US Department of the Interior
Bureau of Land Management
Carson City District, Nevada

Draft Resource Management Plan and
Environmental Impact Statement

VOLUME 1: EXECUTIVE SUMMARY AND CHAPTERS 1 THROUGH 7

NOVEMBER 2014

Nevada • Carson City District Office

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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In Reply Refer To:
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Dear Reader:

Attached for your review and comment is the Draft Resource Management Plan/Draft Environmental Impact Statement (Draft RMP/EIS) for the Nevada Bureau of Land Management (BLM) Carson City District, Sierra Front and Stillwater Field Offices. BLM prepared this document in consultation with cooperating agencies, and in accordance with the National Environmental Policy Aet of 1969,as amended, the Federal Land Policy and Management Act of 1976,as amended , implementing regulations, the BLM's Land Use Planning Handbook (H-1601-1), and other applicable law and policy.

The planning area consists of about 9 million acres of land which includes about 4.8 million acres of public lands managed by the Sierra Front and Stillwater Field Offices in Carson City, Churchill, Douglas, Lyon, Mineral, Nye, Storey and Washoe Counties in western Nevada, and portions of Alpine, Lassen and Plumas Counties in eastern California. When approved, this RMP will replace the *2001 Carson City Field Office Consolidated Resource Management Plan* plus subsequent amendments and will guide the management of public lands administered by the Carson City District into the future. The *Carson City District Draft Resource Management Plan* and supporting information is available on the project web site at: http://www.blm.gov/nv/st/en/fo/carson_city_field.html.

The BLM encourages the public to provide information and comments pertaining to the analysis presented in the Draft RMP/EIS. We are particularly interested in feedback concerning the adequacy and accuracy of the proposed alternatives, the analysis of their respective management decisions, and any new information that would help the BLM as it develops the plan. In developing the Proposed RMP/Final EIS, which is the next phase of the planning process, the decision maker may select various management decisions from each of the alternatives analyzed in the Draft RMP/EIS for the purpose of creating a management strategy that best meets the needs of the resources and values in this area under the BLM multiple use and sustained yield mandate. As a member of the public, your timely comments on the *Carson City District Draft Resource Management Plan* will help formulate the Proposed RMP/Final EIS. Comments will be accepted for one hundred twenty (120) calendar days following the Environmental Protection Agency's (EPA) publication of its Notice of Availability in the Federal Register. The BLM can best utilize your comments and resource information submissions if received within the review period.

Comments may be submitted electronically at: blm_nv_ccdo_rmp@blm.gov. Comments may also be submitted by mail to: Carson City RMP, BLM Carson City District Office, 5665 Morgan Mill Road, Carson City, NV 89701. To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments in an electronic format.

Your review and comments on the content of this document are critical to the success of this planning effort. If you wish to submit comments on the Draft RMP/EIS, we request that you make your comments

as specific as possible. Comments will be more helpful if they include suggested changes, sources, or methodologies, and reference to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision making process, although they will not receive a formal response from the BLM.

Before including your address, phone number, email 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 your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Public meetings to provide an overview of the document, respond to questions, and take public comments will be announced by local media, website, and/or public mailings at least 15 days in advance. Public meetings are currently scheduled for 5:00 to 7:00 p.m., on January 13, at the John Ascuaga's Nugget (1100 Nugget Ave.) in Sparks, Nev., on January 15, at the Fallon Convention Center (100 Campus Way) in Fallon, Nev., on January 20, at the Mineral County Library (First & A Street) in Hawthorne, Nev., on January 22, at the Carson Valley Inn (1627 US Hwy 395 N) in Minden, Nev., and on January 29, at the Yerington Elementary School (112 N. California St.) in Yerington, Nev. An additional public meeting will be held from 4:00 to 6:00 p.m., on January 24, at the Carson City Plaza Hotel and Event Center located at 801 South Carson Street, Carson City, NV.

Copies of the Draft RMP/EIS have been sent to affected Federal, state and local government agencies (USFS Plumas National Forest, USFS Humboldt-Toiyabe National Forest, Bureau of Reclamation, Stillwater National Wildlife Refuge Complex, US Fish and Wildlife Service, Naval Air Station Fallon, Marine Corps Mountain Warfare Training Center, Hawthorne Army Depot, Carson City, Alpine, Churchill, Douglas, Lyon, Mineral, Nye, Storey, and Washoe Counties, NV Department of Wildlife, NV Department of Conservation and Natural Resources, Bridgeport Paiute Indian Colony, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, Walker River Paiute Tribe, and the Washoe Tribe of NV and CA). Copies of the Draft RMP/EIS are available for public inspection at the Alpine, Churchill, Douglas, Mineral, Storey and Washoe County planning departments, Lyon County public libraries, Mineral County Public Library, Gabbs Town Hall and on the BLM website at http://www.blm.gov/nv/st/en/fo/carson_city_field.html. Copies are also available for public inspection at the following BLM locations:

Carson City District Office, 5665 Morgan Mill Road, Carson City, NV 89701
Nevada State Office, 1340 Financial Boulevard, Reno, NV 89502

Thank you for your continued interest in the *Carson City District Resource Management Plan*. We appreciate the information and suggestions you contribute to the planning process. For additional information or clarification regarding this document or the planning process, please contact Colleen Sievers, RMP Project Manager at 775-885-6168.

