest Research Station, Forestry Inventory and Analysis Program
US Department of Agriculture, Forest Service, Pacific Southwest Research Station, Institute of Forest Genetics
US Department of Agriculture, Natural Resource Conservation Service
US Department of Energy

US Department of the Interior, Geological Survey, Western Ecological Studies Center

**Governmental Organizations Outside the United States**

Canadian Geological Survey

**Non-Governmental Non-Profit Agencies**

California Native Plant Society
California Federation of Mineralogical Societies
PRBO Conservation Science

## 1.3.6 Fire Management

Fire objectives will closely approximate the historical and natural fire regime. Any fire that occurs in the SBMRNA will be followed by monitoring until the area once again approximates its former condition.

### Characteristics

This Fire Management Unit (FMU) ranges in elevation from 2000 to over 5000 feet. The highest peak in the FMU is San Benito Mountain at 5,241 feet. The FMU contains nonserpentine chaparral, serpentine barrens, serpentine chaparral, and mixed conifer forest. The FMU contains several rare plant species including San Benito evening primrose, rayless layia, and talus fritillary.

### Fire History

Fire history for the SBMRNA may be characterized as one of minimal to infrequent fires, as a result of low fuel loads on the low-productivity serpentine soils and barren landscape. Fire ignition is primarily caused by lightning, but the potential for fires caused by humans also exists. Serpentine and nonserpentine chaparral poses potential for extreme fire behavior. Fire use and prescribed fire have been used in the past to maintain and promote uneven-aged brush fields to natural conditions.

### Fire Management Objectives

- Manage the habitat for threatened and endangered plant and animal species to maintain viable populations in their natural ecosystems.
- Promote natural conditions within SBMRNA plant communities.
- Restore and maintain structure, species composition, and processes of native ecological communities and existing ecosystems.
- Maintain air quality to meet or exceed applicable federal and state standards and regulations.

- Use fire to restore and/or sustain ecosystem health based on sound scientific principles and information, balanced with other societal goals, including public health and safety, and air quality.

*Management Emphasis – T&E Plants and Sensitive Plants:*

1. Protect and improve potential habitat for special status plant species and the San Benito Mountain Forest.

2. Provide a mosaic of plant community seral stages.

3. Improve native plant community diversity and structure.

*Suppression Objectives:*

1. Natural fires should be allowed to burn if they meet fire objectives. Fire retardants and scarification for fire lines or breaks should be avoided. A resource advisor from the Hollister Field Office must be notified before any retardant drops are planned from aircraft.

2. Fire will be managed for the protection of sensitive resource values, including the San Benito Mountain forest.

3. Use existing roads and natural barriers as the preferred method for containment and control of wildfire in the FMU.

4. The Monterey Air Board must be notified when any earth disturbance activities occur to conform to the Air Toxic Control Measures (ATCM).

5. The potential for the BLM to inherit the wildfire after the first 24 hours of suppression may be possible if objectives are not being met in accordance with the RMP and FMP.

*Fire Use and Prescribed Fire Objectives:*

1. Prescribed fire may be used to sustain desired characteristics. Specific seasonal timing, patch size, yearly total and rotational time for chaparral type fuel is to be coordinated with resource personnel.

2. Fuels treatment may be considered as needed by a site-specific plan. Allow the use of prescribed fire to promote natural conditions.

3. Use prescribed fire, wildland fires, and mechanical and chemical treatments to protect and maintain rare, threatened, and endangered plants and habitat, prevent the spread of invasive plants, and benefit chaparral components important to wildlife.

4. Construct hand line and natural fuel breaks and control lines for firing only when necessary, to preserve natural fire regimes.

5. Protect and enhance the San Benito Mountain forest within the SBMRNA.

6. All local and state air quality objectives will be met prior to ignition of prescribed fires.

*Post Fire Rehabilitation and/or Restoration Objectives:*

1. Immediately initiate post-fire rehabilitation and restoration to stabilize rare, threatened, and/or endangered plant habitat.

2. Prevent soil erosion and flooding by constructing water bars and installing erosion control (straw bales, straw rolls) on fire lines and fuel breaks.

3. Reseed with a diversity of locally-collected native plant seed in appropriate sites for species, if needed.

4. Monitor for and control invasive plant species.

**Fire Management Strategies:**

- Use of Appropriate Management Response (AMR) to manage all fires for management objectives and based on current conditions and fire location.
- Prevent wildland fires from spreading to private land and the communication site on San Benito Mountain.
- Use natural barriers for containment.
- Restore and Rehabilitate fire suppression lines created during fire suppression efforts in a timely manner to prevent erosion and stabilize sensitive habitat.

Implement the full range of wildland fire fuels management practices, provided they will contribute to historical and natural fire patterns. BLM's appropriate management response (AMR) will address areas where plant communities are at high risk due to current conditions or other ecological constraints. AMR strategies will address critical habitat for wildlife, T&E species, areas of soil instability, and preservation of cultural resources. Use AMR to prevent wildland fires from spreading to private and other agency lands outside the SBMRNA. Once the decadal burn target has been reached of 300 acres, from either planned or unplanned ignitions, a review of objectives and strategies will lead to new suppression criteria on all wildland fires.

The appropriate management response is to prevent wildland fires from spreading to private land and to the repeater tower on San Benito Mountain. Suppression is coordinated between BLM and CDF. The FMU is within Local Responsibility Area where the State provides direct protection under contract with the agency. Due to the presence of naturally-occurring asbestos in the FMU, however, CDF will not enter the SBMRNA. Instead, CDF will assume a support function outside of the FMU, to prevent further spread of wildfire. If resources are needed for suppression within the FMU, local red carded firefighters with hazardous asbestos health and safety training and other required training can enter the asbestos area. Additional resources will also need the proper training if extended fire suppression is required. Aerial application and the

use of natural barriers is the choice for containment within the FMU. This FMU has very limited accessibility by land.

*Wildland Fire Use*

Wildland fire use for resource benefit is a fire management option within this FMU. Allow wildland fire use to promote natural conditions as identified as a component of research conducted within the SBMRNA. Established natural barriers may be able to hold fire within certain areas, depending on time of year, fuel loading, weather, location, and firefighting resources on hand, and if safety concerns have been addressed and mitigated.

## 1.4 Monitoring

The following monitoring methods will be continued and/or developed and implemented to fulfill the aforementioned goals and objectives. Additional biological and abiotic monitoring will be assessed and implemented as a result of adaptive management.

**1)** Continue to collect data on San Benito evening primrose (*Camissonia benitensis*) from the known populations within the SBMRNA. The monitoring data will enable the BLM to assess the recovery and habitat condition of this federally-listed threatened plant species. Ongoing consultation with the US Fish and Wildlife Service will continue.

**2)** BLM will continue to fulfill its responsibilities for species recovery under the Federal Endangered Species Act, Recovery Plan for San Benito evening primrose, and compliance with stipulations for managing the San Benito evening primrose from the US Fish and Wildlife.

**3)** Monitor public compliance with Regulations and with BLM's Protection Measures Concerning Habitats for the San Benito evening primrose, and develop adaptive management strategies as necessary.

Objectives:

This monitoring program documents in a systematic and repeatable way what type and intensity of disturbance occurs on potential and occupied habitats of San Benito evening primrose on a monthly basis during the use season (October - April) and bimonthly (May - September) outside of the primary use season. The current frequency of monitoring, however, may change based upon which CCMA RMP alternative is selected.

- BLM monitors public compliance at known sites for San Benito evening primrose.

- BLM monitors the effectiveness of its measures to protect the species and its habitats with informational signs, fences, and pipe barriers to reduce disturbances caused by motorized vehicles in San Benito evening primrose habitat. Inspection of protection measures shall occur on a regular basis. The BLM and the US Fish and Wildlife Service designed a monitoring program (Appendix IV) that conforms to the recent "no-jeopardy" biological opinion (2005) from the Service.

- BLM monitors the frequency of natural disturbance to evening primrose habitat from landslides, flooding and other natural events.

- Monitoring also documents the Bureau's responsiveness (implementation monitoring) to these findings.

Monitoring Protocol Methods and Materials:

BLM natural resource specialists inspect each known site in sufficient detail to determine whether change, either human-caused or natural, has occurred since the last inspection. The time needed at each potential habitat site varies by site size, its distance from a designated route, and the integrity around the perimeter of the habitat area. The protocol considers a human-caused disturbance within a habitat area from a recreation visitor/public as an instance of non-compliance, and is recorded for future management decisions. Non-compliant events vary in type, number and severity.

At each site during each visit an observer must:

- *Review tables for changes or unfinished recommendations*
- *Compare the site to the base map*
- *Check trails for use*
- *Check for new trails*
- *Check that signs are in place*
- *Check for use impacts in habitat*
- *Check for barrier damage (including tampering)*
- *Obscure tracks to establish baseline for the next inspection*
- *Identify impacts by location, type and severity*
- *Retake reference photos pre- and post-use season*
- *Check for sediment or erosion impacts to habitat*
- *Photograph impacts when warranted*

*Each habitat site for San Benito* evening primrose is unique, and therefore, the inspection requires different strategies. If physical barriers are present at a site, BLM employees inspect the barriers to look for obvious breaks and to see whether people have moved barriers to hide the tampering. Cover-ups are the most difficult type of user non-compliance to detect quickly. However, because of the detailed notes available on track numbers and locations, BLM employees usually detect these kinds of infractions even when an attempt to obscure vehicle tracks is made.

Adaptive Management in Response to Compliance and Effectiveness Monitoring for the San Benito Evening Primrose

This monitoring tests the efficacy of recommended protective measures and detects gaps in the protection of San Benito evening primrose habitat. In areas where data collection shows that people have driven vehicles across habitat, BLM resource specialists respond with measures to reduce damage and reinforce public compliance.

The BLM Hollister Field Office reports OHV compliance monitoring data to the FWS. Monitoring data reported includes incidents of noncompliance, type, location, and severity and what action was taken to repair barriers and prevent noncompliance from reoccurring. The degree of compliance with BLM regulations and with BLM management measures to protect the evening-primrose sets up structure for adaptive management of the SBMRNA. One aspect of adaptive management for the benefit of the San Benito evening primrose is to create habitat suitable for the species at sites where habitat does not currently exist. Creation of new habitat will be a hedge against loss of original habitat and reduce the risk of extinction of a plant subpopulation in the event of a rare event such as a flood.

*Monitoring Population Counts of the San Benito evening-primrose*

Population monitoring is improving understanding of the status, distribution and habitats of this species (Taylor 1990, 1991, 1993, 1995; BLM 2008). In addition to the plant inventory, botanists documented the descriptions of habitat and threats to potential habitats and occupied occurrences.

- number of known / historic / extant / potential habitat sites
- pattern of distribution (patchy, ephemeral, scale, habitat shape)
- time since last observed
- status of populations at sites of known habitats annually (counts, biomass)
- quality of sites: frequency, intensity, and extent of natural and human disturbances
- portion of potential habitat as occupied: annually, short-term, long-term
- measures of connectivity of habitat and of genetic composition
- population trend
- presence of pollinators / fecundity / viability of seed

**4)** Continue to monitor known locations, and increase inventory efforts, of all sensitive plant and animal species that occur within the SBMRNA.

Monitoring Objectives

The monitoring program for special status species documents in a systematic and repeatable way; the status of human and natural disturbance on known populations and potential and occupied habitats; and the distribution in known occupied habitat.

*Special Status Plant Species*

Special status plant species frequently monitored within the SBMRNA include San Benito evening primrose (*Camissonia benitensis*), rayless layia (*Layia discoidea*), and talus fritillary (*Fritillaria falcata*). All other special status plant species are casually monitored.

Management Response Based on Monitoring - Management prescriptions for all special status plant species will be consistent with management for San Benito evening primrose. Further research regarding site characteristics for the above mentioned special status plants, is critical to gain an understanding of each species' ecological requirements. Based on monitoring results, adaptive management will determine actions and protection measures for all sensitive plant

species within the SBMRNA. In areas of high use or where continued non-compliance occurs, fences are constructed for added protection.

*Special Status Animal Species*

Special status animal species monitored within the SBMRNA include foothill yellow-legged frog and South Coast horned lizard. BLM staff developed a monitoring protocol for the foothill yellow-legged frog in 2001. Additional transects were added to monitoring efforts in 2003. BLM will conduct annual surveys for this species. Herpetological surveys conducted in 1992 recorded sightings of the South Coast horned lizard, however, a formal monitoring plan has not been developed to date. BLM Hollister Field Office will work closely with the BLM El Centro Field Office in developing a monitoring plan. The El Centro Field Office has taken the lead in multi-agency monitoring across the range of the rare flat-tailed horned lizard (*Phrynosoma mcallii*). A review of monitoring methods is needed to adapt other horned lizard monitoring protocols from desert and chaparral ecosystems for the forest-chaparral mosaic characteristic of the CCMA.

**5)** Soil Loss Monitoring

BLM staff has been monitoring trail conditions systematically since 2001 according to the Soil Loss Monitoring Standards established by the Off-Highway Motor Vehicle Recreation Division of the California Department of Parks and Recreation. Soil loss monitoring in the SBMRNA will continue on designated routes, barrens, and on closed routes to determine reclamation needs. Based on this survey, routes requiring tread repair, drainage structures, and use signing are identified for further investigation and correction by resource and implementation staff. Barrens restoration actions will continue to identify and implement a variety of engineering and biological measures to address erosion features caused by historical OHV use.

**6)** Continue breeding bird and nest surveys in the SBMRNA.

The high-elevation San Benito Mountain Forest provides habitat islands for several bird species found nowhere else in the Central Coast Range. Changes in the populations of nesting bird species may be initial indicators that the conifer forest habitat in the SBMRNA is changing.

Chaparral bird species as indicators of large-scale environmental change are as follows: California thrasher (*Toxistoma redivivum*), rufous-crowned sparrow (*Aimophila ruficeps*), Bell's sage sparrow (*Amphispiza belli* spp. *belli*), and black-chinned sparrow (*Spizella atrogularis*). These four species are key indicator bird species nominated by the Point Reyes Bird Observatory for the California Partners in Flight Program for bird conservation (Lovio et al., 2003). At the highest elevations in and around the SBMRNA, BLM will continue long-term monitoring for breeding populations of the following species: mountain quail, olive-sided flycatcher (*Contopus cooperi*), gray flycatcher (*Empidonax wrightii*), and Hammond's flycatcher (*E. hammondii*); as well as monitoring for raptor species.

**7)** Inventory and monitor the San Benito Mountain mixed conifer forest to gain an understanding of the demography and health of the populations.

**8)** Monitor and develop a protocol to control and/or eradicate invasive plant and animal species.

**9)** Design and implement habitat restoration plan to obscure and/or rehabilitate closed trails and to measure and control erosion.

**10)** Continue OHV compliance monitoring and increase enforcement as necessary to halt unauthorized vehicle use in the SBMRNA. Law enforcement officers from BLM and from the Sheriff's Departments of Fresno and San Benito Counties assist with monitoring for user compliance among recreation visitors to the CCMA.

**11)** Develop a monitoring plan for all fire management projects within the SBMRNA.

**12)** Develop a serpentine barren erosion monitoring plan. Long-term monitoring results can provide watershed-scale models of water and sediment flow, as well as changes to stream channel morphology. Water and sediment flows and stream morphology are critical factors in the formation and degradation of rare plant habitat such as the stream terraces frequently occupied by San Benito evening primrose.

**13)** Soil erosion can be quantified in two ways including soil depth loss as measured by staff gauge grid established upon the area of interest, or collection (basin or silt fence) of the sediment eroded from a particular area, downhill of that area. Sediment collection is the easiest method. One easy way to measure soil erosion is to establish silt fences at key sites of overland erosion (Robichaud and Brown 2002). These fences can measure changes to sites, especially near habitats for the San Benito evening primrose, and provide verification for needed restoration throughout the SBMRNA. BLM will determine locations to establish silt fences in tandem with restoration projects to document the effectiveness of intended improvements.

## 1.5 Allowable Uses

Uses inconsistent with the preservation of the values for which the RNA was designated will not be allowed. Allowable uses identified in this document will guide management of the RNA in the interim.

### 1.5.1 Recreation Access

Recreation and access will conform to management actions identified in the preferred alternative in the CCMA RMP and be consistent with SBMRNA management objectives. This process will identify recreation activities to be managed or discouraged in the SBMRNA. The SBMRNA shall be managed for minimum human disturbance. Intensive recreational or commercial activities, or activities inconsistent with the values for which the SBMRNA was designated will not be allowed, and may include review and permitting of access for authorized uses. Only low impact recreational activities will be permitted. All commercial applications shall be thoroughly reviewed and should avoid the designated area where possible.

### 1.5.2 General Access

The following uses will be allowed:

- Educational tours;
- Research – require written authorization;
- Existing rights-of-way, easements, and real estate permits;
- Motorized and mechanized vehicle use on designated open routes;
- Native American access – written authorization if beyond the scope of allowable uses;
- Prescribed fire – to preserve the desired characteristics of the RNA;
- Hiking on marked and designated trails.

The following uses will not be allowed:

- Camping
- Trapping/hunting
- Target shooting
- Paintball
- Metal detecting
- Geo-caching
- Hang-gliding
- Special Recreation Permit OHV events
- Wood-fueled campfires
- Plant, animal, or mineral collection
- Collection of cultural resources
- Wood collection
- Timber harvest
- Grazing

The above restrictions apply to recreational use only and may be allowable for research projects. This list is not all-inclusive and any uses not specifically authorized are restricted. Activities involving organized groups or commercial activities will need written authorization.

**All uses will be in accordance with 43 CFR 8223.1**

**A.** No person shall use, occupy, construct, or maintain facilities in a research natural area except as permitted by law, other Federal regulations, or authorized under provisions of 43 CFR 8223.

**B.** No person shall use, occupy, construct, or maintain facilities in a manner inconsistent with the purpose of the research natural area.

**C.** Scientists and educators shall use the area in a manner that is non-destructive and consistent with the purpose of the research natural area.

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# Appendix IV - *Camissonia benitensis* Compliance Monitoring & Adaptive Management Plan

**Bureau of Land Management**
**Hollister Field Office**
**Clear Creek Management Area**

## 1.0 Introduction

The San Benito evening-primrose (*Camissonia benitensis,* CABE) is a federally listed threatened plant species which occurs on public lands in the Clear Creek Management Area (CCMA). The Endangered Species Act requires that all Federal agencies ensure that management actions do not jeopardize the continued existence of any endangered or threatened species. The only known locations of the San Benito evening-primrose are limited to serpentine-derived alluvial deposits within the vicinity of the CCMA. The Bureau of Land Management (BLM) has, as a priority, the protection of existing populations of the San Benito evening-primrose and attempting to expand its range to areas that have moderate and high potential for the species.

The Compliance Monitoring Plan will improve the BLM's ability to manage the CCMA in a manner that promotes the long-term conservation of CABE and makes efficient use of staffing and funding. This document outlines specific actions and refines the protocol to be used in monitoring CABE occupied and potential habitat areas within the CCMA. This monitoring program documents disturbance to CABE habitat by tracking the nature, frequency, and intensity of threats to the species and its habitat to assess the status of the species over time to determine if adaptive management is needed. This Compliance Monitoring Plan is also part of a larger adaptive management plan being developed jointly by BLM and the U.S. Fish and Wildlife Service (FWS).

The Hollister Field Office staff has conducted population census monitoring and off highway vehicle (OHV) compliance monitoring within CABE occupied and potential habitat since 1996. This time period has provided an opportunity to test the effectiveness of these two monitoring efforts and to make modifications if necessary. BLM and FWS have determined that the existing Compliance Monitoring Plan is effective; however, this plan may be revised as necessary based on consultation and annual review with the FWS, to adaptively manage the species, improve the clarity of the plan, and provide managers with additional information on which to base decisions. This monitoring program will assist in determining areas where further management actions, protective measures, or administrative closures are necessary to adequately protect CABE populations and habitat within the CCMA.