Sincerely,

Raul Morales

for Amy L. Lueders
State Director

/s/ Raul Morales
Acting

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
ACEC	area of critical environmental concern
AML	Appropriate Management Level
AMP	Allotment Management Plan
AMS	Analysis of the Management Situation
APN	Assessor's parcel number
AQRV	air quality related value
AUM	animal unit month
BCB	Back County Byway
BCR	Bird Conservation Regions
BCWCA	Back Country Wildlife Conservation Areas
BLM	US Department of the Interior, Bureau of Land Management
BMP	best management practice
°C	degrees Celsius
CARB	California Air Resources Board
CBR	Central Basin and Range
CCD	US Department of the Interior, Bureau of Land Management, Carson City District
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CHP	cultural/historic
CO	carbon monoxide
CO_2	carbon dioxide
COA	condition of approval
CRMP	consolidated resource management plan
CSU	controlled surface use
CTTM	comprehensive travel and transportation management
DOI	US Department of the Interior
EA	environmental assessment
EIS	environmental impact statement
EPA	US Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESR	emergency stabilization and rehabilitation
°F	degrees Fahrenheit
FLPMA	Federal Land Policy and Management Act
FMU	fire management unit
Forest Service	United States Department of Agriculture, National Forest Service
FRCC	fire regime condition class
GIS	Geographic Information System
GPRA	Government Performance and Results Act
GRSG	Greater Sage-Grouse
HA	herd area

HMA	Herd Management Area
IM	Instruction Memorandum
LAC	limits of acceptable change
LUP	land use plan
LUPA	land use plan amendment
Ma	megaannum
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAS	US Department of Defense, Naval Air Station
National Register	National Register of Historic Places
NDEP	Nevada Department of Environmental Protection
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NHT	National Historic Trail
NNHP	Nevada Natural Heritage Program
NO_2	nitrogen dioxide
NPS	US Department of the Interior, National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statute
NSO	no surface occupancy
NV IBA	Nevada Important Bird Areas
NWIS	National Water Information System
NWSRS	National Wild and Scenic Rivers System
O_3	ozone
OHV	off-highway vehicle
ORV	outstandingly remarkable values
PFC	Proper Functioning Condition
PFYC	Potential Fossil Yield Classification
PGH	preliminary general habitat
PGMA	preliminary general management area
PILT	Payments in Lieu of Taxes
Planning Area	Carson City District Resource Management Plan Planning Area
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns or less
ppb	parts per billion
PPH	preliminary priority habitat
ppm	parts per million
PPMA	preliminary priority management area
R&PP	Recreation and Public Purposes Act

RAC	Resource Advisory Council
RDF	required design features
REA	Rapid Ecological Assessment
Reclamation	US Department of the Interior, Bureau of Reclamation
RHA	Rangeland Health Assessments
RMIS	Recreation Management Information System
RMP	resource management plan
RMZ	recreation management zone
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
Standards and Guidelines	Nevada Standards for Public Land Health and Guidelines for Livestock Grazing Management
TA	Target Areas
TCP	traditional cultural property
TL	timing limitations
TMA	travel management area
US	United States
USC	United States Code
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VRM	Visual Resource Management
WEG	Wind Erodibility Group
WHB	wild horse and burro
WSA	wilderness study area
WSR	wild and scenic river
WUI	wildland-urban interface

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Executive Summary

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The United States (US) Department of the Interior (DOI), Bureau of Land Management (BLM), Carson City District (CCD) has prepared this draft resource management plan (RMP) and environmental impact statement (EIS) for managing public lands administered by the CCD. This document provides:

- Consolidated direction for managing public lands under the jurisdiction of the CCD
- An analysis of the environmental effects that could result from the implementation of the alternatives addressed in the RMP

This RMP will replace the 2001 Carson City District Consolidated RMP (BLM 2001c), including amendments.

ES.2 PLANNING AND DECISION AREA

The CCD RMP/EIS planning area is composed of approximately 9 million acres of public and private lands in Carson City, Churchill, Douglas, Lyon, Mineral, Nye, Storey, and Washoe Counties in western Nevada, and portions of Alpine, Lassen, and Plumas Counties in eastern California. The BLM administers nearly half (4.8 million acres) of the land in the planning area. The remaining area is composed of US Department of Agriculture, Forest Service (Forest Service), Bureau of Reclamation (Reclamation), US Fish and Wildlife Service (USFWS), Department of Defense (DOD), State of Nevada, State of California, and private lands as well as tribal lands governed by sovereign Native American tribes in consultation with the Bureau of Indian Affairs (BIA). See **Figure ES-1**, Carson City District RMP Planning Area, and **Table ES-1**, Land Status within the Carson City District RMP Planning Area.

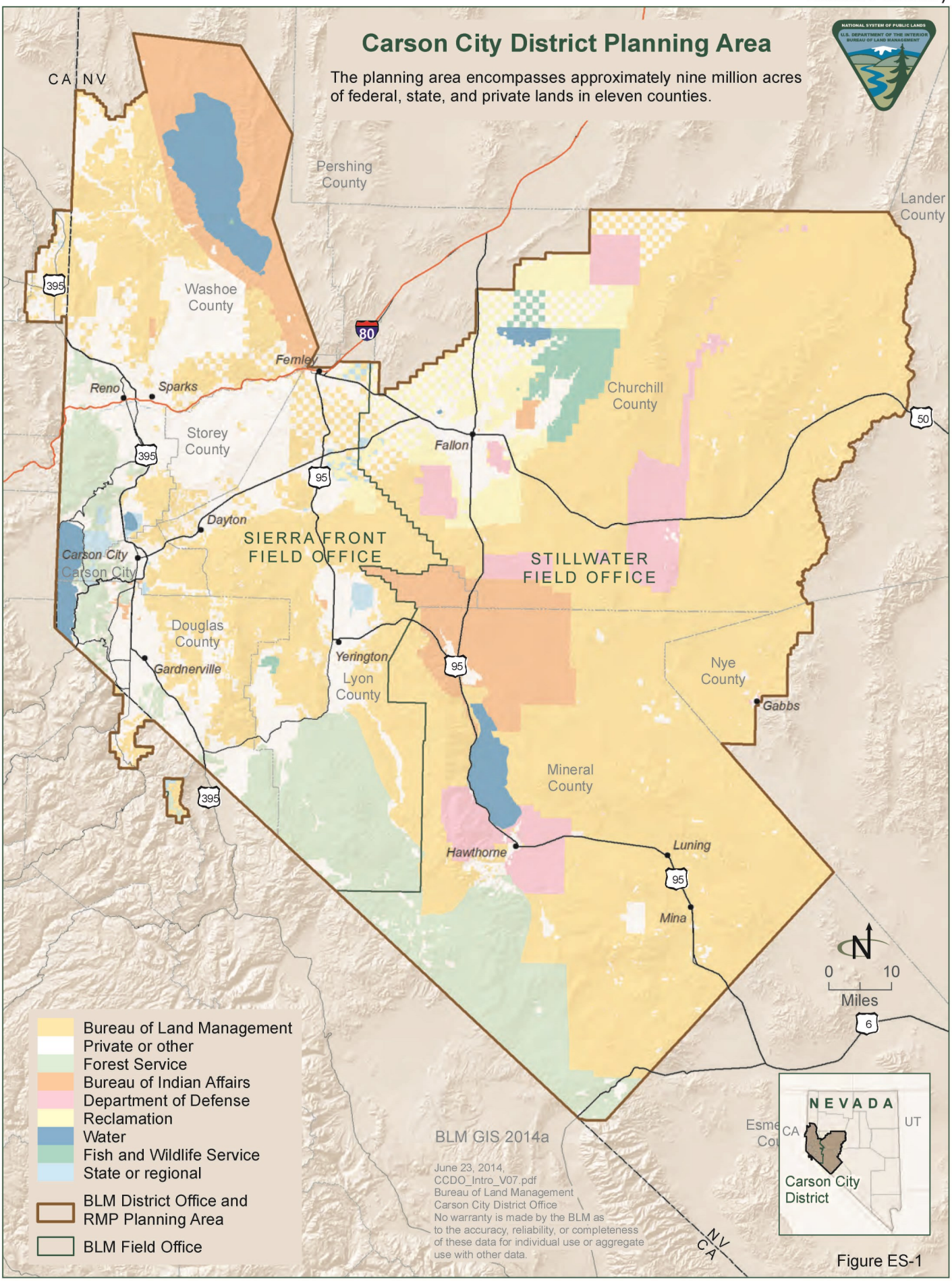
Carson City District Planning Area
The planning area encompasses approximately nine million acres of federal, state, and private lands in eleven counties.
CA NV
Pershing County
Lander County
Washoe County
Storey County
Douglas County
Lyon County
Churchill County
Nye County
Mineral County
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Gabbs
Hawthorne
Luning
Mina
395
80
95
50
6
0 10
Miles
Bureau of Land Management
Private or other
Forest Service
Bureau of Indian Affairs
Department of Defense
Reclamation
Water
Fish and Wildlife Service
State or regional
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014a
June 23, 2014,
CCDO_Intro_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
NEVADA
UT
CA
Carson City District

Figure ES-1

Table ES-1
Land Status within the Carson City District RMP Planning Area

Agency	Acres
Bureau of Land Management	4,803,300
Forest Service (Nevada and California)	866,900
Bureau of Reclamation	304,000
Bureau of Indian Affairs	653,900
US Fish and Wildlife Service	103,900
Department of Defense	360,100
State of Nevada (including Nevada Department of Wildlife)	24,200
State of California	2,300
Private	1,507,900
Other (local, regional, water bodies)	312,600
Total	*8,939,100*

Source: BLM GIS 2014a

Management direction and actions provided in the RMP apply only to the decision area, which includes BLM-administered surface lands in the planning area and federal mineral estate lying beneath other surface ownership but administered by the BLM (split estate). A split estate can be either federal surface overlying private minerals or private surface overlying federal minerals. When it comes to BLM-administered surface and private minerals, the BLM has limited authority relating to public access for mineral exploration and development. On split estates where the surface is managed by another federal agency, the surface-managing agency establishes the mineral leasing requirements, which the BLM subsequently adopts.

ES.3 AUTHORITIES

The RMP is being prepared in accordance with the Federal Land Policy and Management Act (FLPMA) of 1976 (43 US Code [USC] 1701 et seq.), BLM Planning Regulations (43 Code of Federal Regulations [CFR] 1601-1610), and BLM Land Use Planning Handbook, H-1601-1 (BLM 2005a). This RMP provides planning-level guidance for the management of resources and designation of uses on BLM-administered lands. The RMP was developed in coordination with federal, state, and local governments, Native American tribes, and interested members of the public. Rather than providing entirely new management direction, this RMP carries forward existing management strategies where appropriate, while incorporating updated information and regulatory guidance made available since the adoption of the previous RMP. New management direction in the RMP also addresses land use issues and conflicts that have emerged since the previous RMP and RMP amendments were adopted.