This monitoring program is based on the 2005 FWS Biological Opinion (BO) for CABE within the CCMA, and builds upon existing documents and strategies that have established protocol for compliance monitoring, including the 2005 Proposed Resource Management Plan Amendment (RMPA) and Final Environmental Impact Statement (FEIS) and 2006 Record of Decision (ROD) for the CCMA. Key documents are listed in Section 8.0.

# 2.0 Definitions

## 2.1 Population Terminology

Population: Traditionally, a plant population has been defined as "a group of individuals of the same species occupying a habitat small enough to permit interbreeding among all members of the group" (see, for example, Barbour et al. 1987, page 7). This can be referred to as the biological population definition. Because of the difficulty in determining what actually constitutes a biological population under this definition (i.e., what occupied habitat is "small enough" for a particular species), the California Natural Diversity Data Base dispensed with the use of the term "population" and used the term "occurrence" instead (as defined below).

Also because of the difficulty in circumscribing a biological population, plant population biologists have more recently departed from the traditional biological population definition and now define a population without respect to whether there is interbreeding or not. For example, Gibson (2002, page 4) defines a plant population as follows: "A *population* of plants is a collection of individuals belonging to the same species, living in the same area (Silvertown and Lovett Doust 1993)." This is the definition used in this document, and is therefore a general term used to discuss CABE plants growing in any distinct location. Under this definition both occurrences and suboccurrences can be considered populations.

Occurrence: Groups of CABE plants that are within ¼ mile of each other.

Suboccurrence: Occupied habitat in which a group of CABE plants occur in a specific area within an occurrence, differing noticeably in habitat characteristics (e.g., slope, aspect, disturbance regime) from any other group of plants of the same occurrence. There are 46 documented suboccurrences affected by this monitoring project.

## 2.2 Habitat Terminology

Occupied habitat: Areas where CABE is known to occur. Each area of occupied habitat is currently assigned a suboccurrence number. Note that the suboccurrence number is used to identify the location of habitat out of convenience, even though the term suboccurrence refers to the group of plants that occupy the habitat.

Potential habitat: Areas of moderate to level slope that are the product of deposition from serpentine sources, either on a geologic time frame such as terraces or alluvial fans or from a more recent period such as a flood plain, that has less than 50% ground cover from the shrub layer, exhibit 25% or greater bare ground in the shrubless areas, and have low to no vehicle use, camping, or roadside disturbance. These areas are generally (but not always) adjacent to occupied habitat.

The criteria for identifying potential habitat were based on the work done by Taylor (1990). However, the discovery of several new CABE populations since then has somewhat broadened our understanding of what might be considered potential habitat. Therefore, while the criteria above are a general guide, the consideration of a site as potential habitat should not automatically be rejected if it fails to match the criteria in every way.

## 2.3 Noncompliance Terminology

Baseline: Baseline conditions will be established prior to the use season (October 15) to document habitat conditions. Any pre-existing tracks or site disturbance will be noted and obscured to the extent possible. Photo point monitoring will be conducted to document general site conditions. Monitoring will focus on measuring the level of current compliance and avoid counting of tracks existing prior to the use season.

Non-compliance: Motorized and non-motorized trespass and unauthorized use in occupied and potential habitat.

Incident: A non-compliant incident is human disturbance to habitat that is observed and is a change from the previous monitoring visit. Each visit is relative to the baseline, non-disturbed site. An OHV non-compliant incident includes unauthorized motorized use off the designated route network that occurs in occupied or potential habitat. OHV non-compliance incidents will be the primary mechanism relating to thresholds that trigger adaptive management strategies for increasing protection of habitat for the species. The baseline is the suboccurrence or the potential habitat without any OHV tracks. Tracks will be obscured (e.g. raked) at each visit so that new incidents at each subsequent visit are easily detected. Tracks in one CABE suboccurrence are equal to one incident. A single incident that occurs in both the suboccurrence and potential habitat is recorded as one incident in the suboccurrence. The number of tracks relate to the intensity of OHV trespass - low, moderate or high as identified below. Codes used to identify the type of incident, intensity, and habitat type are in Section 3.2.

Disturbance: Disturbance to CABE, CABE habitat, and CABE potential habitat by motorized, non-motorized, and environmental factors, includes but is not limited to tire tracks, trampling of plants, soil compaction, soil displacement, trash, camping, soil erosion, and sedimentation.

OHV Disturbance Intensity (includes occupied and potential habitat):

Low: A new incident of OHV non-compliance with 1 distinct set of tracks since the most recent compliance monitoring.

Moderate: A new incident of OHV non-compliance with 2 distinct sets of tracks since the most recent compliance monitoring.

High: A new incident of OHV non-compliance with 3 or more distinct sets of tracks since the most recent compliance monitoring.

## 3.0 Compliance Monitoring Program

### 3.1. Frequency:

With substantially lower levels of vehicle use within the Serpentine ACEC anticipated for Alternatives D – G, frequency of monitoring can be reduced. Proposed frequency of monitoring all populations is four times annually (once every three months). Monitoring frequency may be increased or reduced in response to vehicle use and seasonal variation in use. Monitoring frequency shall not be less than twice per year. Monitoring all populations at the same time interval will eliminate the priority monitoring tiers used to present.

### 3.2 Habitat Monitoring

The compliance monitoring year begins June 1 and ends June 1 the following year. Field staff will be assigned habitat monitoring tasks as a priority work element. The frequency of monitoring for each site was described in the preceding section. Each staff member assigned monitoring tasks will be trained regarding this program and provided field forms, maps, camera, and GPS unit. A field map has been generated for use by employees to ensure the correct suboccurrences are being visited and recorded accurately.

In addition to habitat monitoring, BLM performs weekly and bimonthly monitoring of protective measures (fencing, barriers, etc.) for CABE habitat according to a separate protocol. Data is input on a field inspection record and includes site name, date, staff person, observations on the type of damage, GPS location, and corrective action taken. Habitat monitoring and protective measure monitoring are two independent efforts to monitor OHV impacts on CABE within the CCMA.

Due to newly discovered CABE suboccurrences within the CCMA and newly introduced suboccurrences since 2007, a total of sixty-four suboccurrences will now be monitored under this program, along with the surrounding potential habitat areas as defined on the project map. Potential habitat areas are based on BLM GIS data.

**Suboccurrence Protocol**

At each suboccurrence location, the monitoring employee will enter data onto a standardized Field Monitoring Data Sheet. The sheet will contain fields for each suboccurrence with a GPS location to compare to the map and GPS unit. The form will also differentiate the frequency of monitoring for each site based on the priority list above. This will provide consistency in how data is gathered by staff and cut down on time needed to transfer data in the office.

Staff will record the visit on the Field Monitoring Data Sheet and document any incidents of OHV non-compliance or disturbance to the habitat in written format using the appropriate field codes. Observations will note any change from previous monitoring visit or baseline conditions; including breaks in barriers, missing signs, tracks, evidence of camping, erosion, or sedimentation, and determine the type and severity of the incident. Any disturbance (tracks, etc.) to the habitat will be obscured to the extent possible. Field notes will provide additional information and descriptions of habitat condition. The monitoring staff member will also photograph each incident of OHV non-compliance in affected suboccurrences. Field office management will be notified immediately of any instances of non-compliance to determine the need for further management action.

**Potential Habitat Protocol**

Potential habitat areas surrounding each suboccurrence will be observed upon each monitoring visit, and any OHV non-compliance disturbance to the habitat will be noted in the monitoring report. GPS information will be used to identify the potential habitat locations. Observations will note any change from previous monitoring visit or baseline conditions and determine the type and severity of the incident. Any disturbance (tracks, etc.) to the habitat will be obscured to the extent possible. Field notes will provide additional information and descriptions of habitat condition. The monitoring staff member will also photograph each incident of OHV non-compliance in affected suboccurrences. Field office management will be notified immediately of any instances of non-compliance to determine the need for further management action. Any habitat disturbance will be assessed by resource staff to determine if corrective measures are needed to protect the proximal suboccurrence or the potential habitat itself.

The following codes and format will be used on the data sheet to record incidents of OHV non-compliance:

**Occupied habitat:**
OTH: Occupied habitat, use of closed trail, high (3 or more tracks)
OTM: Occupied habitat, use of closed trail, moderate (2 tracks)
OTL: Occupied habitat, use of closed trail, low (1 track)

**Potential habitat:**
PNH: Potential habitat, new trail, high (3 or more tracks)
PNM: Potential habitat, new trail, moderate (2 tracks)
PNL: Potential habitat, new trail, low (1 track)

## 3.3 Compliance Monitoring Reporting

**Reporting and Record Keeping**

Any OHV non-compliant incident within suboccurrences and potential habitat will be recorded and immediately reported to the Field Manager or Associate Field Manager upon return to the Field Office to determine the need for adaptive management. Reports of OHV non-compliance will also be immediately routed to staff Botanist, Wildlife Biologist, and appropriate Resource Staff to assess the need for appropriate action.

Associated photographs will be assigned the date of monitoring and suboccurrence number and filed electronically and in hard copy format with the report.

Data sheets will be submitted and filed in a central location at the Hollister Field Office. Data will also be logged electronically at the office by appropriate staff.

**Periodic reports**

OHV Compliance Monitoring Reports will be generated quarterly and submitted to the FWS. Reports will cover the following time periods

1) June – September,
2) October – December,
3) January – March,
4) April – May.

An annual report will be submitted to the FWS in June of each year which summarizes ongoing management to protect CABE occurrences and potential habitat within the CCMA.

Each of the reports will include the following elements:

1) Information gathered from all staff participating in the monitoring, including biological staff, resource staff, and LE staff;
2) Photos of incidents of OHV non-compliance to subocurrences;
3) A general assessment of the condition of the suboccurrence habitat;
4) Recommendations for changes in management with specific timelines included;

5) A compliance monitoring record including total visits and total incidents of OHV non-compliance per suboccurrence and potential habitat;
6) Descriptions of all non-compliance incidents;
7) Implementation of management actions identified in the ROD;
8) A summary of population monitoring (annual report).

# 4.0 Adaptive Management

## 4.1 Adaptive Management Options Available to Managers:

The following measures are available for increasing protection to occupied and potential CABE habitat if compliance monitoring indicates that existing protection is insufficient to control impacts to these sites. These measures should be applied so that they are tied to the specific type of infraction and the location where the infraction occurs; the measures should be applied in a stepwise process.

- Site Monitoring
  - Increase frequency of monitoring at specific suboccurrences with chronic noncompliance

- Signing
  - Increase signing. Sign Tier 1 and 2 CABE sites for educational and law enforcement purposes (i.e. Vegetation Study Area and Closed Area) unless vandalism is a risk.

- Fencing
  - Continued OHV non-compliance will determine if the next level of protection is necessary (complete fence exclosure, partial pipe barriers, complete pipe barriers, and route or area closure).
- Pipe-barrier
  - Generally a pipe barrier is only needed adjacent to very high use areas (staging or camping, and county roads) and along portions of the perimeter of protected areas. This level of protection is very expensive, as well as effective, and may be considered when other alternatives are unacceptable.
- Closures
  - Close trails, sub-watersheds, entire watersheds and larger areas, or the entire CCMA when monitoring shows continued OHV non-compliance in CABE suboccurrences and potential habitat on BLM managed lands exceeds thresholds identified below. Closures at the sub-watershed and larger areas will be determined by the Bureau and the Service to determine appropriate adaptive management actions. The groundwork for this strategy was included in the 2005 BO. The extent and degree of the closure is described below.

## 4.2 Closure Criteria

The BLM will respond to incidents of non-compliance with a hierarchical approach using signs, barriers, and area closures (i.e., trails, areas, sub-watersheds, watersheds, larger areas, or the entire CCMA). When risks to plants are too great to use less restrictive methods of protection this approach may not be followed step by step; in such cases, the appropriate adaptive management response may be to skip intermediate steps to ensure higher levels of protection. The BLM and FWS will jointly determine closures at the sub-watershed level and above to determine appropriate adaptive management actions. In addition insufficient funds or personnel and lack of monitoring could result in closure of the CCMA. The closure thresholds are identified below.

Insufficient funds or personnel: Should budget or staffing levels result in ineffective habitat protection, barrier construction, occurrence monitoring, and area patrol, that could cause unacceptable damage to CABE habitat, the Bureau will determine the best adaptive management action to implement in informal consultation with the Service.

### 4.2.1 Non-compliance Closure Levels and Thresholds

**Closures:** A hierarchy of closures is based on the degree and extent of the annual OHV non-compliance and disturbance to occupied CABE habitat on BLM lands. A higher level of protection is generally triggered by conditions exceeding threshold levels. Since the BLM has no jurisdiction for enforcing OHV compliance on private land inholdings within the CCMA borders, non-compliance within occupied CABE habitat on private lands (suboccurrences 261100, 181100, 201200) would not count towards the threshold number. Closures would remain in effect for the remainder of the monitoring period or until the adverse effects are eliminated and measures implemented to prevent recurrence, with mutual agreement between FWS and BLM.

**Non-compliance at the Occurrence/Suboccurrence Scale**

**Threshold**: When OHV non-compliance incidents have occurred within the same occupied CABE habitat (suboccurrence) on two consecutive monitoring visits on BLM land during the compliance monitoring period (begins June 1 and ends June 1 the following year).

**Action**: Close trails that lead to protected suboccurrences and potential CABE habitat at the intersection above the site. Trails may be signed, fenced, or rerouted to maintain continuity and to avoid cul-de-sacs.

**Non-compliance at the Watershed Scale**

**Threshold:** More than 5 OHV non-compliance incidents within any occupied CABE habitat (suboccurrence) on BLM land within the same watershed[5] during the monitoring period. Initiate informal consultation with the Service to determine appropriate adaptive management. The exact nature of any closures will be determined in informal consultation with the BLM and the FWS and may include closure of the sub-watershed, watershed, or larger areas.

**Action**: Close sub-watershed or larger areas. Extend the OHV closure area to sub-watersheds or larger areas when trail closure is ineffective or if non-compliance continues due to route proliferation.

**Non-compliance at the Clear Creek Management Area Scale**

**Threshold:** More than 15 OHV non-compliance incidents within any occupied CABE habitat (suboccurrence) on BLM land located within the entire CCMA. Closure of the entire CCMA will be determined in informal consultation with the Bureau and the Service. The area could be closed to the type of vehicle that is causing the non-compliance. Closure would be in accordance with Federal regulation at 43 CFR 8341.2 and 43 CFR 8364.1.

[5] Watersheds identified in the 2005 RMPA and FEIS include, Larious, Clear Creek, San Carlos, San Benito, Los Gatos, Cantua, and White Creek. Los Gatos and Cantua do not have occurrences of CABE. Larious, San Carlos, and White Creek are currently closed.

**Action:** Closure of the CCMA - Closure of the entire CCMA may be considered if non-compliance is occurring at several locations.

43 CFR 8341.2
(a) Notwithstanding the consultation provisions in Sec. 8342.2(a), where the authorized officer determines that off-road vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the authorized officer shall immediately close the areas affected to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. Such closures will not prevent designation in accordance with procedures in subpart 8342 of this part, but these lands shall not be opened to the type(s) of off-road vehicle to which it was closed unless the authorized officer determines that the adverse effects have been eliminated and measures implemented to prevent recurrence.

43 CFR 8364.1 Closure and Restrictions
(a) To protect persons, property, and public lands and resources, the authorized officer may issue an order to close or restrict use of designated public lands.
(b) Each order shall:
(1) Identify the public lands, roads, trails or waterways that are closed to entry or restricted as to use;
(2) Specify the uses that are restricted;
(3) Specify the period of time during which the closure or restriction shall apply;
(4) Identify those persons who are exempt from the closure or restrictions;
(5) Be posted in the local Bureau of Land Management Office having jurisdiction over the lands to which the order applies;
(6) Be posted at places near and/or within the area to which the closure or restriction applies, in such manner and location as is reasonable to bring prohibitions to the attention of users;
(7) Include a statement on the reasons for the closure; and
(c) In issuing orders pursuant to this section, the authorized officer shall publish them in the Federal Register.
(d) Any person who fails to comply with a closure or restriction order issued under this subpart may be subject to the penalties provided in 8360.0-7

## 5.0 Population Monitoring

**Monitoring protocol**

CABE annual monitoring was conducted by Dean Taylor under Bureau contract between 1990 and 1994. The Bureau has conducted all CABE monitoring tasks since 1996. CABE suboccurrence plant counts are made annually during peak flowering (typically April 1 – May 1). Based on these past years of annual monitoring, we have made the following observations: 1) in climatically favorable years, suboccurrences with large numbers of individuals are difficult and time-consuming to census; 2) regardless of the change in number of individuals from year to year, the "footprint" of the suboccurrence is similar. For annual species with large annual variation in numbers of individuals, it is more important to maintain the quality of the habitat than to know the precise number of individuals that occur from year to year. Also, suboccurrence trend information can be gathered through other techniques than through a complete direct count.

Therefore, the following protocol will be used for the annual population census:

1. Suboccurrences under 100 are completely counted
2. Suboccurrences over 100 are estimated and rounded to the nearest 10
3. Suboccurrences over 500 are estimated and rounded to the nearest 50
4. Suboccurrences over 1,000 are estimated and rounded to the nearest 100

Estimations on larger suboccurrences can be made using other techniques:

1. If density is fairly even, the count for a small area of the suboccurrence can be extrapolated to the entire suboccurrence.

2. If density is uneven, estimates can be made based on the random placement of plots.

Suboccurrence census information will be forwarded to the BLM manager along with data from the compliance monitoring. The resource specialist/botanist shall make recommendations to the managers as to whether any additional measures need to be taken to protect CABE suboccurrences and habitat beyond those that would be triggered by reviewing compliance monitoring data alone. For instance, during an annual census, the botanist may observe an extension of a suboccurrence or identify additional suitable habitat that has not been recorded previously, and make recommendations that these additional areas be immediately entered into the database of CABE occupied/suitable habitat polygons, and that protective measures need to be taken within specific timeframes to remove potential impacts from OHV use.

## 6.0 Annual review with the U.S. Fish and Wildlife Service

**Review of Bureau Response to Compliance Monitoring Data**

If informal consultation with the FWS has otherwise not been triggered by reaching the thresholds outlined in the Compliance Monitoring Plan, the Bureau will confer with the FWS on an annual basis to review data gathered from the compliance monitoring program and the population census monitoring, and what measures the BLM has taken to remedy any problems that were identified. The conference can initially be via e-mail and phone, though either party reserves the right to request an in-person meeting. If substantial disagreement arises between the agencies regarding appropriate management response to issues related to protection and conservation of CABE, the Service may request that consultation be reinitiated.

**Review of Compliance Monitoring and Adaptive Management Plan**

Either the Service or the Bureau can request a review of the current plan and suggest revisions. Revisions should be agreed upon by both parties. An administrative record should be kept by both agencies regarding revisions that are agreed to by both parties.

## 7.0 References

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Silvertown, J. W., and J. Lovett Doust. 1993. Introduction to plant population biology. Blackwell Science, Oxford, England.]

## 8.0 Documents

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Bureau of Land Management. 1997. Draft compliance monitoring on potential habitat polygons for San Benito evening-primrose.