The EIS incorporated as part of this document meets the requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations for implementing the NEPA (40 CFR 1500-1508), the BLM's

Land Use Planning Handbook, H-1601-1 (BLM 2005a), and the requirements of BLM NEPA Handbook, H-1790-1 (BLM 2008a).

ES.4 PURPOSE OF AND NEED FOR THE RESOURCE MANAGEMENT PLAN

According to the FLPMA, the BLM shall "develop, maintain, and, when appropriate, revise land use plans" (43 USC 1712 [a]). Accordingly, the purpose of this RMP is to ensure that BLM-administered lands in the planning area are managed in accordance with the multiple use and sustained yield principles mandated by the FLPMA. With the support of new data, this RMP provides planning-level management strategies that are expressed in the form of goals, objectives, allowable uses, and management actions necessary to achieve the preferred conditions for resources and resource uses. The need for the RMP is to address policies and resource issues that have arisen since the adoption of the previous RMP and amendments. Major issues prompting the need for this RMP include the following:

- Management of energy resources, including renewable resources such as geothermal, wind, and solar
- Management of resources for which there is a high demand but limited supply, such as water or fish and wildlife
- Management for the protection of sensitive resources, such as cultural or paleontological artifacts
- Management of increased conflicts between competing resource values and land uses, particularly as a result of increased off-highway vehicle (OHV) use
- Management of the urban interface in light of expanding urban areas throughout the planning area

The BLM prepared this document using a collaborative planning process that included an interdisciplinary approach for fulfilling the need for new planning data. The BLM prepared the following plans, studies, and reports to support this RMP:

- CCD RMP/EIS Preparation Plan (March 2012)
- CCD RMP/EIS Collaboration and Communication Plan (May 2012)
- Scoping Summary Report (December 2012)
- Travel Management Workshop Report (January 2013)
- Socioeconomic Baseline Report (January 2013)
- Socioeconomic Report and Addendum (February 2013)
- Wild and Scenic River Eligibility Report (February 2013)
- Areas of Critical Environmental Concern Report (March 2013)

- Analysis of the Management Situation (April 2013)
- Mineral Potential Report (June 2013)
- Reasonably Foreseeable Development (RFD) Scenario for Solar, Wind, and Biomass Report (June 2013)
- Air Analysis Framework Report (June 2013)
- Ethnographic Report (December 2013)
- Cultural Overview/Synthesis Report (draft; April 2014)
- Lands with Wilderness Characteristics Report (July 2014)

As new policy requirements, planning issues, and scientific information emerge over time, the BLM may review the RMP and consider the need for updated management prescriptions and resource allocations. Per 43 CFR 1610.4-9, the BLM is required to monitor and evaluate land use plans (LUPs) such as RMPs to determine if LUP decisions remain relevant, remain effective, need revision, should be dropped, or require new decisions. The LUP evaluation process is described in BLM Planning Handbook H-1601-1. The BLM may only change adopted LUP decisions through the amendment or revision process, which includes adherence to the environmental review requirements under the NEPA.

The planning process consists of developing, approving, maintaining, and amending or revising an RMP. The BLM carries out this process under the authority of Section 202(f) of the FLPMA and Section 202(c) of the NEPA. The process, which includes a land use planning tier and implementation tier, follows BLM planning regulations codified in 43 CFR 1600 and the CEQ regulations codified in 40 CFR 1500.

Making decisions on land use planning involves identifying and clearly defining goals and objectives (desired outcomes) for resources and resource uses, followed by developing the allowable uses and management actions necessary to achieve the goals and objectives. These critical determinations guide future land management actions and subsequent site-specific implementation actions to meet multiple use and sustained yield mandates while sustaining land health. Adaptive management may result in adjustments of goals, objectives, management area prescriptions, and standards and guidelines constraining land uses. This process is discussed in more detail in **Section 1.8.4**, Adaptive Management and Regional Mitigation Strategies. The BLM may also establish criteria in the LUP to guide the identification of site-specific use levels for activities during plan implementation.

The BLM develops and maintains the RMP, which will guide BLM management decisions for BLM-administered lands in the CCD planning area. Subsequent site-specific management decisions will require implementation plan decisions at a smaller geographic scale. Accordingly, implementation consists of the more detailed activity- or implementation-level planning that takes place as part of the

BLM's daily operations. Activity planning can include the development of recreation management plans, allotment management plans (AMPs), and the implementation of other similar plans that authorize, limit, or restrict the use of resources on BLM-administered lands. Implementation planning requires public outreach and NEPA compliance. Unlike LUP decisions, implementation decisions are not subject to protest under the planning regulations. Instead, implementation decisions are subject to various administrative remedies, particularly appeals to the Interior Board of Land Appeals. The Proposed RMP/Final EIS will outline LUP and implementation decisions, if necessary (and clearly distinguish between the two types of decisions).

This Draft RMP/EIS includes sage-grouse habitat management allocations consistent with the Nevada and Northeastern California Greater Sage-Grouse Draft LUP Amendment/EIS and the Bi-State Sage Grouse Draft Forest Plan/LUP Amendment. These plan amendment documents have been released as public drafts and no decisions have been made. Decisions on these documents are expected prior to issuance of the Proposed RMP/Final EIS, and decisions for the Greater Sage-Grouse and bi-state sage grouse efforts will help inform the Proposed RMP/Final EIS. To facilitate district-level planning during the interim period, the CCD has developed a range of alternatives for analysis.

ES.5 ALTERNATIVES

RMP decisions consist of identifying and clearly defining goals and objectives (desired outcomes) for resources and resource uses, followed by developing allowable uses and management actions necessary for achieving the goals and objectives. In accordance with the FLPMA, these determinations guide future land management actions and subsequent site-specific implementation actions to meet multiple use and sustained yield mandates while sustaining land health.

ES.5.1 Purpose of Alternative Development

Alternative development is the cornerstone of the RMP/EIS process. Land use planning and NEPA regulations require the BLM to formulate a reasonable range of alternatives. Established planning criteria, as outlined in 43 CFR Section 1610, guide the alternative development process.

The basic goal of alternative development is to produce distinct potential management scenarios that:

- Address the identified major planning issues
- Explore opportunities to enhance management of resources and resource uses
- Resolve conflicts among resources and resource uses
- Meet the purpose of and need for the RMP

The NEPA regulation at 40 CFR 1501.2(c) states in part that federal agencies shall, "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." Alternative development provides the BLM and the public with an understanding of the diverse ways in which conflicts regarding resources and resource uses might be resolved, and offers the BLM State Director a reasonable range of alternatives from which to make informed decisions. The components and broad aim of each alternative considered for the Carson City District RMP are discussed below.

ES.5.2 Alternative Development Process

Between January 16, 2013, and May 9, 2013, the BLM interdisciplinary team met to develop management goals while small teams met to identify objectives and actions to address the goals within their fields of expertise. The various groups met numerous times throughout this period to refine their work. The interdisciplinary team developed one no action alternative (Alternative A) and four action alternatives. The action alternatives were designed to:

- Address the 27 planning issues compiled from public input, cooperating agency feedback, and Resource Advisory Council input
- Fulfill the purpose and need for the RMP (outlined in **Section 1.1**, Purpose of and Need for the Resource Management Plan)
- Meet the multiple use and sustained yield mandates of the FLPMA

ES.5.3 Alternatives Considered for Detailed Analysis

Summary of Alternatives

The four action alternatives (Alternatives B, C, D, and E) offer a range of possible management approaches. Alternative B generally emphasizes resource use and economic development. Alternative C emphasizes strategies to preserve and protect ecosystem health and resource values. Alternative D includes strategies that address increased demand on BLM-administered lands within urban interface areas. Alternative E is the agency preferred alternative and includes a mix of management actions to resolve issues and offers an intermediate level of protection, restoration, and enhancement of resources. While the goals are the same across alternatives, each alternative contains a discrete set of objectives and management actions constituting separate RMP management scenarios. Each alternative addresses resource program goals to varying degrees, with the potential for different long-range outcomes and conditions. **Table 2-2**, Description of Alternatives A, B, C, D, and E, describes the proposed decisions for each alternative, including goals, objectives, management actions, and allowable uses for individual resource programs (see **Chapter 2**, Alternatives). Figures in **Appendix A**, Alternatives A, B, C, D, and E Figures, provide a visual representation of each alternative.

The relative emphasis given to particular resources and resource uses differs as well, including allowable uses, restoration measures, and specific direction pertaining to individual resource programs. When resources or resource uses are mandated by law or are not tied to planning issues, there are typically few or no distinctions between alternatives.

In some instances, varying levels of management from different resource programs overlap. For example, the BLM proposes management for Hidden Cave, which is within the proposed Grimes Point Archeological Area of Critical Environmental Concern (ACEC). The ACEC management prescribes a no surface occupancy stipulation for fluid mineral leasing under Alternative B; however, the Hidden Cave prescription calls for a controlled surface use stipulation. In such instances where varying management levels overlap, the stricter management prescriptions would apply. However, if the Authorized Officer makes an exception to the stricter prescription, then the less strict management prescription would prevail.

ES.6 MANAGEMENT COMMON TO ALL ALTERNATIVES

Certain allowable uses and management actions from the existing RMPs remain valid and do not require revision. All of the proposed alternatives carry these forward, while other decisions are common only to the action alternatives (Alternatives B, C, D, and E).

Although each alternative is distinct in the resources and resource uses it emphasizes, all five alternatives do the following:

- Comply with state and federal laws, regulations, policies, and standards, including the FLPMA multiple use and sustained yield mandates.
- Implement actions originating from laws, regulations, and policies and conform to day-to-day management, monitoring, and administrative functions not specifically addressed.
- Preserve valid existing rights, which include any leases, claims, or other use authorizations established before a new or modified authorization, change in land designation, or new or modified regulation is approved. Existing fluid mineral leases are managed through Conditions of Approval outlined in the RMP.
- Offer diverse recreational opportunities that foster outdoor-oriented lifestyles and enhance quality of life.
- Apply best management practices (BMPs), standard operating procedures (shown in **Appendix B**, Best Management Practices and Standard Operating Procedures), and other site-specific mitigation measures to all resource uses to promote rapid reclamation, maximize resource protection, and minimize soil erosion.