U.S. Fish and Wildlife Service. 1997. Biological Opinion of the Clear Creek Management Area/Resource Management Plan Amendment and Final Environmental Impact Statement and the Proposed Administrative Site Development
Plan, San Benito and Fresno Counties, California (1-8-96-F-20) (USDI SERVICE, 1997) and management of *Camissonia benitensis.*

Bureau of Land Management. 2003. Interim Protection Strategy. The Interim Protection Strategy (IPS) was developed by the BUREAU and SERVICE as an adaptive management response to increased OHV non-compliance at the CCMA. This revised Compliance Monitoring Plan (CMP) included with the Services' Biological Opinion on the Clear Creek Management Area Plan Amendment (2005) will replace the IPS and will serve as a component of the long-term protection plan for CABE.

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# Appendix V - Best Management Practices

The following management practices were compiled from various sources listed in the reference section. These practices are listed as methods for correcting problems related to CCMA travel management and watershed issues associated with dust suppression, hazardous materials releases, and soil loss and erosion. Many of these management practices are specific measures which will need additional study to determine how or if they effectively apply to the specific conditions in the Clear Creek Management Area.

All of these management practices would need to be monitored and evaluated to determine their overall effectiveness and protection of human health and the environment. These management practices have been grouped into the following, broad categories: watershed restoration/management, barrens restoration/management, transportation and roads, abandoned mine lands (AML) and mining activities, and recreation facilities.

## A. Watershed Management & Restoration

BLM'S watershed management goals related to soil loss are based on limiting sediment production from roads, trails, and disturbed areas (hill climbs, mining areas), avoiding vegetation and stream channel disturbance, and minimizing mass movement of soil into stream channels (from steep slopes and mining areas).

The following is a list of Management Practices (MP) that have been implemented and will continue to be implemented, practices that will be further developed, and management practices that will need further evaluation and planning prior to implementation. Continued implementation of management actions related to controlling erosion and sediment yield to minimize impacts to watershed resources are generally within the capability and budget constraints of the BLM. In all cases, BMPs will be identified that best address resource condition objectives and will be phased in over a period of time.

MP –1: Protection of Unstable Areas

Objective: To provide for protection of unstable areas and thereby avoid triggering mass movements of the soil mantle and resultant erosion and sedimentation.

Explanation: This management practice will help protect unstable areas by reducing or stabilizing their high erosion rates. Unstable slopes will be protected by use of fences and barriers to eliminate or channel vehicle use away from these areas, and by use of gully plugs, water diversions, etc. as needed.

MP- 2: Streamside Management Zone Designation

Objective: To designate a zone along streams where prescriptions are made that will minimize the adverse effects of nearby land disturbance activities including roads, by: (1) acting as an effective filter for sediment generated by erosion from road fills and dust drift; (2) maintaining shade riparian habitat (aquatic and terrestrial), and channel stabilizing effects; (3) keeping the floodplain surface in a resistant, undisturbed condition to limit erosion by flood flows.

Explanation: Activities near streams need to be carefully designed and managed. At designated roads and stream crossings, fill and side cast material must be kept at a distance from nearby

streams to minimize their impact on the critical riparian zone and on the stream itself. Factors such as stream class channel aspect, channel stability, side-slope steepness, and slope stability are considered in determining the constraints of activities and width of stream side management zones. It is vital to stabilize till slopes before the stream side management zone is saturated with sediment. The streamside management zone is not a zone of exclusion, but a zone of closely managed activity. It is a zone which acts as an effective filter and absorptive zone for sediment, maintains shade, protects aquatic and terrestrial riparian habitats, protects channel and stream banks, and promotes flood plain stability.

MP – 3: Restrict Development within the Floodplain

Objective: To avoid, where possible, the long and short-term adverse impacts to water quality associated with the occupancy and modification of floodplains.

Explanation: A floodplain analysis and evaluation will be made when sites within floodplains are being considered for structures or developments. Environmental quality, ecological effects, and individual safety and health are considered. Flood frequencies, watershed conditions, climatic and environmental factors associated with past flood events, flood flow quantities and specific flood boundaries are all evaluated.

MP – 4 Specifying Riprap Composition

Objective: To minimize sediment production associated with the installation and utilization of riprap materials.

Explanation: Riprap is commonly used to armor stream banks, stream crossings, and drainage ways from the erosive forces of flowing water. Riprap must be sized and installed in such a way that it effectively resists erosive water velocities. Stone used for riprap should be free from weakly structured rock, organic material and materials of insufficient size, all of which are not resistant to stream flow and would only serve as sediment sources. Outlets of drainage facilities in erodible soils commonly require riprap for energy dissipation. The Corps of Engineers and Federal Highway Administration procedures are commonly used for designing riprap structures.

MP – 5 Re-vegetation of Surface Disturbed Areas

Objective: To protect water quality by minimizing soil erosion through the stabilizing influence of vegetation.

Explanation: This is a corrective practice to stabilize the soil surface of a disturbed area. The vegetation selected will be a mix of species best suited to meet the management objectives of the area, be it wildlife, recreation, watershed, or fuels management. Endemic species (grass or browse shrubs) may be used between recently planted trees where appropriate for aesthetics, erosion prevention or wildlife needs. The factors evaluated are soil fertility, slope, aspect, soil water holding capacity, climatic variables, and suitable species selection. Re-vegetation of some disturbed areas in serpentine soils may not be feasible.

MP – 6: Watershed Restoration

Objective: To improve water quality and soil stability.

Explanation: Watershed restoration is a corrective measure to: (1) repair degraded watershed conditions and restore the hydrologic balance with a vegetative cover that will maintain or improve soil stability, reduce surface runoff, increase infiltration, and reduce flood occurrence and flood damages; (2) conserve the basic soil resource; (3) maintain and improve water availability; and (4) enhance economic, social, and scenic benefits of the watershed. Factors considered are: predicted change in water quality, downstream values, on-site productivity, threat to life and property, direct and indirect economic returns, and social and scenic benefits. Examples of watershed restoration measures are gabion structures, back filling gullies with rock, and constructing water diversions.

MP – 7: Erosion Control Structure Maintenance

Objective: To ensure that constructed erosion control structures are stabilized and working.

Explanation: Erosion control structures are only effective when they are in good repair and stable condition. Once the erosion control structures are constructed and seeded where practicable, there is a possibility that they may not become adequately vegetated or stabilized or they may become damaged from subsequent activities. It is necessary to provide follow-up inspections and structural maintenance in order to avoid these problems and insure adequate erosion control.

MP – 8: Abandoned Road and Trail Restoration and Reclamation

Objective: To improve water quality and soil stability.

Explanation: Route restoration is a corrective measure to: (1) repair degraded route conditions and restore the hydrologic balance with a vegetative cover that will maintain or improve soil stability, reduce surface runoff, increase infiltration, and reduce flood occurrence and flood damages; (2) conserve the basic soil resource; (3) maintain and improve water availability; and (4) enhance economic, social, and scenic benefits of the watershed. Factors considered are: predicted change in water quality, downstream values, on-site productivity, threat to life and property, direct and indirect economic returns, and social and scenic benefits. Examples of route restoration measures are soil de-compaction, vertical and horizontal mulching, transplanting and re-seeding vegetation, re-establishing natural drainage features and utilization of temporary water management features.

## B. Barren Areas Management & Restoration

The purpose of this section is to present sediment and erosion control BMPs that are potentially applicable for active OHV play areas. Due to the unique conditions at the Clear Creek Management Area (i.e., topography, climate, soil types, vegetation, and recreational OHV use), the effectiveness of the proposed BMPs is difficult to predict. There is very limited practical experience with BMPs for conditions similar to those found at Clear Creek.

In order to directly evaluate the efficiency of the proposed BMPs at Clear Creek, it is recommended that a BMP pilot program be implemented. Under the pilot program, the BMPs considered by BLM to be most feasible based on the available budget will be implemented on a limited scale. Each selected BMP is

implemented at one or two sites that meet its applicability criteria and using different designs where possible. The effectiveness of each BMP is then evaluated over the course of one year. At the end of the evaluation, BLM will identify the most effective BMPs and designs and will expand their use at other sites with similar features within the Clear Creek Management Area.

MP – 9 Silt Fences

Objective: A silt fence consists of a geotextile fabric attached to supporting poles, which is used to intercept, reduce velocity, and filter surface runoff.

Explanation: Silt fences are effective in areas where sheet flow occurs for example, at lower end of active play areas, particularly at the interface between a play area and a vegetation buffer; base of slopes; and along streams. Silt fences provide retention of runoff sediments, decrease runoff flow velocity and energy, protect downslope vegetation from sedimentation and wash-out, and provide visual indication of play area lower boundary. Installation does not require construction equipment or skilled labor and is low cost.

MP –10 Erosion Control Blankets

Objective: Erosion control blankets are mats made of synthetic or natural material, or a combination of the two, which are stapled to the soil on steep slopes to control erosion and promote the establishment of vegetation.

Explanation: The use of erosion control blankets is limited to narrow strips adjacent to the lateral boundaries of vegetated areas located downgradient of active OHV use areas. In order for the blankets to be effective, the soil over which they are installed should be of sufficient quality to support vegetation growth. The soil surface must be relatively smooth, without rock, deep depressions, or debris. The blankets may be seeded to improve the vegetation establishment process. This BMP may be combined with the use of silt fences, which are described earlier in this section. A silt fence may be installed upgradient of a vegetated area and extended laterally to protect the erosion protection blanket strips. Benefits and advantages of erosion control blankets include: effective protection of soils on highly erodible slopes: they absorb and hold moisture near the soil surface; promote vegetation establishment; may be installed on steep slopes; and they do not require construction equipment or skilled labor.

MP – 11 Rock Backfilling of Gullies

Objective: Filling gullies with loose angular rock prevents further deterioration from water erosion.

Explanation: This practice is used primarily in naturally incised drainage channels that concentrate flow and significantly contribute to sediment generation and transport. This method may be combined with the check dam application where lower, more accessible sections of a gully may be backfilled with rock and the check dams would be constructed at higher sections of the gully. Benefits of rock backfilling include: a decrease in runoff flow velocity and energy; retention of runoff sediment which, over time, may clog the void spaces and “heal” the gully; and maintenance can be minimal with proper construction.

MP – 12 Check Dams

Objective: Check dams decrease runoff flow velocity and energy and provide retention and settling of runoff sediments.

Explanation: Check dams are small structures made of logs, stone, or silt fence that are constructed across a gully or ephemeral stream in order to lower the speed, retain sediments, and diminish the erosion potential of concentrated flows. Installation does not require construction equipment or skilled labor and is low cost.

MP – 13 Interceptor Dyke and Swale

Objective: Interceptor dykes and swales are used to decrease runoff flow energy, protect downslope vegetation from sedimentation and wash-out, and provide visual indication of play area lower boundary.

Explanation: Dykes are ridges of compacted soil and swales are excavated depressions. A dyke is constructed adjacent and downslope of the swale from materials excavated for the construction of the swale. In most cases the swale is stabilized with riprap. Dyke and swale systems intercept overland flow and convert it into concentrated flow with lower, non-erosive velocity. The diverted flow is discharged to a suitable outlet. Dykes differ from silt fences in that it intercepts and diverts all runoff from upload areas, whereas, silt fences allow runoff to filter though the fence and reach lower areas.

MP – 14 Sediment Basins

Objective: Sediment basins provide retention of runoff sediments up to 60 to 70%, decrease runoff flow velocity and energy, and protect downslope vegetation from sedimentation and wash-out.

Explanation: A sediment basin is a pond created by constructing a dam across a drainage way, and is designed to detain runoff in order to allow suspended sediments to settle. The pond is provided with a riser connected to a discharge pipe, which ends downgradient of the dam. The pipe is placed perpendicular to and at the base of the water flow. In the pond, water accumulated until its level exceeds the height of the riser and the excess water discharges though the pipe to the downgradient outlet. The basin volume below the top of the riser is the sediment storage zone. The dam should be constructed of materials less permeable than gravel and clean sand. Local materials such as silty sand, clayey sand, and silt, are acceptable if they are free of debris. The storage volume may be increased by evacuation the area in from of the dam, and excavated materials may be used for the construction of the dam. The structure is provided with an emergency spillway to prevent water from flowing over the dam in flood conditions. The ratio between the basin length and width should be between 2:1 and 9:1.

MP – 15 Rock Filter

Objective: Rock filters provide retention of runoff sediments, decrease runoff flow velocity and energy, and create physical boundaries for OHV's.

Explanation: A rock filter consists of a berm of crushed rock (size 1.5 to 3 inches), wrapped in poultry wire (one inch diameter hexagonal mesh, galvanized 20 gauge), and placed parallel to topographic contour lines on a horizontal surface at the toe of a slope. The purpose of the

rock filter is to intercept sediment laden runoff from disturbed areas of the site, reduce flow velocity, promote sedimentation, and release the water as sheet flow. Rock filters are low cost and require low maintenance.

MP – 16 Gabion Mattresses

Objective: To provide retention of runoff sediments, decrease runoff flow velocity and energy, and create a physical boundary for OHV's.

Explanation: A gabion mattress is a wire-mesh box filled with crushed rock. Typical mattress dimensions are: Height – six to nine inches; length – nine to twelve feet; and width – six feet. The purpose of gabion mattresses similar to that of the filter rock in which sediment laden runoff is intercepted from disturbed areas of the site, flow velocity is reduced sedimentation is promoted, and water is released as sheet flow. The main differences between mattresses and filter rock are: gabion mattresses may be placed on the slope before and after the slope break at the toe; gabion mattresses are more resilient; and mattresses are wider, resulting in better sediment trapping efficiency.

## C. Transportation & Roads

MP – 17: Dust Mitigation Measures

Objective: Reduction of Chrysotile Emissions on Unpaved Roads and Trails

Explanation: Airborne chrysotile dust would attempt to be controlled through various mitigating treatments. Treatments would potentially range from base rock, frequent application of water, Lignosulfonate, Calcium chloride, petroleum products, liquid copolymers and synthetic organic soil binding fluid. A variety of suppliers are available. Efficacy would need to be established through field testing. Reapplication and maintenance schedules would be established through testing using manufacturers' recommendation as baseline. Fugitive airborne dust and sloughing may increase application to subjective intervals.

MP – 18: Stream course Protection

Objective: (1) To protect the natural flow of streams, (2) to provide unobstructed passage of storm flows, (3) to reduce sediment and other pollutants from entering streams, and (4) to restore the natural course of any stream as soon as practicable if the stream is diverted as a result of management activities.

Explanation: The following points are fundamental to protecting streams and stream courses:

a. Vehicles should not operate within stream side management zones except where trails and roads cross the stream channel.

b. Water bars and other erosion control structures will be located so as to prevent water and sediment from being channeled into stream courses and to dissipate concentrated flows.

c. Material resulting from temporary road and ORV trail stream course crossing should be removed and stream banks restored and protected to the extent practicable.

MP – 19: Road Stream crossings

Objective: To ensure that roads do not unduly damage streams or disturb channels.

Explanation: Culverts or other means are necessary on roads (temporary, semi-permanent, or permanent) at all locations where it is necessary to cross designated streams. Alternate means of crossing stream courses may include: rock fills, hardened fords (using such features as rocked approaches) and low water crossings. Most (if not all) crossings of perennial streams should be approved by an inter-disciplinary team. Such facilities should be designed to provide for unobstructed flows and to minimize damages to stream courses. The number of crossings should be kept to the minimum needs for access. Channel crossings should be as perpendicular to stream courses as possible. Stream bank excavation should be kept to the minimum needed for use of the crossings, and entry and exit ramps may need to be rocked. Fords and turnpike crossings hardened with washed rock or landing mats are sometimes an acceptable alternative depending upon hydrological considerations.

MP – 20: Road Slope Design

Objective: To reduce sedimentation by: (1) minimizing erosion from road slopes, and (2) minimizing the chances for slope failures along roads.

Explanation: No stabilization project can entirely prevent erosion from cut and fill slopes, but no road construction should be planned without considering stabilization needs. The first planning requirement is for an adequate soil and geologic investigation, to provide data necessary for proper cut and fill design consideration such as:

(1) The proper cut and full slopes for the material;
(2) The handling of surface and subsurface drainage;
(3) Necessary compaction standards and surfacing needs.

A prerequisite for stabilization is to provide basic mechanical stability of the soils, using data from soils and geologic investigations to develop requirements for proper slope angles, compaction, and adequate drainage.

MP – 21: Road Slope Stabilization

Objective: To improve road cut and fill slope stabilization by applying mechanical and vegetative measures.

Explanation: Few slopes are sufficiently rocky to be naturally stable without needing additional measures. In most cases mechanical, and/or vegetative measures are required. Mechanical measures include but are not limited to: erosion nets, terraces, wattling, side drains, sub-surface dewater devices, blankets, fute mats, riprap, mulch, tackifier pavement, soil seals, and gunnite. Vegetative measures include the seeding of endemic herbaceous species (grass, legumes, or browse species) or the planting of endemic brush or trees. Vegetative measures may include: fertilization, mulching (or even watering) to insure success. A combination of endemic vegetative species often produces a better result than a more simplistic treatment, e.g., grass seeding alone. (See also MP – 5).

MP – 22: Dispersion of Subsurface Drainage from Cut and Fill Slopes.

Objective: To minimize the possibilities of cut or fill slope failure and the subsequent production of sediment.

Explanation: Roadways may drastically change the surface drainage characteristics of a slope. Since the angle and height of cut and fill slopes increase the risk of instability, it is often necessary to provide subsurface drainage to avoid moisture saturation necessary because of slopes, soil, aspect, and precipitation. Methods that should be used:

(1) Pipe under drains
(2) Horizontal drains
(3) Stabilization trenches

Dispersion of collected water should be accomplished in an area capable of withstanding increased flows. On erosive soils, energy dissipaters need to be placed below pipe carrying large volumes of runoff water.

MP – 23 Control of Road Drainage

Objective: (1) To minimize the erosive effects of water concentrated by road drainage features; (2) to disperse runoff from disturbances within the road clearing limits; (3) to lessen the sediment load from road areas; (4) to minimize erosion of the road prism by runoff from road surfaces and from uphill areas.

Explanation: A number of measures can be used (alone or in combination) to control the detrimental effects of road drainage. Methods used to reduce erosion may include such things as properly spaced cross drains or water bars, dips, drop basins, energy dissipaters, aprons, downspouts, gabions, debris racks, and armoring of ditches and drain inlets and outlets. Disposal of runoff can be accomplished by such means as rolling the grade; out sloping; installation of water spreading ditches; contour trenching; or adequate sized over side drains, etc. Disposal of runoff also reduces peak down stream flows and associated high water erosion and sediment transport. Sediment loads can be reduced by installing such things as sediment filters, settling ponds, and contour trenches. Soil stabilization can help reduce sedimentation by lessening erosion on borrow and waste areas, on cut and fill slopes and on road shoulders.

MP – 24: Erosion Control on ORV Trails and Temporary Roads.

Objective: To protect water quality by minimizing erosion and sedimentation derived from ORV trails and roads.

Explanation: Installation of erosion control measures may be required on OHV trails and temporary roads. This work may involve cross ditches and water spreading ditches. Other methods such as back-blading may be used in lieu of cross drains. Volunteer groups may also be used for constructing erosion control structure projects.

MP – 25: Minimization of Sidecast Material.

Objective: To minimize sediment production originating from material sidecast during road construction or maintenance.

Explanation: Unconsolidated side-cast material is very difficult to stabilize and often such material is susceptible to erosion and / or mass instability. Sidecasting of un-compacted material should be permitted only at locations designated through interdisciplinary input, and shown in the plans. In some areas especially those slopes over 60 percent, end hauling may be the only acceptable alternative to sidecasting even though the costs are high and end-haul equipment may need certain minimum widths in which to work. Waste areas should be located where excess materials can be deposited and stabilized. During road maintenance operations, care should be taken to eliminate the deposition of sidecast material onto stabilized slopes. Disposal of slide debris should be done only at designated water areas. Personnel performing road maintenance should confine excavated or embankment material within the roadway limits and the roadway should be constructed in reasonably close conformity with the lines, grades, and dimensions designated on the ground. They should also remove materials deposited outside the roadway. All materials should be incorporated in the planned work. Disposal of excess excavation which develops due to miscalculation or a specific design change should be disposed of in a specified manner and at a specified location.

MP – 26: Maintenance of Roads

Objective: To maintain roads in a manner which provides for water quality protection by minimizing rutting, failures, sidecasting, and blockage of drainage facilities – all of which can cause sedimentation and erosion.

Explanation: Roads normally deteriorate because of use and weather impacts. This deterioration can be minimized through adequate maintenance and /or restriction of use. All system roads should be maintained to provide the basic custodial care required to protect the road investment and to see that damage to adjacent land and resources is held to a minimum. This level of maintenance often requires an annual inspection to determine what work, if any is needed to keep drainage functional and the road stable. This level is the normal prescription for roads that are closed or seasonally closed to traffic. As a minimum measure, maintenance must protect drainage facilities and runoff patterns. Higher levels of maintenance may be chosen to reflect greater use or resource administrative needs. Additional maintenance measures could include resurfacing, out sloping, clearing debris from dips and cross drains, armoring of ditches and spot rocking.

MP – 27: Control of Road Use During Wet Periods

Objective: (1) To reduce road surface disturbance and rutting of roads; and (2) to lessen sediment washing from disturbed road surfaces.

Explanation: The unrestricted and official use of many unimproved and semi-improved roads during wet weather often results in rutting and churning of the road surfaces. Run off from such disturbed road surfaces often carries a high sediment load. The damage/maintenance cycle for roads that are frequently used in winter can create a disturbed road surface that is a continuing sediment source. Roads that are used during wet periods should have a stable surface and/or sufficient drainage to allow such use with a minimum of resource impact. Rocking, oil, paving, and armoring are measures that may be necessary to protect the road surface and reduce material loss. Drainage should be maintained to

prevent water from standing on the road surface or running down the road creating rills and gullies in the road surface.

## D. Abandoned Mine Lands & Mining Related Activities

MP – 28: Regulation of Streamside Gravel Borrow Areas

Objective: To limit channel disturbances and sediment production associated with gravel source development.

Explanation: Materials deposited along channel sections during storm runoff often provide an inexpensive source of gravel. Because of easy access this gravel is often in demand; with adequate planning, it can often be removed with minimal impact on water resources. Under some circumstances, gravel removal may alter stream flow characteristics and consequently affect stream channel stability and create a new sediment source. Borrowing should be limited to gravel bars above the water line which is normal for the period of excavation. If the borrow area is subject to periodic flooding, some leveling, shaping, or other special drainage features should be provided. Excavation should not take place below the water table unless sediment basins are built to contain or catch the resulting sediment. Sediment basins should not be subject to washouts. If excess sediment accumulates in basins, excavators should be required to clean the basin and deposit removed sediment in approved sites. Serpentine areas should not be used as a gravel source for use outside of the serpentine area.

MP – 29: Restoration of Borrow Pits, Quarries, and Mining Operations

Objectives: To minimize sediment production from borrow pits, quarry sites and mining operations.

Explanation: Borrow pits, quarries, and mining operations are often susceptible to erosion due to steel side slopes, lack of vegetation, and/or their proximity to water courses. Whenever necessary, prior excavation of the site, top soil should be removed and stockpiled for surface dressing in the post operation rehabilitation period. Once excavation has been completed on all or part of the area, the sides will be sloped and graded and the general pit area smoothed and stabilized. Oversize material, if left in the pit or quarry, should be evenly distributed. Finer materials should be spread over the bottom of the pit prior to spreading stockpiled or imported top soil. Seeding and mulching may be required and sediment basins should also be considered. Access roads to the site should be ripped, drained, blocked to traffic, and seeded unless other treatment is required by the design.

MP – 30: Environmental Health and Safety Hazard Awareness

Objective: Improve the level of visitor awareness of environment health and safety hazards, e.g., asbestos hazard in dust and water.

Explanation: The public will be encouraged through signs, pamphlets, media exposure and public contact to conduct their activities in ways that will not unnecessarily expose themselves to environmental hazards.

## E. Recreation Facilities

MP – 31: Surface erosion Control at Facility Sites

Objective: Limit the amount of surface erosion taking place on developed sites and the amount of soil entering streams.

Explanation: On lands developed for campgrounds, parking areas or waste disposal sites much ground is cleared of vegetation. Erosion control methods need to be implemented to keep as much of the oils in place as possible and to reduce the amount of soil entering streams Some examples of erosion control methods that can be applied at a site for keeping the soil in place would be applying endemic species seed, jute matting, tackifiers, hydro mulch, paving or rocking of roads, water bars, cross drains, or retaining walls. To control the amount of soil entering streams, the natural drainage pattern of the area should not be changed. Sediment basins and sediment filters should be established to filter surface runoff. Diversion ditches and berms should be built to divert surface runoff around bare areas. Construction activities should be scheduled to avoid periods of the year when heavy runoff will occur.

MP – 32: Control of Sanitation Facilities.

Objective: To protect surface and subsurface water quality from bacteria, nutrients, and chemical pollutants resulting from collection, transmission, and disposal of sewage from Bureau of Land Management facilities.

Explanation: Toilet facilities are provided at semi-developed and developed recreation sites. Sanitation facilities will be planned, located, designed, constructed, operated, inspected and maintained to minimize the possibility of water contamination. Toilet facilities should be located outside of the flood plain.

MP – 33 Control of Refuse Disposal

Objective: To protect water quality from nutrients, bacteria, and chemicals associated with solid waste disposal.

Explanation: Users of public land recreation facilities are encouraged cooperate in the proper disposal of garbage and trash. Receptacles are provided at most semi-developed sites. Garbage and trash must be packed out by those who use dispersed areas. The final disposal of collected garbage will be at a proper designated and operated sanitary landfill. The land fill site will be located where groundwater and surface waters are at safe distances as prescribed by State or local Health Board regulations.

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# Appendix VI - Wild & Scenic River Inventory

## I. Wild and Scenic River System

The Wild and Scenic Rivers Act of 1968 (Public Law 90-542) was passed by Congress to preserve riverine systems that contain outstanding features. The law was enacted during an era when many rivers were being dammed or diverted, and is intended to balance this development by ensuring that certain rivers and streams remain in their free-flowing condition. The BLM is mandated to evaluate stream segments on public lands as potential additions to the National Wild and Scenic Rivers System (NWSRS) during the Resource Management Plan (RMP) process under Section 5(d) of the Act. The NWSRS study guidelines are found in BLM Manual 8351, U.S. Departments of Agriculture and Interior Guidelines published in Federal Register Vol. 7, No.173, September 7, 1982 and in various BLM memoranda and policy statements. Formal designation as a Wild and Scenic River requires Congressional Legislation, or designation can be approved by the Secretary of Interior if nominated by the Governor of the state containing the river segment. The following discussion provides information on how BLM considered waterways for potential inclusion in the NWSRS.

The NWSRS study process has three distinct steps:

1. Determine what rivers or river segments are eligible for NWSRS designation;
2. Determine the potential classification of eligible river segments as wild, scenic, recreational or any combination thereof; and
3. Conduct a suitability study to determine if the river segments are suitable for designation as components of the NWSRS.

This report documents all three steps of the process for the streams in the planning area.

## II. Eligibility of Planning Area Rivers & Streams

**Identification**

A variety of sources were reviewed to identify waterways which could have potential for wild and scenic river designation. They include the Nationwide Rivers Inventory List, the Outstanding Rivers List compiled by American Rivers, Inc., river segments identified by state or local government, river segments identified by the public during formulation of the CCMA RMP/EIS, and river segments identified by the planning team as having potential to meet Wild and Scenic River eligibility requirements.

The Wild and Scenic Rivers Act defines a river as a "flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes."

Eleven stream segments totaling 21 miles located on or crossing BLM public lands were identified for review. These streams segments are identified on Map 7 in Appendix I and are listed in Table 1 below.

**Eligibility Determination**

Each identified river segment was evaluated to determine whether it is eligible for inclusion in the NWSRS. To be eligible, a river segment must be "free flowing" and must possess at least one "outstandingly remarkable value" (ORV). These ORV's include:

- Scenic,
- Recreational,
- Geological,
- Fish,
- Wildlife,
- Historical,
- Cultural,
- Ecological,
- Riparian,
- Botanical,
- Hydrological, and
- Scientific values

To be considered as "outstandingly remarkable", a river related value must be a unique, rare, or exemplary feature that is significant at a comparative regional or national scale. Only one such value is needed for eligibility. All values should be directly river related, meaning they should:

1. Be located in the river or on its immediate shorelands (generally within ¼ mile on either side of the river);
2. Contribute substantially to the functioning of the river ecosystem; and/or
3. Owe their location or existence to the presence of the river.

These are the only factors considered in determining the eligibility of a river segment. All other relevant factors are considered in determining suitability. A river need not be navigable by watercraft to be eligible. For purposes of eligibility determination, the volume of flow is sufficient if it is enough to maintain the outstandingly remarkable value(s) identified within the segment.

Table 1 summarizes the eligibility evaluation of all identified river segments. The table includes information on the length of stream segments managed by BLM, free-flowing status, and outstandingly remarkable value(s) of each eligible segment, if applicable. Table 1 also gives a description of each eligible river segment's location on BLM Surface Management (SM) maps.

**Table 1: Wild & Scenic River Inventory**

| River Name/Segment | Reason Considered (1) | BLM Length (mi.) | Segment/Reach Identification | Free Flowing | ORV (2) | Eligibility |
|---|---|---|---|---|---|---|
| Picacho Creek | C | 2.0 | COALINGA SM, T18S., R12E., SEC 19, 30 T18S., R11E., SEC 25 | Y | C,H | Eligible |
| White Creek | C | 2.8 | COALINGA SM, T19S., R13E., SEC 4, 8, 9, 17 | Y | F,G | Eligible |
| Larious Creek | C | 2.5 | COALINGA SM, T17S., R11E., SEC 26, 35, 36 | Y | F,G | Eligible |
| East Fork of San Carlos Creek | C | 1.4 | COALINGA SM, T18S., R12E., SEC 2, T17S., R12E., SEC 22, 26, 35 | Y | D | Eligible |
| San Carlos Creek | C | 1.0 | COALINGA SM, T18S., R12E., SEC 4, 5 | Y | D,F | Eligible |
| San Benito River (1) | C | 0.8 | COALINGA SM, T18S., R12E., SEC 32, 5 | Y | B,D,H | Eligible |
| San Benito River (2) | C | 0.5 | COALINGA SM, T18S., R12E. SEC 25, 26 | Y | B,D,H | Eligible |
| San Benito River (3) | C | 0.3 | COALINGA SM., T17S., R10E. SEC 16, 17 | Y | B,D,H | Eligible |
| Cane Canyon | C | 1.3 | COALINGA SM, T17S., R11E., SEC 30, 31 | Y | A | Eligible |
| Cantua Creek | D | 3.8 | COALINGA SM, T18S,R12E, Sec 1, 12, 13, 24 T18S, R13E, Sec 5,6 | Y | A | Non-elegible |
| Clear Creek and Tributaries | C | 7.0 | COALINGA SM, T18S., R12E., SEC 8, 9, 17 T18S., R11E., SEC 1, 11, 12, 15, 16 | Y | B - H | Eligible |
| Sawmill Creek | C | 1.5 | COALINGA SM, T18S., R12E., SEC 1, 4, 15, 22 | Y | E,F,H | Eligible |

SM = BLM Surface Management Map

(1) A – National Rivers Inventory
B – 1988 Outstanding Rivers List, American Rivers, Inc.
C – Segment in Hollister Field Office riparian database
D – Other

(2) A – Non-existent
B – Scenic
C – Recreational
D – Geological
E – Fish & Wildlife
F – Historical
G – Cultural
H – Other (including Ecological)

## III. Suitability of Hollister Field Office Stream Segments

All river segments identified on Map 7 in Appendix I and displayed in Table 1 (above) were found to be eligible for inclusion into the NWSRS.

Section 4(a) of the Wild and Scenic River Act mandates that all rivers found eligible as potential additions to the NWSRS be studied as to their suitability for such a designation. The purpose of the suitability study is to provide information upon which the President of the United States can base his recommendation and Congress can make a decision. The study report describes the characteristics that do or do not make the stream segment a worthy addition to the system, the current status of land ownership and use in the area, the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the system, and several other factors. The suitability study is designed to answer these questions:

1. Should the river's free–flowing character, water quality, and outstandingly remarkable values (ORVs) be protected, or are one or more other uses important enough to warrant doing otherwise?
2. Will the river's free-flowing character, water quality, and ORVs be protected through designation? Is it the best method for protecting the river corridor?
3. Is there a demonstrated commitment to protect the river by any nonfederal entities that may be partially responsible for implementing protective management?

Pursuant to Sections 4(a) and 5(c) of the Wild and Scenic Rivers Act, the following factors would be considered and evaluated as a basis for the suitability determination for each river (as described further, below);

1. Characteristics that do or do not make the area a worthy addition to the NWSRS;
2. The current status of land ownership, minerals (surface and subsurface), and use in the area, including the amount of private land involved and associated or incompatible uses.
3. The reasonably foreseeable potential uses of the land and water that would be enhanced, foreclosed, or curtailed if the area were included in the NWSRS. Historical or existing rights which could be adversely affected.
4. The federal agency that will administer the area should it be added to the NWSRS.
5. The estimated cost to the United States of acquiring necessary lands and interests in lands and of administering the area should it be added to the NWSRS.
6. A determination of the degree to which the state or its political subdivisions might participate in the preservation and administration of the river should it be proposed for inclusion in the NWSRS.
7. An evaluation of the adequacy of local zoning and other land use controls in protecting the river's ORVs by preventing incompatible development;
8. Federal, public, state, local, or other interests in designation or non-designation of the river, including the extent to which the administration of the river, including the cost thereof, may be shared by state, local, or other agencies and individuals. Support or opposition to the designation.
9. The consistency of designation with other agency plans, programs or policies and in meeting regional objectives.
10. The contribution to river system or basin integrity.

11. The ability of BLM to manage the river segments under designation, or ability to protect the river area other than Wild and Scenic designation.

## 1. Characteristics that Do or Do Not Make the River Segments Worthy Additions to the NWSRS

Stream segments in the Planning Area are located within the California Coast Ranges of the Pacific Border Physiographic Province. This province was used as a basis to determine if the study segments possess characteristics of at least regional significance that would make them worthy additions to the NWSRS. The Pacific Border province contains the highest rainfall and density of streams in California. Also, many of these streams provide habitat for anadromous fisheries.

The San Francisco Bay and Central Coast portion of the Coast Ranges are considered a distinct hydrological area because precipitation in this region is generally about 50% of that in the northern part of the province and snowmelt influences are insignificant. The tectonics associated with the San Andreas Fault system have influenced the orientation and location of the major river valleys. Sediment yields are high because of high-intensity rainfall, high rates of uplift, and unstable rocks. These small steep watersheds have short lag times and high peak runoffs, and rivers often flood during winter storms.

There are currently 15 designated National Wild & Scenic Rivers in California, which include portions of the North Fork and Lower American River, Big Sur River, Black Butte River, Eel River, Feather River, King River, Kern River. Klamath River, Merced River, Sespe Creek, Sisquoc River, Smith River, Trinity River, and Tuolumne River. This amounts to more than 1,800 miles of rivers and streams that are designated as part of the NWSRS in California.

Very few of the eligible river segments within the CCMA have any outstandingly remarkable values, and when considered in the context of other streams in the region, which may contain these same values to varying levels, the BLM planning team found that some river segments provided below-average to low quality values in this regional context and therefore were not considered to be worthy additions to the system.

In summary, although these values meet the minimum eligibility criteria, when viewed in the context of the California Coast Ranges of the Pacific Border Physiographic Province, the study team determined that these river segments were not of a level of quality to make them worthy additions to the NWSRS.

## 2. Status of Land Ownership and Current Use

BLM Manual 8351.33A(2), "Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation and Management", states "In situations where there is limited public land (shoreline and adjacent land) administered by the BLM within an identified river study area, it may be difficult to ensure those identified outstandingly remarkable values could be properly maintained and afforded adequate management protection over time. Accordingly, for those situations where the BLM is unable to protect or maintain any identified outstandingly remarkable values, or through other mechanisms (existing or potential), river segments may be determined suitable only if the entity with land use planning responsibility supports the finding and commits to assisting the BLM in protecting the identified river values. An alternative method to consider these segments is for state, local governments or private citizens to initiate efforts under section 2(a)(ii), or a joint study under section 5C of the Wild and Scenic Rivers Act." Typically, the local county governments have land use planning responsibility for the private lands on these segments. However, BLM has not approached the counties in the Planning Area regarding their support for wild and scenic designation of these segments, because the study team determined that they are not worthy additions to the system and BLM ownership of shoreline and adjacent lands is

sufficient to ensure that ORVs could be properly maintained and afforded adequate management protection over time regardless of designation.

## 3. Potential Uses of the Land to be Enhanced or Curtailed by Designation/ Historical or Existing Rights That Could Be Adversely Affected, including Water Resources Projects.

Diversion of additional water from any of the streams during the summer low-flow period could impact outstandingly remarkable values if they are present. Wild and Scenic River designation would not impact current water rights, but could affect future diversions from the streams.

## 4. Federal Agency that will Administer Wild & Scenic River Segments

BLM's Hollister Field Office would administer all river segments under evaluation should they be included in the NWSRS.

## 5. Estimated Cost of Acquisition and Administration

There would be a minor need to acquire additional lands for Hollister Field Office river segments to be included in the National Wild & Scenic River System. A small number of private in-holdings and CCMA adjacent lands would need to be acquired (or placed under conservation easements) in stream corridors to maintain or restore their character. There would also be a modest cost associated with developing management plan(s) for all designated streams, and coordination with mining claim holders and private landowners to ensure that their activities would not cause offsite (downstream or downslope) impacts that could potentially affect river values.

## 6. State or local political subdivision participation in river preservation and management.

During the initial scoping period no government agencies commented or expressed interest specifically in wild and scenic river designation. However, numerous state and Federal agencies are committed to protecting river related values on the study segments. For example, the BLM and California State Parks OHV Division have funded grants to reduce sediment transport that result from watershed management activities in the CCMA. Plus, BLM is working with Regional Water Quality Control Districts and EPA to implement total maximum daily loads (TMDLs) for pollutants in San Benito River (mercury, sediment) and Clear Creek (sediment). In summary, there is already a strong established level of cooperation among Federal, state and local agencies to restore and protect the beneficial uses of streams in the region.

## 7. Local Zoning and Land Use Planning Adequacy in protecting the river values.

All of the stream segments included in this study are on Federal Lands administered by the BLM and local zoning would not apply. Where the segments cross private lands, most stretches are zoned for livestock, agriculture, or residential use. Livestock and agricultural uses at the scales foreseen within the study segments would not be compatible with Wild and Scenic River designation. Although the private land base in these watersheds could be developed for residences, it is likely to be low density and retain its rural character, which would be compatible with Wild and Scenic River designation.

## 8. Federal, public, state, local or other interests in designation/non-designation of the river. Support or Opposition to the Designation.

A description of other Federal, state and local agency involvement and interest in river management is contained under item 6 above. Residents of the San Joaquin Valley and Hernandez Valley have a long history of active interest in water conservation for flood control and agriculture or livestock use. Although no comments specific to wild and scenic river designation were received during the scoping period, many comments were received regarding protection of river related values including water quality/quantity, riparian habitat, recreation opportunities, and scenic values.