- Make every effort to avoid adverse impacts if cultural or paleontological sites are found at project locations. Consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation in accordance with the State Protocol Agreement between the BLM and the SHPO, dated January 2012.
- Seek to enhance collaborative opportunities, partnerships, and communications with other agencies and interested parties to implement the RMP, including education and outreach and project-specific activities.
- Follow the procedures outlined in the Air Quality Memorandum of Understanding Among the US Department of Agriculture, US Department of the Interior, and US Environmental Protection Agency, Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions Through the National Environmental Policy Act Process.
- Apply the exceptions, modifications, and waivers for fluid mineral leasing stipulations outlined in **Appendix C,** Fluid Mineral Leasing Stipulations, unless otherwise stated under a specific action.
- Identify and apply mitigation measures and conservation actions in order to achieve land use plan goals and objectives. The sequence of mitigation action will be the mitigation hierarchy (avoid, minimize, rectify, reduce or eliminate over time, compensate), as identified by CEQ (40 CFR 1508.20) and the BLM's Draft Manual Section 1794, Regional Mitigation.
- The ROW avoidance and exclusion areas for renewable energy in this plan are in conformance with the Final Programmatic EIS for Solar Energy Development in Six Southwestern States, as reflected in the acres below in **Table ES-2,** Comparative Summary of Alternatives**.**

ES.7 DESCRIPTION OF ALTERNATIVES

ES.7.1 Alternative A: No Action

Alternative A meets the NEPA requirement in 40 CFR 1502.14 that the BLM consider a no action alternative. This alternative provides the baseline against which to compare the other alternatives. This alternative would continue present management direction and practices based on existing LUPs and LUP amendments. Direction contained in existing laws, regulations, policies, and standards would also continue to be implemented, sometimes superseding provisions of the 2001 Consolidated RMP and subsequent LUP amendments. The current levels, methods, and mix of multiple use and sustained yield management of BLM-administered lands in the CCD decision area would

continue, and resource values would continue to receive attention at present levels.

ES.7.2 Alternative B

Alternative B emphasizes resource use and economic development (e.g., livestock grazing, energy, mineral development, and recreation) in the planning area. This alternative has the fewest restrictions to development and land use. Potential impacts on sensitive resources (e.g., soils and sensitive plant habitat) would be mitigated on a case-by-case basis. Sustainable development concepts are included to maintain economic productivity.

ES.7.3 Alternative C

Alternative C would develop management strategies to preserve and protect ecosystem health and resource values across the planning area, while providing multiple use and sustained yield. Resource development would be more constrained than under Alternatives B, D, or E, and in some cases and in some areas, uses would be excluded to protect sensitive resources. This alternative includes the most special designations, with specific measures to protect or enhance resource values within these areas. This alternative emphasizes active and specific measures to protect and enhance vegetation and habitat for special status species, fish, and wildlife. Likewise, this alternative would reflect a reduction in resource production goals for forage, renewable energy, and minerals. Resource production would generally be secondary to restoring and protecting important habitats, such as sagebrush and riparian areas. Sustainable development principles would focus on preserving ecological functions and environmental values.

ES.7.4 Alternative D

Alternative D emphasizes the increased demand on BLM-administered lands within the urban interface area. The interface is a set of conditions that affect resources and how they can be managed, rather than a geographic place. It is an area or zone where human infrastructure and urban development meet or intermingle with undeveloped BLM-administered land. Enhanced community development through a change in land tenure would be reflected. Alternative D provides for increased management of recreational opportunities in areas of high use while reducing conflict between use of the BLM-administered land and adjacent private landowners. Specific measures would also be applied to manage for increased pressures on the land and a higher demand from the public while minimizing adverse effects on the local communities. Where management is not specified for the urban interface areas, the current management (represented by Alternative A) would continue.

ES.7.5 Alternative E: Agency Preferred

Alternative E, Agency Preferred, represents a mix of management actions that best resolve the issues identified from the assessment of need for changing management, concerns raised during public scoping, and future management

considerations. This alternative would reflect a combination of goals and objectives for all values and programs. This alternative emphasizes an intermediate level of protection, restoration, enhancement, and use of resources and services to meet ongoing programs and land uses. The management strategy would be accomplished by using a variety of proactive and prescriptive measures that would protect vegetation and habitat and would promote the continuation of multiple-use management. Vegetation and special status species habitat would be restored and enhanced to provide for the continued presence of an ecologically healthy ecosystem using a suite of proactive and specific prescriptive management tools and implementation measures. Commodity and development-based resources such as livestock grazing and minerals production would be maintained on BLM-administered lands through specific actions to meet resource goals and protect ecosystem health. Management strategies would continue to provide for recreational opportunities on and access to BLM-administered lands and would take into consideration the result of management actions on the economies of communities within the region and user conflicts.

ES.8 COMPARISON OF ALTERNATIVES

Table ES-2, Comparative Summary of Alternatives, provides a comparative summary of alternatives and compares meaningful differences in allocations among the five alternatives. Figures in **Appendix A** provide a visual representation of the differences between alternatives.