## 9. The consistency of designation with other agency plans, programs or policies and in meeting regional objectives.

Wild and Scenic River designation for most of the study segments would be consistent with BLM's goals for natural and cultural resources and other agency plans and programs for the region. However, wild and scenic river management and promoting recreational activities on the CCMA river segments in the Serpentine ACEC would not be consistent with BLM and EPA goals to provide adequate protection of human health and the environment.

## 10. Contribution to River System or Basin Integrity

The contribution of wild and scenic river designation to river system or basin integrity in the planning area would be minimal due to the current regulations and existing efforts to conserve water resources for beneficial uses.

## 11. Management or Protection other than Wild and Scenic River Designation

In the case of river segments that are found not suitable for designation, the Hollister Field Office will continue to manage these streams as integral ecosystem components on BLM public lands. Management objectives in this RMP/EIS call for continued emphasis on restoration of riparian ecosystems, and other components of healthy watersheds. The preferred alternative for this plan also calls for the BLM to submit applications to the State of California for federal water reserves to protect the aquatic habitat of streams on public lands.

**Recommendation and Rationale**

It is recommended that none of the eligible river segments identified in this study, as defined in Table 1, be designated as components of the NWSRS.

Many of the river segments under evaluation have similar land tenure status, historical uses, and potential or existing uses. The primary factor for the non-suitable determination of all river study segments in the planning area was the conclusion that they would not make worthy additions to the system. Many of these watersheds have been substantially modified through past mining and logging activities and the associated construction of roads and trails. The resulting landscapes would not broaden the representation of key ecosystems within the Wild and Scenic River system. A second factor contributed to the non-suitable recommendation for river segments in the Tucker Zone. Although these watersheds are currently somewhat undeveloped, local and regional planning may consider development in these areas to address California's growing population. The anticipated level of development is not likely to change the character of the watersheds or be incompatible with Wild and Scenic River designation. Biological resources and other watershed values for all streams will be afforded protection through state and local land use plans, the Clean Water Act, and the Endangered Species Act.

## IV. Protective Management

All river segments found to be eligible for inclusion in the NWSRS are placed under protective management by the BLM. Subject to valid existing rights, the BLM is required to protect the free-flowing characteristics and outstandingly remarkable values in the stream corridors. The BLM must also protect the corridor from modifications that would impact the tentative river classification (i.e. change the classification potential from Wild to Scenic, or from Scenic to Recreational). These management restrictions apply only to public lands. Once suitability is determined and the Record of Decision (ROD) for the RMP signed, protective management continues only for those segments found suitable for designation. This protective management remains in effect until Congress makes a final decision regarding designation, or the CCMA RMP is amended.

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# Appendix VII - Best Management Practices for Wind Energy Development on Public Lands

The BLM proposes that the following Best Management Practices (BMPs) be applied to all wind energy development projects to establish environmentally sound and economically feasible mechanisms to protect and enhance natural and cultural resources. These proposed BMPs were derived from the mitigation measures discussed in Chapter 5 of the Programmatic Environmental Impact Statement (PEIS) but are limited to those measures that are applicable to all wind energy development projects (PEIS Section 5.15). These BMPs would be adopted as required elements of project-specific PODs and/or as ROW authorization stipulations. They are categorized by development activity: site monitoring and testing, development of the POD, construction, operation, and decommissioning. The proposed BMPs for development of the POD identify required elements of the POD needed to address potential impacts associated with subsequent phases of development.

Some of the proposed BMPs address issues that are not unique to wind energy development but that are more universal in nature, such as road construction and maintenance, wildlife management, hazardous materials and waste management, cultural resource management, and pesticide use and integrated pest management. For the most part, however, the level of detail provided by the BMPs is less specific than that provided in other, existing BLM program-specific mitigation guidance documents (PEIS Section 3.6.2). As required by proposed policy (PEIS Section 2.2.3.1), mitigation measures identified in or required by these existing program-specific guidance documents would be applied, as appropriate, to wind energy development projects; however, they are not discussed in detail in the programmatic BMPs proposed here.

In summary, stipulations governing specific wind energy projects would be derived from a number of sources: (1) the proposed BMPs discussed in this section; (2) other, existing and relevant program-specific mitigation guidance (PEIS Section 3.6); and (3) the mitigation measures discussed in PEIS Chapter 5. Guidelines for applying and selecting project-specific requirements include determining whether the measure would (1) ensure compliance with relevant statutory or administrative requirements, (2) minimize local impacts associated with siting and design decisions, (3) promote postconstruction stabilization of impacts, (4) maximize restoration of previous habitat conditions, (5) minimize cumulative impacts, or (6) promote economically feasible development of wind energy on BLM-administered land.

## Site Monitoring and Testing

- The area disturbed by installation of meteorological towers (i.e., footprint) shall be kept to a minimum.
- Existing roads shall be used to the maximum extent feasible. If new roads are necessary, they shall be designed and constructed to the appropriate standard.
- Meteorological towers shall not be located in sensitive habitats or in areas where ecological resources known to be sensitive to human activities (e.g., prairie grouse) are present. Installation of towers shall be scheduled to avoid disruption of wildlife reproductive activities or other important behaviors.
- Meteorological towers installed for site monitoring and testing shall be inspected periodically for structural integrity.

## Plan of Development Preparation

### General

- The BLM and operators shall contact appropriate agencies, property owners, and other stakeholders early in the planning process to identify potentially sensitive land uses and issues, rules that govern wind energy development locally, and land use concerns specific to the region.
- Available information describing the environmental and sociocultural conditions in the vicinity of the proposed project shall be collected and reviewed as needed to predict potential impacts of the project.
- The Federal Aviation Administration (FAA)-required notice of proposed construction shall be made as early as possible to identify any air safety measures that would be required.
- To plan for efficient use of the land, necessary infrastructure requirements shall be consolidated wherever possible, and current transmission and market access shall be evaluated carefully.
- The project shall be planned to utilize existing roads and utility corridors to the maximum extent feasible, and to minimize the number and length/size of new roads, lay-down areas, and borrow areas.
- A monitoring program shall be developed to ensure that environmental conditions are monitored during the construction, operation, and decommissioning phases. The monitoring program requirements, including adaptive management strategies, shall be established at the project level to ensure that potential adverse impacts of wind energy development are mitigated. The monitoring program shall identify the monitoring requirements for each environmental resource present at the site, establish metrics against which monitoring observations can be measured, identify potential mitigation measures, and establish protocols for incorporating monitoring observations and additional mitigation measures into standard operating procedures and BMPs.
- "Good housekeeping" procedures shall be developed to ensure that during operation the site will be kept clean of debris, garbage, fugitive trash or waste, and graffiti; to prohibit scrap heaps and dumps; and to minimize storage yards.

### Wildlife and Other Ecological Resources

- Operators shall review existing information on species and habitats in the vicinity of the project area to identify potential concerns.
- Operators shall conduct surveys for federal- and/or state-protected species and other species of concern (including special status plant and animal species) within the project area and design the project to avoid (if possible), minimize, or mitigate impacts to these resources.
- Operators shall identify important, sensitive, or unique habitats in the vicinity of the project and design the project to avoid (if possible), minimize, or mitigate impacts to these habitats (e.g., locate the turbines, roads, and ancillary facilities in the least environmentally sensitive areas; i.e., away from riparian habitats, streams, wetlands, drainages, or critical wildlife habitats).
- The BLM will prohibit the disturbance of any population of federal listed plant species.
- Operators shall evaluate avian and bat use of the project area and design the project to minimize or mitigate the potential for bird and bat strikes (e.g., development shall not occur in riparian habitats and wetlands). Scientifically rigorous avian and bat use surveys shall be conducted; the amount and extent of ecological baseline data required shall be determined on a project basis.

- Turbines shall be configured to avoid landscape features known to attract raptors, if site studies show that placing turbines there would pose a significant risk to raptors.
- Operators shall determine the presence of bat colonies and avoid placing turbines near known bat hibernation, breeding, and maternity/nursery colonies; in known migration corridors; or in known flight paths between colonies and feeding areas.
- Operators shall determine the presence of active raptor nests (i.e., raptor nests used during the breeding season). Measures to reduce raptor use at a project site (e.g., minimize road cuts, maintain either no vegetation or nonattractive plant species around the turbines) shall be considered.
- A habitat restoration plan shall be developed to avoid (if possible), minimize, or mitigate negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species. The plan shall identify revegetation, soil stabilization, and erosion reduction measures that shall be implemented to ensure that all temporary use areas are restored. The plan shall require that restoration occur as soon as possible after completion of activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- Procedures shall be developed to mitigate potential impacts to special status species. Such measures could include avoidance, relocation of project facilities or lay-down areas, and/or relocation of biota.
- Facilities shall be designed to discourage their use as perching or nesting substrates by birds. For example, power lines and poles shall be configured to minimize raptor electrocutions and discourage raptor and raven nesting and perching.

### Visual Resources

- The public shall be involved and informed about the visual site design elements of the proposed wind energy facilities. Possible approaches include conducting public forums for disseminating information, offering organized tours of operating wind developments, and using computer simulation and visualization techniques in public presentations.
- Turbine arrays and turbine design shall be integrated with the surrounding landscape. Design elements to be addressed include visual uniformity, use of tubular towers, proportion and color of turbines, nonreflective paints, and prohibition of commercial messages on turbines.
- Other site design elements shall be integrated with the surrounding landscape. Elements to address include minimizing the profile of the ancillary structures, burial of cables, prohibition of commercial symbols, and lighting. Regarding lighting, efforts shall be made to minimize the need for and amount of lighting on ancillary structures.

### Roads

- An access road siting and management plan shall be prepared incorporating existing BLM standards regarding road design, construction, and maintenance such as those described in the BLM 9113 Manual (BLM 1985) and the *Surface Operating Standards for Oil and Gas Exploration and Development* (RMRCC 1989) (i.e., the Gold Book).

### Ground Transportation

- A transportation plan shall be developed, particularly for the transport of turbine components, main assembly cranes, and other large pieces of equipment. The plan shall consider specific object sizes, weights, origin, destination, and unique handling requirements and shall evaluate

alternative transportation approaches. In addition, the process to be used to comply with unique state requirements and to obtain all necessary permits shall be clearly identified.

- A traffic management plan shall be prepared for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan shall incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration.

### Noise

- Proponents of a wind energy development project shall take measurements to assess the existing background noise levels at a given site and compare them with the anticipated noise levels associated with the proposed project.

### Noxious Weeds and Pesticides

- Operators shall develop a plan for control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site. The plan shall address monitoring, education of personnel on weed identification, the manner in which weeds spread, and methods for treating infestations. The use of certified weed-free mulching shall be required. If trucks and construction equipment are arriving from locations with known invasive vegetation problems, a controlled inspection and cleaning area shall be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.
- If pesticides are used on the site, an integrated pest management plan shall be developed to ensure that applications would be conducted within the framework of BLM and DOI policies and entail only the use of EPA-registered pesticides. Pesticide use shall be limited to nonpersistent, immobile pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.

### Cultural/Historic Resources

- The BLM will consult with Indian Tribal governments early in the planning process to identify issues regarding the proposed wind energy development, including issues related to the presence of cultural properties, access rights, disruption to traditional cultural practices, and impacts to visual resources important to the Tribe(s).
- The presence of archaeological sites and historic properties in the area of potential effect shall be determined on the basis of a records search of recorded sites and properties in the area and/or, depending on the extent and reliability of existing information, an archaeological survey. Archaeological sites and historic properties present in the area of potential effect shall be reviewed to determine whether they meet the criteria of eligibility for listing on the *National Register of Historic Places* (NRHP).
- When any ROW application includes remnants of a National Historic Trail, is located within the viewshed of a National Historic Trail's designated centerline, or includes or is within the viewshed of a trail eligible for listing on the NRHP, the operator shall evaluate the potential visual impacts to the trail associated with the proposed project and identify appropriate mitigation measures for inclusion as stipulations in the POD.
- If cultural resources are present at the site, or if areas with a high potential to contain cultural material have been identified, a cultural resources management plan (CRMP) shall be developed.

This plan shall address mitigation activities to be taken for cultural resources found at the site. Avoidance of the area is always the preferred mitigation option. Other mitigation options include archaeological survey and excavation (as warranted) and monitoring. If an area exhibits a high potential, but no artifacts were observed during an archaeological survey, monitoring by a qualified archaeologist could be required during all excavation and earthmoving in the high-potential area. A report shall be prepared documenting these activities. The CRMP also shall (1) establish a monitoring program, (2) identify measures to prevent potential looting/vandalism or erosion impacts, and (3) address the education of workers and the public to make them aware of the consequences of unauthorized collection of artifacts and destruction of property on public land.

### Paleontological Resources

- Operators shall determine whether paleontological resources exist in a project area on the basis of the sedimentary context of the area, a records search for past paleontological finds in the area, and/or, depending on the extent of existing information, a paleontological survey.
- If paleontological resources are present at the site, or if areas with a high potential to contain paleontological material have been identified, a paleontological resources management plan shall be developed. This plan shall include a mitigation plan for collection of the fossils; mitigation could include avoidance, removal of fossils, or monitoring. If an area exhibits a high potential but no fossils were observed during survey, monitoring by a qualified paleontologist could be required during all excavation and earthmoving in the sensitive area. A report shall be prepared documenting these activities. The paleontological resources management plan also shall (1) establish a monitoring program, (2) identify measures to prevent potential looting/vandalism or erosion impacts, and (3) address the education of workers and the public to make them aware of the consequences of unauthorized collection of fossils on public land.

### Hazardous Materials and Waste Management

- Operators shall develop a hazardous materials management plan addressing storage, use, transportation, and disposal of each hazardous material anticipated to be used at the site. The plan shall identify all hazardous materials that would be used, stored, or transported at the site. It shall establish inspection procedures, storage requirements, storage quantity limits, inventory control, nonhazardous product substitutes, and disposition of excess materials. The plan shall also identify requirements for notices to federal and local emergency response authorities and include emergency response plans.
- Operators shall develop a waste management plan identifying the waste streams that are expected to be generated at the site and addressing hazardous waste determination procedures, waste storage locations, waste-specific management and disposal requirements, inspection procedures, and waste minimization procedures. This plan shall address all solid and liquid wastes that may be generated at the site.
- Operators shall develop a spill prevention and response plan identifying where hazardous materials and wastes are stored on site, spill prevention measures to be implemented, training requirements, appropriate spill response actions for each material or waste, the locations of spill response kits on site, a procedure for ensuring that the spill response kits are adequately stocked at all times, and procedures for making timely notifications to authorities.

### Storm Water

- Operators shall develop a storm water management plan for the site to ensure compliance with

applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion.

### Human Health and Safety

- A safety assessment shall be conducted to describe potential safety issues and the means that would be taken to mitigate them, including issues such as site access, construction, safe work practices, security, heavy equipment transportation, traffic management, emergency procedures, and fire control.
- A health and safety program shall be developed to protect both workers and the general public during construction, operation, and decommissioning of a wind energy project. Regarding occupational health and safety, the program shall identify all applicable federal and state occupational safety standards; establish safe work practices for each task (e.g., requirements for personal protective equipment and safety harnesses; Occupational Safety and Health Administration [OSHA] standard practices for safe use of explosives and blasting agents; and measures for reducing occupational electric and magnetic fields [EMF] exposures); establish fire safety evacuation procedures; and define safety performance standards (e.g., electrical system standards and lightning protection standards). The program shall include a training program to identify hazard training requirements for workers for each task and establish procedures for providing required training to all workers. Documentation of training and a mechanism for reporting serious accidents to appropriate agencies shall be established.
- Regarding public health and safety, the health and safety program shall establish a safety zone or setback for wind turbine generators from residences and occupied buildings, roads, ROWs, and other public access areas that is sufficient to prevent accidents resulting from the operation of wind turbine generators. It shall identify requirements for temporary fencing around staging areas, storage yards, and excavations during construction or decommissioning activities. It shall also identify measures to be taken during the operation phase to limit public access to hazardous facilities (e.g., permanent fencing would be installed only around electrical substations, and turbine tower access doors would be locked).
- Operators shall consult with local planning authorities regarding increased traffic during the construction phase, including an assessment of the number of vehicles per day, their size, and type. Specific issues of concern (e.g., location of school bus routes and stops) shall be identified and addressed in the traffic management plan.
- If operation of the wind turbines is expected to cause significant adverse impacts to nearby residences and occupied buildings from shadow flicker, low-frequency sound, or EMF, site-specific recommendations for addressing these concerns shall be incorporated into the project design (e.g., establishing a sufficient setback from turbines).
- The project shall be planned to minimize electromagnetic interference (EMI) (e.g., impacts to radar, microwave, television, and radio transmissions) and comply with Federal Communications Commission [FCC] regulations. Signal strength studies shall be conducted when proposed locations have the potential to impact transmissions. Potential interference with public safety communication systems (e.g., radio traffic related to emergency activities) shall be avoided.
- The project shall be planned to comply with FAA regulations, including lighting regulations, and to avoid potential safety issues associated with proximity to airports, military bases or training areas, or landing strips.
- Operators shall develop a fire management strategy to implement measures to minimize the potential for a human-caused fire.

## Construction

### General

- All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the construction phase, as appropriate.
- The area disturbed by construction and operation of a wind energy development project (i.e., footprint) shall be kept to a minimum.
- The number and size/length of roads, temporary fences, lay-down areas, and borrow areas shall be minimized.
- Topsoil from all excavations and construction activities shall be salvaged and reapplied during reclamation.
- All areas of disturbed soil shall be reclaimed using weed-free native grasses, forbs, and shrubs. Reclamation activities shall be undertaken as early as possible on disturbed areas.
- All electrical collector lines shall be buried in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance). Overhead lines may be used in cases where burial of lines would result in further habitat disturbance.
- Operators shall identify unstable slopes and local factors that can induce slope instability (such as groundwater conditions, precipitation, earthquake activities, slope angles, and the dip angles of geologic strata). Operators also shall avoid creating excessive slopes during excavation and blasting operations. Special construction techniques shall be used where applicable in areas of steep slopes, erodible soil, and stream channel crossings.
- Erosion controls that comply with county, state, and federal standards shall be applied. Practices such as jute netting, silt fences, and check dams shall be applied near disturbed areas.

### Wildlife

- Guy wires on permanent meteorological towers shall be avoided.
- In accordance with the habitat restoration plan, restoration shall be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- All construction employees shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. In addition, pets shall not be permitted on site during construction.

### Visual Resources

- Operators shall reduce visual impacts during construction by minimizing areas of surface disturbance, controlling erosion, using dust suppression techniques, and restoring exposed soils as closely as possible to their original contour and vegetation.

### Roads

- Existing roads shall be used, but only if in safe and environmentally sound locations. If new roads are necessary, they shall be designed and constructed to the appropriate standard and be no higher

than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Excessive grades on roads, road embankments, ditches, and drainages shall be avoided, especially in areas with erodible soils. Special construction techniques shall be used, where applicable. Abandoned roads and roads that are no longer needed shall be recontoured and revegetated.

- Access roads and on-site roads shall be surfaced with aggregate materials, wherever appropriate.
- Access roads shall be located to follow natural contours and minimize side hill cuts.
- Roads shall be located away from drainage bottoms and avoid wetlands, if practicable.
- Roads shall be designed so that changes to surface water runoff are avoided and erosion is not initiated.
- Access roads shall be located to minimize stream crossings. All structures crossing streams shall be located and constructed so that they do not decrease channel stability or increase water velocity. Operators shall obtain all applicable federal and state permits.
- Existing drainage systems shall not be altered, especially in sensitive areas such as erodible soils or steep slopes. Potential soil erosion shall be controlled at culvert outlets with appropriate structures. Catch basins, roadway ditches, and culverts shall be cleaned and maintained regularly.

### Ground Transportation

- Project personnel and contractors shall be instructed and required to adhere to speed limits commensurate with road types, traffic volumes, vehicle types, and site-specific conditions, to ensure safe and efficient traffic flow and to reduce wildlife collisions and disturbance and airborne dust.
- Traffic shall be restricted to the roads developed for the project. Use of other unimproved roads shall be restricted to emergency situations.
- Signs shall be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuters, consideration shall be given to limiting construction vehicles traveling on public roadways during the morning and late afternoon commute time.

### Air Emissions

- Dust abatement techniques shall be used on unpaved, unvegetated surfaces to minimize airborne dust.
- Speed limits (e.g., 25 mph [40 km/h]) shall be posted and enforced to reduce airborne fugitive dust.
- Construction materials and stockpiled soils shall be covered if they are a source of fugitive dust.
- Dust abatement techniques shall be used before and during surface clearing, excavation, or blasting activities.

### Excavation and Blasting Activities

- Operators shall gain a clear understanding of the local hydrogeology. Areas of groundwater discharge and recharge and their potential relationships with surface water bodies shall be identified.

- Operators shall avoid creating hydrologic conduits between two aquifers during foundation excavation and other activities.
- Foundations and trenches shall be backfilled with originally excavated material as much as possible. Excess excavation materials shall be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.
- Borrow material shall be obtained only from authorized and permitted sites. Existing sites shall be used in preference to new sites.
- Explosives shall be used only within specified times and at specified distances from sensitive wildlife or streams and lakes, as established by the BLM or other federal and state agencies.

### Noise

- Noisy construction activities (including blasting) shall be limited to the least noise-sensitive times of day (i.e., daytime only between 7 a.m. and 10 p.m.) and weekdays.
- All equipment shall have sound-control devices no less effective than those provided on the original equipment. All construction equipment used shall be adequately muffled and maintained.
- All stationary construction equipment (i.e., compressors and generators) shall be located as far as practicable from nearby residences.
- If blasting or other noisy activities are required during the construction period, nearby residents shall be notified in advance.

### Cultural and Paleontological Resources

- Unexpected discovery of cultural or paleontological resources during construction shall be brought to the attention of the responsible BLM authorized officer immediately. Work shall be halted in the vicinity of the find to avoid further disturbance to the resources while they are being evaluated and appropriate mitigation measures are being developed.

### Hazardous Materials and Waste Management

- Secondary containment shall be provided for all on-site hazardous materials and waste storage, including fuel. In particular, fuel storage (for construction vehicles and equipment) shall be a temporary activity occurring only for as long as is needed to support construction activities.
- Wastes shall be properly containerized and removed periodically for disposal at appropriate off-site permitted disposal facilities.
- In the event of an accidental release to the environment, the operator shall document the event, including a root cause analysis, appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event shall be provided to the BLM authorized officer and other federal and state agencies, as required.
- Any wastewater generated in association with temporary, portable sanitary facilities shall be periodically removed by a licensed hauler and introduced into an existing municipal sewage treatment facility. Temporary, portable sanitary facilities provided for construction crews shall be adequate to support expected on-site personnel and shall be removed at completion of construction activities.

### Public Health and Safety

- Temporary fencing shall be installed around staging areas, storage yards, and excavations during construction to limit public access.

## Operation

### General

- All control and mitigation measures established for the project in the POD and the resource-specific management plans that are part of the POD shall be maintained and implemented throughout the operational phase, as appropriate. These control and mitigation measures shall be reviewed and revised, as needed, to address changing conditions or requirements at the site, throughout the operational phase. This adaptive management approach would help ensure that impacts from operations are kept to a minimum.
- Inoperative turbines shall be repaired, replaced, or removed in a timely manner. Requirements to do so shall be incorporated into the due diligence provisions of the ROW authorization. Operators will be required to demonstrate due diligence in the repair, replacement, or removal of turbines; failure to do so could result in termination of the ROW authorization.

### Wildlife

- Employees, contractors, and site visitors shall be instructed to avoid harassment and disturbance of wildlife, especially during reproductive (e.g., courtship and nesting) seasons. In addition, any pets shall be controlled to avoid harassment and disturbance of wildlife.
- Observations of potential wildlife problems, including wildlife mortality, shall be reported to the BLM authorized officer immediately.

### Ground Transportation

- Ongoing ground transportation planning shall be conducted to evaluate road use, minimize traffic volume, and ensure that roads are maintained adequately to minimize associated impacts.

### Monitoring Program

- Site monitoring protocols defined in the POD shall be implemented. These will incorporate monitoring program observations and additional mitigation measures into standard operating procedures and BMPs to minimize future environmental impacts.
- Results of monitoring program efforts shall be provided to the BLM authorized officer.

### Public Health and Safety

- Permanent fencing shall be installed and maintained around electrical substations, and turbine tower access doors shall be locked to limit public access.
- In the event an installed wind energy development project results in EMI, the operator shall work with the owner of the impacted communications system to resolve the problem. Additional warning information may also need to be conveyed to aircraft with onboard radar systems so that echoes from wind turbines can be quickly recognized.

## Decommissioning

### General

- Prior to the termination of the ROW authorization, a decommissioning plan shall be developed and approved by the BLM. The decommissioning plan shall include a site reclamation plan and monitoring program.
- All management plans, BMPs, and stipulations developed for the construction phase shall be applied to similar activities during the decommissioning phase.
- All turbines and ancillary structures shall be removed from the site.
- Topsoil from all decommissioning activities shall be salvaged and reapplied during final reclamation.
- All areas of disturbed soil shall be reclaimed using weed-free native shrubs, grasses, and forbs.
- The vegetation cover, composition, and diversity shall be restored to values commensurate with the ecological setting.

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# Appendix VIII - Hollister Field Office Reasonably Foreseeable Development Scenario for Oil and Gas

## I. Summary

Based on an analysis of past oil and gas related activities within the boundaries of the Hollister Field Office (HFO) and the very small amount of federal mineral estate within areas of high development potential, we project that oil and gas activities on federal mineral estate within the Hollister Field Office area boundary will continue at a relatively minimal level. Overall, within the next 15-20 years, we project total surface disturbance due to all oil and gas activities on federal mineral estate to be no more than 74 acres. This estimate includes geophysical exploration (seismic), 5 exploration wells, 10 development wells and associated facilities, roads, and a transmission pipeline that could be linked to existing transmission lines within the area. One third of this disturbance, 26 acres, will be temporary, and would be mostly to totally reclaimed within a few months to a couple of years. Over the long term, both new and existing oil and gas related activities would eventually be abandoned, the lands would be reclaimed, and the sites would be restored to as near a natural condition as practical**.**

The total surface disturbance for up to 10 development wells would be 10 acres for well pads, 12 acres for roads, and 24 acres for a single transmission line 10 miles long. No more than 1 acre would be required for the small facility (meter, separator) on each of two parcels, for a total of 2 acres. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 74 acres.

| **Description** | **Number** | **Unit Surface Disturbance (acres)** | **Total Surface Disturbance (acres)** |
|---|---|---|---|
| Exploratory Wells | | | |
| Well Pads | 5 wells | 1 acre/well | 5 |
| Roads (40’ wide) | 5 x 0.5 miles | 4.8 acre/mile | 12 |
| Development | | | |
| Well Pads | 10 | 1 acre/well | 10 |
| Roads (40’ wide) | 10 x 0.25 mi | 4.8 acre/mile | 12 |
| Facilities | 4 | 1 acre/facility | 4 |
| Seismic (2 track x 18”) | 25 miles | 0.36 acre/mi | 9 |
| Pipeline (20 ‘ wide) | 10 miles | 2.4 acres/mi | 24 |
| | | Total: | 74 |

## II. Introduction

This appendix describes the scenario for the Reasonably Foreseeable Development (RFD) of oil and gas. The RFD scenario estimates the level and type of future oil and gas activity in the planning area and provides a basis for the analysis of cumulative effects. Based on current regulations and the small amount of projected activity on federal mineral estate within the planning area, this RFD is applicable regardless of which of the alternatives analyzed in the EIS is chosen as the Preferred Alternative.

The scenario first describes the steps involved in exploring for and developing deposits of oil and gas. Trends and assumptions affecting oil and gas activity are discussed in this appendix, followed by estimates for future oil and gas exploration and development.

The scenario for reasonably foreseeable development is based on known or inferred oil and gas potential, and applies the conditions and assumptions discussed below. Changes in available geologic data or economic conditions may alter this scenario, and some deviation should be expected over time. The lands included are limited to those with BLM-administered minerals, including split estate with federal minerals.

It should be noted that not all mineral estate managed by the BLM may have been identified at this time. For purposes of this document, we consider that all mineral estate managed by the BLM is covered by this RFD, even if we do not currently show the mineral estate on BLM maps. We also consider that mineral estate on lands that may be acquired in the future will also be covered by this RFD so long as the values and resources that are contained on the newly acquired lands do not differ significantly from those on existing known federal mineral estate.

## III. Petroleum Geology of the Hollister Field Office Area

Refer to Section V, Oil and gas Occurrence and Development Potential**.**

## IV. Past and Present Oil and Gas Exploration and Development Activity

There are 30 active oil fields and gas fields within the HFO management area, with a total administrative area of 188,000 acres. Within those administrative areas, the actual productive areas total about 58,000 acres. During the past 10 years, more than 1000 wells have been drilled within the HFO area, 93% of which were within field boundaries, with only 7% being classified as wildcats (outside administrative field boundaries). Although there are nearly 5400 acres of federal mineral estate within these productive boundaries (9% of the total), there was not a single well on federal mineral estate. This trend is not likely to change much, because nearly all of the activity in each of the past 10 years occurred in 3 fields where the federal share of mineral estate is only 1%.

Regarding new field discoveries, there have been fewer than 3 fields discovered within the last 10 years, none of which contained federal mineral estate. Because of the low amount of activity on federal mineral estate, a more detailed description of past and current activities throughout the entire HFO area is unnecessary.

## V. Oil and gas Occurrence and Development Potential

The Hollister Field Office has areas of high, moderate, and low to none development potential. The size of each category is shown in the table below.

| **Category** | **Total Acres** |
|---|---|
| High | 1,883,449 |
| Moderate | 2,402,432 |
| Low to None | 2,529,259 |
| **Total** | **6,815,140** |

**High Development Potential**

The areas of high oil/gas development potential occur in five areas. The areas, a total of 1,883,000 acres, are depicted in pink on Map 10. They will be described from north to south.

The first area of high oil/gas development potential is in the extreme northern part of the Hollister Field Office area in Contra Costa County. This area is dominated by gas fields that produce from Eocene and Paleocene sedimentary rocks.

The second area of high oil/gas development potential is in the Santa Clara Mountains of southeastern San Mateo and northwestern Santa Cruz Counties. There are no presently active oil or gas fields in the area. However, several drilling programs have identified potential production ("shows") from Lower Tertiary and Upper Cretaceous formations in this area.

The third area of high oil/gas development potential is in the central part of the Hollister Field Office area in northern San Benito County. The Sargent Oil Field produces from the Miocene Monterey Formation and Pliocene Purisima Formation of the San Juan Valley sedimentary basin.

The fourth area of high oil/gas development potential is in southeastern San Benito County and western Fresno County. This area is part of the San Joaquin Basin, and has several oil fields that produce from Miocene and Pliocene marine sedimentary rocks.

The fifth area of high oil/gas development potential is in southwestern San Benito County and southeastern Monterey County. The most important oil/gas field in this area is the San Ardo field. It, and the other oil fields in the area, produce from the Miocene Monterey formation in the Salinas sedimentary basin.

**Moderate Potential**

There are several areas of moderate potential within the Hollister Field Office area. These areas, a total of 2,402,000 acres, are shown in yellow on Map 10. They are described as areas with Upper Cretaceous or Lower Tertiary sedimentary rocks containing many wells with oil and gas "shows" or even production, although generally not in economic quantities. Although these areas may contain numerous wells that either had production at one time, or had "shows", they are classified as having only moderate potential because the rocks in this area are generally more highly fractured, and do not generally have trapping styles or cap rocks that permit sustained development from oil/gas accumulations.

In the southern part of the Hollister Area Office, these rocks are found in three strips along the western central and eastern parts of the Area Office. The eastern strip of Moderate oil/gas potential lies west of high-potential areas of the Sacramento-San Joaquin Basin. This strip lies east of a mass of crystalline and Franciscan metamorphic rocks in the center of the Field Office Area, including the Clear Creek Management Area in the Diablo Mountain Range.

The central strip of moderate oil/gas potential is bounded on the east by a mass of crystalline and Franciscan metamorphic rocks of the Diablo Range and a similar set of igneous and metamorphic rocks in the Coast Ranges.

The western strip of moderate oil/gas potential occurs between the coast and the western foothills of the Coast Ranges.

**Low to None Development Potential**

There areas of low to none (hereafter "low") oil/gas development potential is defined as areas that are underlain dominantly by crystalline igneous rocks and metamorphic rocks of the Franciscan Formation.

These areas of low oil/gas development potential, a total of 2,529,000 acres, are shown in green on Map 10.

There are five low potential zones in the Hollister Field Office. The low potential rocks occur in three discontinuous bands that run north-northwest to south-southeast in the eastern, central, and western parts of the Area Office.

The eastern low potential zone is located in the Diablo Mountains and in the Tumey-Panoche Hills. It is divided into northern and southern segments by the Vallecitos Trough.

The central low potential zone is located in the Coast Ranges as the core of a crystalline igneous-metamorphic faulted complex.

The western low potential zone has two components. The northern component is in the Santa Lucia Range, and the southern component in the Santa Lucia Range.

**Occurrence Potential**

Refer to Map 10 in Appendix I to identify areas of oil and gas occurrence potential in CCMA.

## VI. RFD Baseline Scenario Assumptions, Discussion, and Estimated Surface Disturbance from Oil and Gas Activity on Federal Mineral Estate in the Hollister Field Office Area

For purposes of this document, we have assumed that all potentially productive areas are open under standard lease terms and conditions, except those areas designated as closed to leasing by law, regulation, or executive order. Based on current regulations and policy and the small amount of projected activity on federal mineral estate within the planning area, this RFD is applicable regardless of which of the alternatives analyzed in the EIS is chosen as the Preferred Alternative.

**Future trends and assumptions:** Based on the history of minimal activity for oil and gas exploration and development on federal lands within the planning area, activity over the next 15 to 20 years is likely to be sporadic. Oil and gas activity will probably consist of the issuance of some competitive and over-the-counter leases, a few geophysical surveys, and perhaps the drilling of 3-5 exploratory wells, with no more than 10 development wells, and the associated facilities/gas transmission lines. It is very unlikely that more than a total of 15 exploratory and development wells will be drilled on new federal oil and gas leases. While the large majority or even all of this activity is expected to occur in areas identified in this RFD as "High Development Potential," there is always a possibility that federal minerals in other areas may see geophysical exploration, leasing, and even actual exploration and development drilling. It is highly unlikely that any wells in such an area would be productive, so any associated surface disturbance would likely be short term.

**Geophysical exploration:** Geophysical exploration is conducted to determine the subsurface structure of an area and the potential for mineral resources. There are three geophysical survey techniques that are generally used to define subsurface characteristics through measurements of the gravitational field, magnetic field, and seismic reflections.

*Gravity and magnetic field surveys*—involve small, portable measuring units that are easily transported by light off-highway vehicles, such as 4-wheel drive pickup trucks and jeeps, or aircraft. Both off and on-

highway travel may be necessary. Although these two survey methods can take measurements along defined lines, it is more common to have a grid of distinct measurement stations. Surface disturbance resulting from these surveys is negligible, consisting almost exclusively of soil or vegetation compaction that persists no more than a few months.

*Seismic reflection surveys*—are the most common of the geophysical methods, and they produce the most detailed subsurface information. Seismic surveys are conducted by sending shock waves, generated by a small explosion or by mechanically beating the ground with a thumping or vibrating platform.

In the **explosive method**, small charges are detonated on the surface or in a shallow drill hole. The surface charge method uses 1 to 5-pound charges attached to wooden laths 3 to 8 feet above the ground. Placing charges lower than 6 feet usually results in destruction of vegetation, whereas placing the charges higher, or on the surface of deep snow, results in little visible surface disturbance. In the drill hole method, holes for the charges are drilled using truck-mounted or portable air drills. In general, this method uses 4 to 12 holes per mile of line, and a 5 to 50-pound explosive charge is placed in each hole, covered, and detonated. The shock wave created is recorded by geophones placed in a line on the surface. In rugged terrain, a portable drill carried by helicopter can sometimes be used. The vehicles used for a drilling program may include heavy truck-mounted drill rigs, track-mounted drill rigs, water trucks, a computer recording truck, and a light pickup.

In the **mechanical method**, four large trucks are usually used, each equipped with pads about 4-feet square. The pads are lowered to the ground, and the vibrations are electronically triggered from the recording truck. Once information is recorded, the trucks move forward a short distance and the process is repeated. Surface disturbance includes flattening of vegetation and compaction of soils.

In either type of seismic reflection surveys, existing roads and trails are used where possible. However, off-road travel is necessary in some cases. Several trips per day are made along a seismograph line, usually resulting in a well defined two-track trail.

It is expected that no more than three Notices of Intent, involving seismic reflection and gravity/magnetic field surveys across federal surface, would be filed under all Alternatives and the Proposed RMP during the life of this plan. Although it is unlikely, it is possible that one or two of the parcels with federal surface could be involved in a 3-D seismic proposal. If that occurs, the total expected surface disturbance could be up to 9 acres, based on up to 25 miles of seismic lines and a two track road with each track being 18” wide. It is possible that much of the travel could be located on existing roads or other previously disturbed lands, and there could be some hand laying of lines, and that would result in less new disturbance.

**Drilling phase**: After a parcel is leased, there may or may not be any actual disturbance. In fact, historically, a large majority of leases are relinquished without ever having any actual surface disturbance. In the event that an Application for Permit to Drill (APD) is submitted, a site specific evaluation will be made by the BLM to ensure compliance with NEPA requirements. Based on the results of that evaluation, additional Conditions of Approval may be added, and the operator may only begin construction after complying with lease stipulations and Conditions of Approval of the drilling permit. When a site requires construction of an access road, the shortest feasible route is usually selected to reduce the haul distance and construction costs. Environmental factors or a landowner’s wishes may dictate a longer route in some cases. Drilling in the planning area is expected to be done using existing roads and construction of only short (approximately 0.5 mile) roads to access drill site locations.

Even though there are 30 active oil fields and gas fields that are partly or totally within the Hollister FO area, only 9% land within the productive boundaries of those fields contains federal minerals (5400 federal acres out of a total of more than 58,000 acres). In the past ten years, 1030 wells have been drilled in the entire FO area, but no wells have been drilled on federal minerals within the entire FO area. Consequently, based on the history of oil and gas exploration in the planning area, it is projected that no more than three to five exploratory wildcat wells (wells outside of the administrative boundary of existing oil and gas fields) would be drilled on BLM-administered land in the planning area during the life of this plan. Although the success rate for wildcat wells has improved markedly during the past decade, largely due to improved seismic data, it is still unlikely that any new fields would be discovered by drilling on federal minerals because there is so little activity in areas with significant amount of federal mineral estate.

Most drilling is expected to occur in areas of land designated as high development potential (shown on Map 10). Although there is a low probability that a field will be discovered on federal land during the life of this plan, if a field containing federal land were to be discovered in the northern portion of HFO area, it is likely that the discovery would be gas because all of the occurrences in that area are gas. Conversely, if a field containing federal land were to be discovered in the southern portion of HFO area, it is likely that the discovery would be oil because all of the occurrences in that area are oil.