Table ES-2
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Resources					
Wild Horses and Burros					
Herd Areas/Herd Management Areas	1,235,200	996,500	1,090,000	996,500	1,070,200
Visual Resource Management (VRM) (acres)					
VRM Class I	564,100	564,100	981,900	564,100	564,100
VRM Class II	38,300	56,800	733,900	66,400	513,600
VRM Class III	320,600	1,379,400	213,400	185,900	1,383,900
VRM Class IV	385,700	2,803,000	2,874,100	3,986,900	2,341,700
Undesignated	3,494,900	0	0	0	0
Total	4,803,300	4,803,300	4,803,300	4,803,300	4,803,300
Resource Uses					
Livestock Grazing (acres)					
Available for livestock grazing	4,796,600	4,797,200	2,101,300	4,792,600	4,797,200
Not available for livestock grazing	6,700	6,100	2,702,000	10,700	6,100
Special Recreation Management Areas (SRMAs) (acres)					
Alpine	7,600	5,800	10,700	7,400	7,700
Dead Camel Mountain	N/A	16,800	N/A	37,400	37,400
Hungry Valley	N/A	21,600	N/A	21,800	16,200
Sand Mountain	N/A	7,400	3,900	N/A	19,700

Table ES-2
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Walker Lake	60,100	24,000	60,100	N/A	24,600
Wilson Canyon	N/A	500	N/A	500	520
Total	67,700	76,100	74,700	67,100	106,100
Extensive Recreation Management Areas (ERMAs) (acres)					
Bagley Valley	N/A	N/A	2,600	N/A	2,600
Dry Valley	N/A	N/A	84,100	N/A	83,000
Faye-Luther	N/A	N/A	40	600	110
Middlegate	N/A	268,700	195,300	N/A	268,700
Mina	N/A	824,700	486,400	N/A	824,700
Mustang	N/A	400	400	400	400
Pah Rah	N/A	20,000	20,000	20,000	20,000
Peterson	N/A	N/A	42,200	N/A	42,200
Pine Nut	N/A	201,100	201,100	201,100	201,100
Reno Urban Interface	N/A	70,600	91,000	70,400	70,600
Salt Wells	N/A	292,700	113,700	N/A	280,400
Singatse	N/A	N/A	174,900	N/A	174,900
Virginia Mountains	N/A	N/A	68,100	N/A	68,100
Virginia Range	N/A	N/A	48,800	N/A	48,800
102 Ranch	N/A	120	120	120	120
Total	0	1,678,320	1,528,760	292,620	2,085,730
Comprehensive Travel and Transportation (acres)					
Open to motorized and mechanized travel	3,840,300	95,300	1,300	22,700	55,700
Closed to motorized and mechanized travel	6,900	4,300	598,000	1,600	6,200
Closed to motorized travel (mechanized limited to existing routes)	31,800	26,700	1,190,500	30,600	24,100
Limited to existing routes for motorized and mechanized travel	924,300	4,677,000	3,013,500	4,748,400	4,717,300
Fluid Mineral Leasing (acres)					
Closed to fluid mineral leasing	839,100	768,500	2,081,700	737,000	1,007,200
Open to fluid mineral leasing	3,964,200	4,034,700	2,721,500	4,066,200	3,796,000
Open with no surface occupancy (NSO) stipulations	700	404,600	1,039,200	864,800	935,900
Open with controlled surface use (CSU) stipulations	N/A	2,120,200	1,242,800	2,071,400	1,844,900
Nonenergy Leasable Minerals (acres)					
Closed to nonenergy leasable mineral exploration and development	738,800	981,900	2,960,800	981,900	1,785,900
Open for consideration of nonenergy leasable mineral exploration or development	4,064,500	3,821,300	1,842,400	3,821,300	3,017,400
Locatable Minerals (acres)					
Withdrawn from locatable mineral entry	194,900	194,900	194,900	194,900	194,900
Petitioned for withdrawal from locatable mineral entry	3,700	439,600	117,500	440,800	470,600

Table ES-2
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Mineral Materials (acres)					
Closed to mineral material entry	564,200	807,200	3,004,800	807,700	1,778,700
Open to mineral material entry	4,239,100	3,996,100	1,798,400	3,995,600	3,024,600
Lands and Realty (acres)					
Right-of-way (ROW) exclusion areas	564,100	580,000	2,675,800	564,100	605,900
ROW avoidance areas	N/A	1,195,800	369,300	1,226,100	1,448,200
Identified for disposal	179,700	273,500	0	332,500	267,200
Renewable Energy (Solar and Wind) (acres)					
Variance areas for utility-scale solar (greater than 20 megawatts)	905,900	773,400	578,400	672,100	629,900
Exclusion areas for wind energy development	N/A	N/A	2,073,200	N/A	629,900
Avoidance areas for wind energy development	N/A	1,220,200	0	1,228,100	956,900
Special Designations					
Areas of Critical Environmental Concern (ACECs) (acres)					
Black Mountain/Pistone Archaeological District ACEC (Proposed)	N/A	3,400	3,400	3,100	N/A
Carson Wandering Skipper ACEC (Existing)	330	N/A	330	N/A	N/A
Churchill Narrows Buckwheat Botanical ACEC (Proposed)	N/A	6,600	6,600	6,600	6,600
Clan Alpine Greater Sage-Grouse ACEC (Proposed)	N/A	N/A	98,400	N/A	N/A
Desatoya Greater Sage-Grouse ACEC (Proposed)	N/A	N/A	105,100	N/A	N/A
Dixie Valley Toad ACEC (Proposed)	N/A	N/A	410	N/A	N/A
Fox Peak Cultural ACEC (Proposed)	N/A	48,400	48,400	48,400	49,000
Greater Sand Mountain ACEC (Proposed)	N/A	17,000	17,000	N/A	N/A
Grimes Point Archaeological District ACEC (Proposed)	N/A	15,900	15,900	15,900	2,100
Incandescent Rocks Scenic ACEC (Existing)	1,100	1,100	1,100	1,100	1,100
Lassen Red Rock Scenic ACEC (Proposed)	N/A	N/A	800	N/A	N/A
Namazii Wunu Cultural ACEC (Proposed)	N/A	158,300	158,300	N/A	N/A
Pah Rah High Basin Petroglyph ACEC (Existing)	3,900	5,300	5,300	5,300	5,300
Pine Nut Bi-State Sage-Grouse ACEC (Proposed)	N/A	N/A	100,400	N/A	N/A
Ruhenstroth Paleontological ACEC (Proposed)	N/A	2,300	2,300	2,300	2,300
Pine Nut Mountains Williams Combleaf Botanical ACEC (Proposed)	N/A	N/A	330	330	N/A
Sand Springs Desert Study Area ACEC (Proposed)	N/A	N/A	50	N/A	N/A
Steamboat Buckwheat Botanical (Proposed)	N/A	N/A	80	N/A	N/A
Steamboat Hot Springs Geyser Basin (Existing)	40	N/A	N/A	N/A	N/A
Stewart Valley Paleontological (Existing)	15,900	15,900	15,900	N/A	15,900