During the first phase of drilling, the operator would move construction equipment over existing maintained roads to the point where the access road begins. Less than 0.5 mile of moderate duty access road per well with a gravel surface 20 feet wide is expected for construction. With ditches, cuts, and fill, the total width of surface disturbance would average 40 feet. The second part of the drilling phase is the construction of a drill pad up to 1 acre in size. The likely duration of well drilling, testing, and abandonment is 3 or 4 months per site. The total disturbance for each exploratory well and any new road is estimated to be 3.4 acres. The total surface disturbance caused by exploratory drilling of 3-5 wells over the life of this plan is expected to be no more than 10-17 acres.

**Field development and production:** Exploratory drilling is not expected to lead to the development of a producing field in the planning area. Nonetheless, the following scenario describes the operations and effects associated with field development.

The minimum size considered economically feasible would depend mainly on its proximity to existing infrastructure. There are many fields within the boundaries of the HFO area, mostly in the extreme southern and extreme northern portions of the area, and it is likely that any pipelines from a new field would be relatively short. The wells within the actual productive boundaries (smaller than the administrative boundaries) of gas fields are spaced on average at 80-160 acres. For oil fields in the HFO area, spacing is much closer. In the larger oilfields, usual development spacing is typically at 5-7 acres per well. However, spacing can be as close as one well per acre in areas with heavy oil. Although it is unlikely that a new field will be discovered on federal minerals, for planning purposes we will assume a fairly small to mid size oil field may be discovered somewhere within the planning area. The average field size in the FO area is over 1900 acres, but that is significantly skewed by the presence of a few very large fields. The bottom 80% of the active fields in the FO area average 650 acres, about one square mile. If a single oilfield of that size was discovered, on average it would contain 9.1% federal mineral estate, about 60 acres. At 5-7 acres per well, it would take approximately 10 wells to fully develop the parcel. Each development well would require an estimated 0.25 mile of road, which would have a surface of crushed aggregate or gravel approximately 20 feet wide (total disturbed width of 40 feet). Well pads would be no more than 1 acre in size. Oil/gas produced would be carried by pipelines that could be linked to existing and proposed transmission lines in the planning area. Average infield pipeline length is estimated to be 0.25 mile per well, which could probably be largely contained within the road right of

way and little new surface disturbance would be required. The total distance from a new field to an existing transmission pipeline is likely to be less than 10 miles. The width of the surface disturbance for pipelines would average 20 feet.

The total surface disturbance for up to 10 development wells would be 10 acres for well pads, 12 acres for roads, and 24 acres for a single transmission line 10 miles long. No more than 1 acre would be required for the small facility (meter, separator) on each parcel. For planning purposes, we will assume that the wells may be on two separate parcels, so there would be a total of 2 acres for facilities. The total surface disturbance caused by seismic operations, exploration drilling, and development would be 74 acres.

| **Description** | **Number** | **Unit Surface Disturbance (acres)** | **Total Surface Disturbance (acres)** |
|---|---|---|---|
| Exploratory Wells | | | |
| Well Pads | 5 wells | 1 acre/well | 5 |
| Roads (40' wide) | 5 x 0.5 miles | 4.8 acre/mile | 12 |
| Development | | | |
| Well Pads | 10 | 1 acre/well | 10 |
| Roads (40' wide) | 10 x 0.25 mi | 4.8 acre/mile | 12 |
| Facilities | 2 | 1 acre/facility | 2 |
| Seismic (2 track x 18") | 25 miles | 0.36 acre/mi | 9 |
| Pipeline (20 ' wide) | 10 miles | 2.4 acres/mi | 24 |
| | | Total: | 74 |

**Plugging and abandonment:** Wells that are drilled and determined to be dry holes are plugged according to a plan designed for the condition of each well. Plugging involves placing cement plugs at strategic locations in the hole. Drilling mud is used as a spacer between the plugs to prevent communication between fluid-bearing zones. The drill casing is cut off at least 5 feet below ground level and capped by welding a steel plate on the casing stub. After plugging, all equipment and debris would be removed and the site restored as near as reasonably possible to its original condition. It is projected that much of the surface disturbance from exploratory activities and all of the seismic activities would be of short duration (between a few months and a couple of years). The impacts from the successful development wells would last longer, but it would still be completely reclaimed eventually

**Military Bases** – Fort Hunter Liggett military base is within the planning area. Leasing these lands requires consent from the local Base Commander**.** It has been shown in numerous cases across the country and within California that oil and gas exploration and development can often be conducted in a manner that is fully compatible with ongoing military operations. It is quite possible that negotiations between BLM and military personnel may result in agreement to lease lands within the boundaries of bases or other military lands. In the event that happens, appropriate leasing stipulations that would fully protect the military's mission will be added prior to any land being leased.

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# APPENDIX IX - CONFORMITY ANALYSIS CERTIFICATION

PROJECT NAME: Clear Creek Management Area Resource Management Plan
PROJECT LOCATION: Southern Portion of San Benito County and Western Fresno County, CA, (Case File - )
Fresno County, CA – PM-2.5 nonattainment
Fresno County, CA – Serious PM-10 nonattainment
Fresno County, CA – Serious 8-hr Ozone (NOx/VOC) nonattainment

PROJECT DESCRIPTION: Establish or revise designations of vehicle use areas and routes.

POTENTIAL TOTAL (DIRECT AND INDIRECT) EMISSIONS (tons/year):

| | | |
|---|---|---|
| Carbon monoxide (CO): | [Not applicable-attainment] | n/a |
| Lead (Pb): | [Not applicable-attainment] | n/a |
| Nitrogen oxides ($NO_x$): | [Not applicable-de minimis] | 0.6 tons/year |
| Particulate Matter ($PM_{10}$): | [Not applicable-de minimis] | 66.5 tons/year |
| Particulate Matter ($PM_{2.5}$): | [Not applicable-de minimis] | 10.0 tons/year |
| Sulfur dioxide ($SO_2$): | [Not applicable-attainment] | n/a |
| Volatile Organic Compounds re: Ozone ($O_3$): | [Not applicable-de minimis] | 0.6 tons/year |

MAXIMUM MODELED IMPACT ($\mu g/m^3$):

| | |
|---|---|
| Carbon monoxide (CO): | [Not applicable-attainment] |
| Lead (Pb): | [Not applicable-attainment] |
| Nitrogen dioxide ($NO_2$): | [Not applicable-attainment] |
| Particulate Matter ($PM_{10}$): | [Not applicable-de minimis] |
| Particulate Matter ($PM_{2.5}$): | [Not applicable-de minimis] |
| Ozone ($O_3$): | [Not applicable-de minimis] |
| Sulfur dioxide ($SO_2$): | [Not applicable-attainment] |

THIS PROJECT HAS BEEN DETERMINED TO CONFORM WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL AIR QUALITY LAWS, REGULATIONS AND STATUTES, AS DEFINED IN THE San Joaquin Valley, CA (Fresno County) Planning Area IMPLEMENTATION PLAN(s), FOR THE FOLLOWING REASON(s):

[ ] Action is covered within the approved Implementation Plan.
[ ] Action is excluded by the Regulatory Authority per:
[ ] Action is categorically excluded per (citation):
[X] Potential total emissions are below *de minimis* levels: Per 40 CFR 93.153(b)(1) <50 T/Y NOx ; <50 T/Y VOC (Serious Ozone NAA); <70 T/Y PM-10 (Serious PM-10 NAA); and <70 T/Y PM-2.5 (PM-2.5 NAA)
[ ] Potential total emissions are fully offset by:
[ ] Maximum modeled impacts are below applicable standards:
[X] Other (specify): Subject to implementation per December 6, 2005 Fresno County, California, Clear Creek Management Area Emission Spreadsheet and Assumptions.

SIGNED: _____
TITLE: Hollister Field Office Manager
DATE: _____

Fresno County, California, Clear Creek Management Area Emission Spreadsheet and Assumptions (December 6, 2005)

Citation: Archer, S.F. 2005. Microsoft Excel © Spreadsheet Estimate of Total and Fresno County Emissions by Alternative - Clear Creek Management Area EIS. BLM-National Science and Technology Center. Denver, Colorado. (See file: 051206_CCMA_Emissions)

Summary Table:

| Total Annual | ALT A TPY | ALT B TPY | ALT C TPY | ALT D TPY |
|---|---|---|---|---|
| NOx | 1.7 | 1.7 | 1.7 | 1.7 |
| PM-2.5 | 28.4 | 28.1 | 28.3 | 27.4 |
| PM-10 | 190.0 | 188.0 | 189.0 | 183.0 |
| TSP | 488.9 | 483.3 | 486.0 | 470.9 |
| VOC | 1.7 | 1.7 | 1.7 | 1.7 |

| Fresno Co. Annual | ALT A TPY | ALT B TPY | ALT C TPY | ALT D TPY |
|---|---|---|---|---|
| NOx | 0.6 | 0.6 | 0.6 | 0.6 |
| PM-2.5 | 10.0 | 9.9 | 9.9 | 9.6 |
| PM-10 | 66.5 | 65.8 | 66.2 | 64.1 |
| TSP | 171.1 | 169.2 | 170.1 | 164.8 |
| VOC | 0.6 | 0.6 | 0.6 | 0.6 |

Note: Assumes 35 per cent of Total Emission would occur within Fresno County (CA) nonattainment areas.
Note: Alternative A is Preferred Alternative.

VOC and NOx Emission Estimates:

**ATV** HC+NOx Ef (gm/km) = 1.5
Source: 40 CFR 1051.107

**SUV** NMHC Ef (gm/mi) = 0.31
**SUV** NOx Ef (gm/mi) = 0.6
Source: EPA 2000

**MC** HC+NOx Ef (gm/km) = 2.0
Source: 40 CFR 1051.105

| | Total VMT | Winter VMT | Summer VMT |
|---|---|---|---|
| ATV | 111180 | 67820 | 43360 |
| SUV | 96511 | 58872 | 37639 |
| MC | 864738 | 527490 | 337248 |

Note: VMT estimates were assumed to remain constant regardless of management Alternative

| Total Annual | ALT A TPY | ALT B TPY | ALT C TPY | ALT D TPY |
|---|---|---|---|---|
| NOx | 1.746 | 1.746 | 1.746 | 1.746 |
| VOC | 1.715 | 1.715 | 1.715 | 1.715 |

Note: ATV and MC emission were assumed to be equally distributed between NMHC and NOx

Note: VOC emission were assumed to be equivalent to NMHC and/or HC

Reference:

EPA. 2000. "California Certification Exhaust Emission Standards for Light-Duty Vehicles (Passenger Cars) and Light-Duty Trucks: Federal Test Procedure (FTP) - LDT1 10 Years/100,000 Miles" EPA420-B-00-001. February 2000. Research Triangle Park, NC. Available online at: http://www.epa.gov/otaq/cert/veh-cert/b00001f.pdf

Unpaved Road Emission Factors:

$Ef\ (lbs/VMT) = [(k) \times (s/12)^{a} \times (S/30)^{d} / (M/0.5)^{c}] - C$
Source: EPA 2003

| Constants | PM-2.5 | PM-10 | TSP |
|---|---|---|---|
| k = | 0.27 | 1.8 | 6.0 |
| a = | 1 | 1 | 1 |
| d = | 0.5 | 0.5 | 0.3 |
| c = | 0.2 | 0.2 | 0.3 |
| C = | 0.00036 | 0.00047 | 0.00047 |

Where:
s = silt (%)
S = vehicle speed (mph)
M = soil Moisture (%)
C = excess exhaust/brake/tire PM (lbs/VMT)

Soil moisture data source: NWS 2003

| Assumptions | ATV | SUV | MC |
|---|---|---|---|
| S = | 10 | 10 | 15 |
| W = | 0.3 | 2.5 | 0.2 |
| w = | 4 | 4 | 2 |

Where:

S = vehicle speed (mph)
W = vehicle weight (tons)
w = number of wheels

Precipitation correction factor
$Pcf = (d_t - d_{\geq 0.01in}) / (d_t)$

Where:
$d_t$ = total number of days in season
$d_{\geq 0.01in}$ = days in season with ≥ 0.01 in precipitation

| | Winter | Summer |
|---|---|---|
| $d_t$ = | 181 | 184 |
| $d_{\geq 0.01in}$ = | 42 | 6 |
| Pcf = | 0.77 | 0.97 |

Precipitation data source: WRCC 2003

Vehicle weight correction factor
$Wcf = (W/3)^{0.45}$

| | ATV | SUV | MC |
|---|---|---|---|
| Wcf = | 0.35 | 0.92 | 0.30 |

Unpaved Road Emission Factors (continued):

| PM-2.5 | | Winter | Winter | Winter | Winter | Summer | Summer | Summer | Summer |
|---|---|---|---|---|---|---|---|---|---|
| | | Soil | ATV | SUV | MC | Soil | ATV | SUV | MC |
| Soil Unit | Silt % | Moist % | lbs/VMT | lbs/VMT | lbs/VMT | Moist % | lbs/VMT | lbs/VMT | lbs/VMT |
| 742 | 30.7 | 40.0 | 0.04514 | 0.11719 | 0.04608 | 28.0 | 0.06107 | 0.15857 | 0.06235 |
| 744 | 36.1 | 40.0 | 0.05309 | 0.13785 | 0.05420 | 28.0 | 0.07184 | 0.18652 | 0.07333 |
| 757 | 25.8 | 40.0 | 0.03792 | 0.09845 | 0.03871 | 28.0 | 0.05131 | 0.13321 | 0.05238 |
| 758 | 17.8 | 40.0 | 0.02613 | 0.06784 | 0.02668 | 28.0 | 0.03536 | 0.09180 | 0.03611 |
| 761 | 18.0 | 40.0 | 0.02642 | 0.06861 | 0.02698 | 28.0 | 0.03576 | 0.09284 | 0.03651 |
| 765 | 28.0 | 40.0 | 0.04116 | 0.10686 | 0.04202 | 28.0 | 0.05569 | 0.14459 | 0.05685 |
| 767 | 31.9 | 40.0 | 0.04691 | 0.12178 | 0.04788 | 28.0 | 0.06346 | 0.16478 | 0.06479 |
| 768 | 8.1 | 40.0 | 0.01184 | 0.03073 | 0.01210 | 28.0 | 0.01602 | 0.04160 | 0.01637 |
| 769 | 7.6 | 40.0 | 0.01110 | 0.02882 | 0.01135 | 28.0 | 0.01503 | 0.03901 | 0.01536 |
| 770 | 38.6 | 40.0 | 0.05678 | 0.14742 | 0.05796 | 28.0 | 0.07682 | 0.19945 | 0.07842 |
| 773 | 17.4 | 40.0 | 0.02554 | 0.06631 | 0.02608 | 28.0 | 0.03456 | 0.08973 | 0.03529 |
| 774 | 16.6 | 40.0 | 0.02436 | 0.06325 | 0.02488 | 28.0 | 0.03297 | 0.08559 | 0.03366 |

| PM-10 | | Winter | Winter | Winter | Winter | Summer | Summer | Summer | Summer |
|---|---|---|---|---|---|---|---|---|---|
| | | Soil | ATV | SUV | MC | Soil | ATV | SUV | MC |
| Soil Unit | Silt % | Moist % | lbs/VMT | lbs/VMT | lbs/VMT | Moist % | lbs/VMT | lbs/VMT | lbs/VMT |
| 742 | 30.7 | 40.0 | 0.30144 | 0.78266 | 0.30764 | 28.0 | 0.40781 | 1.05884 | 0.41620 |
| 744 | 36.1 | 40.0 | 0.35449 | 0.92038 | 0.36177 | 28.0 | 0.47957 | 1.24516 | 0.48943 |
| 757 | 25.8 | 40.0 | 0.25331 | 0.65768 | 0.25852 | 28.0 | 0.34270 | 0.88977 | 0.34975 |
| 758 | 17.8 | 40.0 | 0.17472 | 0.45365 | 0.17833 | 28.0 | 0.23638 | 0.61374 | 0.24126 |
| 761 | 18.0 | 40.0 | 0.17669 | 0.45875 | 0.18033 | 28.0 | 0.23904 | 0.62064 | 0.24397 |
| 765 | 28.0 | 40.0 | 0.27492 | 0.71379 | 0.28057 | 28.0 | 0.37193 | 0.96568 | 0.37958 |
| 767 | 31.9 | 40.0 | 0.31323 | 0.81326 | 0.31967 | 28.0 | 0.42376 | 1.10024 | 0.43247 |
| 768 | 8.1 | 40.0 | 0.07944 | 0.20625 | 0.08109 | 28.0 | 0.10748 | 0.27906 | 0.10971 |
| 769 | 7.6 | 40.0 | 0.07453 | 0.19350 | 0.07608 | 28.0 | 0.10084 | 0.26181 | 0.10293 |
| 770 | 38.6 | 40.0 | 0.37904 | 0.98414 | 0.38683 | 28.0 | 0.51280 | 1.33142 | 0.52333 |
| 773 | 17.4 | 40.0 | 0.17079 | 0.44345 | 0.17432 | 28.0 | 0.23107 | 0.59994 | 0.23583 |
| 774 | 16.6 | 40.0 | 0.16294 | 0.42304 | 0.16630 | 28.0 | 0.22044 | 0.57234 | 0.22498 |

Unpaved Road Emission Factors (continued):

| TSP | | Winter | Winter | Winter | Winter | Summer | Summer | Summer | Summer |
|---|---|---|---|---|---|---|---|---|---|
| | | Soil | ATV | SUV | MC | Soil | ATV | SUV | MC |
| Soil Unit | Silt % | Moist % | lbs/VMT | lbs/VMT | lbs/VMT | Moist % | lbs/VMT | lbs/VMT | lbs/VMT |
| 742 | 30.7 | 40.0 | 0.80782 | 2.09740 | 0.76016 | 28.0 | 1.13255 | 2.94052 | 1.06574 |
| 744 | 36.1 | 40.0 | 0.94993 | 2.46638 | 0.89389 | 28.0 | 1.33178 | 3.45782 | 1.25322 |
| 757 | 25.8 | 40.0 | 0.67886 | 1.76258 | 0.63882 | 28.0 | 0.95176 | 2.47112 | 0.89561 |
| 758 | 17.8 | 40.0 | 0.46832 | 1.21594 | 0.44070 | 28.0 | 0.65659 | 1.70475 | 0.61786 |
| 761 | 18.0 | 40.0 | 0.47358 | 1.22961 | 0.44565 | 28.0 | 0.66397 | 1.72391 | 0.62481 |
| 765 | 28.0 | 40.0 | 0.73676 | 1.91291 | 0.69330 | 28.0 | 1.03293 | 2.68187 | 0.97199 |
| 767 | 31.9 | 40.0 | 0.83940 | 2.17939 | 0.78988 | 28.0 | 1.17682 | 3.05548 | 1.10740 |
| 768 | 8.1 | 40.0 | 0.21304 | 0.55314 | 0.20049 | 28.0 | 0.29870 | 0.77553 | 0.28109 |
| 769 | 7.6 | 40.0 | 0.19988 | 0.51898 | 0.18810 | 28.0 | 0.28025 | 0.72763 | 0.26373 |
| 770 | 38.6 | 40.0 | 1.01572 | 2.63720 | 0.95580 | 28.0 | 1.42402 | 3.69731 | 1.34001 |
| 773 | 17.4 | 40.0 | 0.45779 | 1.18861 | 0.43080 | 28.0 | 0.64183 | 1.66643 | 0.60397 |
| 774 | 16.6 | 40.0 | 0.43674 | 1.13395 | 0.41098 | 28.0 | 0.61231 | 1.58980 | 0.57620 |

References:

EPA. 2003. Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*; Chapter 13, Miscellaneous Sources; 13.2.2 Unpaved Roads. December, 2003. Research Triangle Park, NC. Available online at: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf

National Weather Service (NWS). 2003. Monthly Soil Moisture Climatology - Soil Wetness: Calculated Soil Wetness Climatology (1971-2000) Maps. Climate Prediction Center. Camp Springs, MD. Available online at: http://www.cpc.ncep.noaa.gov/soilmst/wclim_wetness_frame.html

Western Regional Climate Center (WRCC). 2003. Historical Climate Information: Priest Valley, California (047150); 1948 to 2003. Reno, NV. Available online at: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?caprie+sca

VMT by Soil Unit by Alternative:

| | Total VMT | Winter VMT | Summer VMT |
|---|---|---|---|
| ATV | 111180 | 67820 | 43360 |
| SUV | 96511 | 58872 | 37639 |
| MC | 864738 | 527490 | 337248 |

Note: VMT estimates were assumed to remain constant regardless of management Alternative

| Fractional Use By Soil Unit | ALT A ATV VMT | ALT A SUV VMT | ALT A MC VMT | ALT B ATV VMT | ALT B SUV VMT | ALT B MC VMT | ALT C ATV VMT | ALT C SUV VMT | ALT C MC VMT | ALT D ATV VMT | ALT D SUV VMT | ALT D MC VMT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 742 | 0.000 | 0.008 | 0.009 | 0.000 | 0.005 | 0.015 | 0.000 | 0.001 | 0.010 | 0.005 | 0.028 | 0.010 |
| 744 | 0.073 | 0.063 | 0.044 | 0.072 | 0.059 | 0.038 | 0.074 | 0.063 | 0.047 | 0.121 | 0.081 | 0.048 |
| 757 | 0.000 | 0.006 | 0.007 | 0.000 | 0.005 | 0.008 | 0.000 | 0.005 | 0.007 | 0.005 | 0.004 | 0.011 |
| 758 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.006 | 0.000 | 0.001 |
| 761 | 0.036 | 0.034 | 0.037 | 0.035 | 0.036 | 0.039 | 0.036 | 0.034 | 0.033 | 0.032 | 0.038 | 0.053 |
| 765 | 0.209 | 0.246 | 0.276 | 0.211 | 0.347 | 0.275 | 0.211 | 0.342 | 0.283 | 0.171 | 0.270 | 0.247 |
| 767 | 0.569 | 0.414 | 0.494 | 0.571 | 0.266 | 0.487 | 0.568 | 0.252 | 0.502 | 0.433 | 0.254 | 0.455 |
| 768 | 0.028 | 0.060 | 0.028 | 0.027 | 0.070 | 0.026 | 0.028 | 0.067 | 0.030 | 0.030 | 0.069 | 0.031 |
| 769 | 0.077 | 0.088 | 0.081 | 0.076 | 0.167 | 0.079 | 0.078 | 0.144 | 0.069 | 0.085 | 0.142 | 0.099 |
| 770 | 0.000 | 0.030 | 0.000 | 0.000 | 0.032 | 0.012 | 0.000 | 0.035 | 0.000 | 0.044 | 0.032 | 0.010 |
| 773 | 0.000 | 0.020 | 0.006 | 0.000 | 0.008 | 0.005 | 0.000 | 0.026 | 0.006 | 0.016 | 0.022 | 0.006 |
| 774 | 0.007 | 0.030 | 0.017 | 0.007 | 0.005 | 0.015 | 0.005 | 0.031 | 0.012 | 0.052 | 0.060 | 0.029 |
| TOTAL | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

VMT by Soil Unit by Alternative (continued):

| ALT A<br>Soil Unit | Full Year Total VMT | Winter Total VMT | Winter ATV VMT | Winter SUV VMT | Winter MC VMT | Summer Total VMT | Summer ATV VMT | Summer SUV VMT | Summer MC VMT |
|---|---|---|---|---|---|---|---|---|---|
| 742 | | | 0.0 | 471.0 | 4747.4 | | 0.0 | 301.1 | 3035.2 |
| 744 | | | 4950.9 | 3708.9 | 23209.6 | | 3165.3 | 2371.3 | 14838.9 |
| 757 | | | 0.0 | 353.2 | 3692.4 | | 0.0 | 225.8 | 2360.7 |
| 758 | | | 67.8 | 58.9 | 527.5 | | 43.4 | 37.6 | 337.2 |
| 761 | | | 2441.5 | 2001.6 | 19517.1 | | 1561.0 | 1279.7 | 12478.2 |
| 765 | | | 14174.4 | 14482.5 | 145587.2 | | 9062.2 | 9259.2 | 93080.4 |
| 767 | | | 38589.6 | 24373.0 | 260580.1 | | 24671.8 | 15582.5 | 166600.5 |
| 768 | | | 1899.0 | 3532.3 | 14769.7 | | 1214.1 | 2258.3 | 9442.9 |
| 769 | | | 5222.1 | 5180.7 | 42726.7 | | 3338.7 | 3312.2 | 27317.1 |
| 770 | | | 0.0 | 1766.2 | 0.0 | | 0.0 | 1129.2 | 0.0 |
| 773 | | | 0.0 | 1177.4 | 3164.9 | | 0.0 | 752.8 | 2023.5 |
| 774 | | | 474.7 | 1766.2 | 8967.3 | | 303.5 | 1129.2 | 5733.2 |
| TOTAL | | | 67820 | 58872 | 527490 | | 43360 | 37639 | 337248 |

| ALT B<br>Soil Unit | Full Year Total VMT | Winter Total VMT | Winter ATV VMT | Winter SUV VMT | Winter MC VMT | Summer Total VMT | Summer ATV VMT | Summer SUV VMT | Summer MC VMT |
|---|---|---|---|---|---|---|---|---|---|
| 742 | | | 0.0 | 294.4 | 7912.4 | | 0.0 | 188.2 | 5058.7 |
| 744 | | | 4883.0 | 3473.4 | 20044.6 | | 3121.9 | 2220.7 | 12815.4 |
| 757 | | | 0.0 | 294.4 | 4219.9 | | 0.0 | 188.2 | 2698.0 |
| 758 | | | 67.8 | 0.0 | 527.5 | | 43.4 | 0.0 | 337.2 |
| 761 | | | 2373.7 | 2119.4 | 20572.1 | | 1517.6 | 1355.0 | 13152.7 |
| 765 | | | 14310.0 | 20428.6 | 145059.8 | | 9149.0 | 13060.7 | 92743.2 |
| 767 | | | 38725.2 | 15660.0 | 256887.6 | | 24758.6 | 10012.0 | 164239.8 |
| 768 | | | 1831.1 | 4121.0 | 13714.7 | | 1170.7 | 2634.7 | 8768.4 |
| 769 | | | 5154.3 | 9831.6 | 41671.7 | | 3295.4 | 6285.7 | 26642.6 |
| 770 | | | 0.0 | 1883.9 | 6329.9 | | 0.0 | 1204.4 | 4047.0 |
| 773 | | | 0.0 | 471.0 | 2637.5 | | 0.0 | 301.1 | 1686.2 |
| 774 | | | 474.7 | 294.4 | 7912.4 | | 303.5 | 188.2 | 5058.7 |
| TOTAL | | | 67820 | 58872 | 527490 | | 43360 | 37639 | 337248 |

VMT by Soil Unit by Alternative (continued):

| ALT C Soil Unit | Full Year Total VMT | Winter Total VMT | Winter ATV VMT | Winter SUV VMT | Winter MC VMT | Summer Total VMT | Summer ATV VMT | Summer SUV VMT | Summer MC VMT |
|---|---|---|---|---|---|---|---|---|---|
| 742 | | | 0.0 | 58.9 | 5274.9 | | 0.0 | 37.6 | 3372.5 |
| 744 | | | 5018.7 | 3708.9 | 24792.0 | | 3208.6 | 2371.3 | 15850.7 |
| 757 | | | 0.0 | 294.4 | 3692.4 | | 0.0 | 188.2 | 2360.7 |
| 758 | | | 0.0 | 0.0 | 527.5 | | 0.0 | 0.0 | 337.2 |
| 761 | | | 2441.5 | 2001.6 | 17407.2 | | 1561.0 | 1279.7 | 11129.2 |
| 765 | | | 14310.0 | 20134.2 | 149279.7 | | 9149.0 | 12872.5 | 95441.2 |
| 767 | | | 38521.8 | 14835.7 | 264800.0 | | 24628.5 | 9485.0 | 169298.5 |
| 768 | | | 1899.0 | 3944.4 | 15824.7 | | 1214.1 | 2521.8 | 10117.4 |
| 769 | | | 5290.0 | 8477.6 | 36396.8 | | 3382.1 | 5420.0 | 23270.1 |
| 770 | | | 0.0 | 2060.5 | 0.0 | | 0.0 | 1317.4 | 0.0 |
| 773 | | | 0.0 | 1530.7 | 3164.9 | | 0.0 | 978.6 | 2023.5 |
| 774 | | | 339.1 | 1825.0 | 6329.9 | | 216.8 | 1166.8 | 4047.0 |
| TOTAL | | | 67820 | 58872 | 527490 | | 43360 | 37639 | 337248 |

| ALT D Soil Unit | Full Year Total VMT | Winter Total VMT | Winter ATV VMT | Winter SUV VMT | Winter MC VMT | Summer Total VMT | Summer ATV VMT | Summer SUV VMT | Summer MC VMT |
|---|---|---|---|---|---|---|---|---|---|
| 742 | | | 339.1 | 1648.4 | 5274.9 | | 216.8 | 1053.9 | 3372.5 |
| 744 | | | 8206.2 | 4768.6 | 25319.5 | | 5246.6 | 3048.8 | 16187.9 |
| 757 | | | 339.1 | 235.5 | 5802.4 | | 216.8 | 150.6 | 3709.7 |
| 758 | | | 406.9 | 0.0 | 527.5 | | 260.2 | 0.0 | 337.2 |
| 761 | | | 2170.2 | 2237.1 | 27957.0 | | 1387.5 | 1430.3 | 17874.1 |
| 765 | | | 11597.2 | 15895.4 | 130290.0 | | 7414.6 | 10162.5 | 83300.3 |
| 767 | | | 29366.1 | 14953.5 | 240008.0 | | 18774.9 | 9560.3 | 153447.8 |
| 768 | | | 2034.6 | 4062.2 | 16352.2 | | 1300.8 | 2597.1 | 10454.7 |
| 769 | | | 5764.7 | 8359.8 | 52221.5 | | 3685.6 | 5344.7 | 33387.6 |
| 770 | | | 2984.1 | 1883.9 | 5274.9 | | 1907.8 | 1204.4 | 3372.5 |
| 773 | | | 1085.1 | 1295.2 | 3164.9 | | 693.8 | 828.1 | 2023.5 |
| 774 | | | 3526.6 | 3532.3 | 15297.2 | | 2254.7 | 2258.3 | 9780.2 |
| TOTAL | | | 67820 | 58872 | 527490 | | 43360 | 37639 | 337248 |

Total PM Emissions by Alternative:

| Total Annual | ALT A TPY | ALT B TPY | ALT C TPY | ALT D TPY |
|---|---|---|---|---|
| PM-2.5 | 28 | 28 | 28 | 27 |
| PM-10 | 190 | 188 | 189 | 183 |
| TSP | 489 | 483 | 486 | 471 |

| Emissions By Soil Unit | ALT A PM-2.5 TPY | ALT A PM-10 TPY | ALT A TSP TPY | ALT B PM-2.5 TPY | ALT B PM-10 TPY | ALT B TSP TPY | ALT C PM-2.5 TPY | ALT C PM-10 TPY | ALT C TSP TPY | ALT D PM-2.5 TPY | ALT D PM-10 TPY | ALT D TSP TPY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 742 | 0 | 2 | 4 | 0 | 2 | 6 | 0 | 2 | 4 | 0 | 3 | 7 |
| 744 | 2 | 13 | 33 | 2 | 11 | 30 | 2 | 13 | 34 | 2 | 15 | 40 |
| 757 | 0 | 1 | 3 | 0 | 1 | 3 | 0 | 1 | 3 | 0 | 2 | 4 |
| 758 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 761 | 1 | 5 | 12 | 1 | 5 | 12 | 1 | 4 | 11 | 1 | 6 | 15 |
| 765 | 8 | 51 | 132 | 8 | 55 | 142 | 8 | 56 | 145 | 7 | 48 | 123 |
| 767 | 16 | 107 | 276 | 15 | 100 | 256 | 15 | 101 | 260 | 14 | 91 | 234 |
| 768 | 0 | 2 | 5 | 0 | 2 | 5 | 0 | 2 | 5 | 0 | 2 | 6 |
| 769 | 1 | 4 | 11 | 1 | 5 | 13 | 1 | 4 | 12 | 1 | 6 | 15 |
| 770 | 0 | 2 | 4 | 1 | 4 | 10 | 0 | 2 | 5 | 1 | 5 | 12 |
| 773 | 0 | 1 | 3 | 0 | 1 | 2 | 0 | 1 | 3 | 0 | 1 | 3 |
| 774 | 0 | 2 | 6 | 0 | 1 | 4 | 0 | 2 | 5 | 1 | 4 | 11 |
| TOTAL | 28 | 190 | 489 | 28 | 188 | 483 | 28 | 189 | 486 | 27 | 183 | 471 |

Total PM Emissions by Alternative (continued):

| ALT A | Full Year | Full Year | Full Year | Winter | Winter | Winter | Summer | Summer | Summer |
|---|---|---|---|---|---|---|---|---|---|
| Soil Unit | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY |
| 742 | | | | 0.1 | 0.9 | 2.3 | 0.1 | 0.8 | 2.1 |
| 744 | | | | 1.0 | 6.8 | 17.3 | 0.9 | 5.9 | 15.5 |
| 757 | | | | 0.1 | 0.6 | 1.5 | 0.1 | 0.5 | 1.3 |
| 758 | | | | 0.0 | 0.1 | 0.2 | 0.0 | 0.1 | 0.2 |
| 761 | | | | 0.4 | 2.4 | 6.2 | 0.3 | 2.1 | 5.5 |
| 765 | | | | 4.1 | 27.5 | 69.5 | 3.6 | 23.8 | 62.3 |
| 767 | | | | 8.6 | 57.6 | 145.7 | 7.5 | 49.8 | 130.6 |
| 768 | | | | 0.2 | 1.0 | 2.7 | 0.1 | 0.9 | 2.4 |
| 769 | | | | 0.3 | 2.3 | 5.9 | 0.3 | 2.0 | 5.3 |
| 770 | | | | 0.1 | 0.9 | 2.3 | 0.1 | 0.8 | 2.1 |
| 773 | | | | 0.1 | 0.5 | 1.4 | 0.1 | 0.5 | 1.2 |
| 774 | | | | 0.2 | 1.2 | 2.9 | 0.1 | 1.0 | 2.6 |
| TOTAL | 28 | 190 | 489 | 15 | 102 | 258 | 13 | 88 | 231 |

| ALT B | Full Year | Full Year | Full Year | Winter | Winter | Winter | Summer | Summer | Summer |
|---|---|---|---|---|---|---|---|---|---|
| Soil Unit | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY |
| 742 | | | | 0.2 | 1.3 | 3.3 | 0.2 | 1.2 | 3.0 |
| 744 | | | | 0.9 | 6.1 | 15.6 | 0.8 | 5.3 | 13.9 |
| 757 | | | | 0.1 | 0.6 | 1.6 | 0.1 | 0.6 | 1.4 |
| 758 | | | | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 |
| 761 | | | | 0.4 | 2.6 | 6.4 | 0.3 | 2.2 | 5.8 |
| 765 | | | | 4.4 | 29.6 | 75.1 | 3.8 | 25.6 | 67.3 |
| 767 | | | | 8.0 | 53.5 | 134.8 | 6.9 | 46.3 | 120.8 |
| 768 | | | | 0.2 | 1.1 | 2.7 | 0.1 | 0.9 | 2.4 |
| 769 | | | | 0.4 | 2.7 | 7.0 | 0.4 | 2.4 | 6.3 |
| 770 | | | | 0.3 | 2.2 | 5.5 | 0.3 | 1.9 | 4.9 |
| 773 | | | | 0.1 | 0.3 | 0.8 | 0.0 | 0.3 | 0.8 |
| 774 | | | | 0.1 | 0.8 | 1.9 | 0.1 | 0.7 | 1.7 |
| TOTAL | 28 | 188 | 483 | 15 | 101 | 255 | 13 | 87 | 228 |

Total PM Emissions by Alternative (continued):

| ALT C | Full Year | Full Year | Full Year | Winter | Winter | Winter | Summer | Summer | Summer |
|---|---|---|---|---|---|---|---|---|---|
| Soil Unit | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY |
| 742 | | | | 0.1 | 0.8 | 2.1 | 0.1 | 0.7 | 1.9 |
| 744 | | | | 1.1 | 7.1 | 18.0 | 0.9 | 6.1 | 16.2 |
| 757 | | | | 0.1 | 0.6 | 1.4 | 0.1 | 0.5 | 1.3 |
| 758 | | | | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| 761 | | | | 0.3 | 2.2 | 5.7 | 0.3 | 1.9 | 5.1 |
| 765 | | | | 4.5 | 30.1 | 76.3 | 3.9 | 26.0 | 68.4 |
| 767 | | | | 8.1 | 54.4 | 136.9 | 7.0 | 47.0 | 122.7 |
| 768 | | | | 0.2 | 1.1 | 2.9 | 0.1 | 1.0 | 2.6 |
| 769 | | | | 0.4 | 2.4 | 6.2 | 0.3 | 2.1 | 5.5 |
| 770 | | | | 0.2 | 1.0 | 2.7 | 0.1 | 0.9 | 2.4 |
| 773 | | | | 0.1 | 0.6 | 1.6 | 0.1 | 0.5 | 1.4 |
| 774 | | | | 0.1 | 0.9 | 2.4 | 0.1 | 0.8 | 2.2 |
| TOTAL | 28 | 189 | 486 | 15 | 101 | 256 | 13 | 88 | 230 |

| ALT D | Full Year | Full Year | Full Year | Winter | Winter | Winter | Summer | Summer | Summer |
|---|---|---|---|---|---|---|---|---|---|
| Soil Unit | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY | PM-2.5 TPY | PM-10 TPY | TSP TPY |
| 742 | | | | 0.2 | 1.5 | 3.9 | 0.2 | 1.3 | 3.5 |
| 744 | | | | 1.2 | 8.2 | 21.1 | 1.1 | 7.1 | 18.9 |
| 757 | | | | 0.1 | 0.9 | 2.2 | 0.1 | 0.8 | 2.0 |
| 758 | | | | 0.0 | 0.1 | 0.2 | 0.0 | 0.1 | 0.2 |
| 761 | | | | 0.5 | 3.2 | 8.1 | 0.4 | 2.8 | 7.3 |
| 765 | | | | 3.8 | 25.5 | 64.6 | 3.3 | 22.1 | 57.9 |
| 767 | | | | 7.3 | 49.0 | 123.4 | 6.4 | 42.4 | 110.6 |
| 768 | | | | 0.2 | 1.2 | 3.0 | 0.2 | 1.0 | 2.7 |
| 769 | | | | 0.4 | 3.0 | 7.7 | 0.4 | 2.6 | 6.9 |
| 770 | | | | 0.4 | 2.5 | 6.5 | 0.3 | 2.2 | 5.8 |
| 773 | | | | 0.1 | 0.7 | 1.7 | 0.1 | 0.6 | 1.5 |
| 774 | | | | 0.3 | 2.3 | 5.9 | 0.3 | 2.0 | 5.3 |
| TOTAL | 27 | 183 | 471 | 15 | 98 | 248 | 13 | 85 | 223 |