Table ES-2
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Tagłm aša Cultural ACEC (Proposed)	N/A	81,800	81,800	81,800	N/A
Virginia City National Landmark Historic District (Proposed)	N/A	14,700	14,700	14,700	N/A
Virginia Mountains Greater Sage-Grouse ACEC (Proposed)	N/A	N/A	109,200	N/A	N/A
Virginia Range Williams Combleaf Botanical (Existing)	470	470	470	470	470
Total	21,800	371,170	786,270	180,000	82,770
Wilderness Study Areas (WSAs) (acres)					
Augusta Mountains	46,400	46,400	46,400	46,400	46,400
Burbank Canyons	12,700	12,700	12,700	12,700	12,700
Carson Iceberg	500	500	500	500	500
Clan Alpine	195,700	195,700	195,700	195,700	195,700
Desatoya Mountains	42,200	42,200	42,200	42,200	42,200
Gabbs Valley Range	80,500	80,500	80,500	80,500	80,500
Job Peak	89,400	89,400	89,400	89,400	89,400
Slinkard	2,400	2,400	2,400	2,400	2,400
Stillwater Range	94,200	94,200	94,200	94,200	94,200
Total	564,000	564,000	564,000	564,000	564,000
National Trails on BLM -administered land (miles)					
Pony Express National Historic Trail	92	92	92	92	92
California National Historic Trail	25	25	25	25	25
Eligible or Suitable Wild and Scenic River (WSR) Study Segments (acres crossing BLM-administered land)[2]					
East Fork Carson River Segment 1	N/A	N/A	400	400	400
East Fork Carson River Segment 2	N/A	N/A	400	400	400
East Fork Carson River Segment 3	N/A	N/A	600	600	600
Total	N/A	N/A	1,400	1,400	1,400
Back Country Wildlife Conservation Areas (acres)					
Gillis West	N/A	N/A	42,500	N/A	N/A
Gillis East	N/A	N/A	63,900	N/A	N/A
Gabbs Valley Range North	N/A	N/A	50,800	N/A	N/A
Gabbs Valley Range South	N/A	N/A	154,400	N/A	N/A
Pilot Mountains	N/A	N/A	93,700	N/A	N/A
Excelsiors	N/A	N/A	125,800	N/A	N/A
Fairview	N/A	N/A	131,400	N/A	N/A
Sand Springs	N/A	N/A	53,700	N/A	N/A
Clan Alpine	N/A	N/A	101,600	N/A	N/A
Total	N/A	N/A	817,800	N/A	N/A
Lands with Wilderness Characteristics (acres)					
Agai Pah Hills	N/A	N/A	27,200	N/A	27,200
Chukar Ridge	N/A	N/A	29,100	N/A	29,100
Excelsior North	N/A	N/A	54,400	N/A	54,400
Excelsior South	N/A	N/A	49,200	N/A	49,200

Table ES-2
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Finger Rock	N/A	N/A	41,500	N/A	N/A
Job South	N/A	N/A	77,400	N/A	77,400
Lyon Peak	N/A	N/A	16,300	N/A	N/A
Monte Cristo North	N/A	N/A	9,800	N/A	N/A
Peterson Mountain	N/A	N/A	16,300	N/A	N/A
Rawe Peak	N/A	N/A	39,800	N/A	39,800
Stillwater Additions	N/A	N/A	19,100	N/A	19,100
Tule Peak	N/A	N/A	36,400	N/A	36,400
Total	N/A	N/A	416,500	N/A	332,600

[1]Acres were GIS generated and rounded to the nearest hundred acres. Includes BLM-administered and non-BLM-administered land in the CCD and outside of the CCD where the associations make up larger geographic areas for managing wild horses and burros.
[2]Alternative A identifies three segments of the East Fork Carson River as eligible for inclusion in the National Wild and Scenic River System (NWSRS) whereas Alternatives C, D, and E would determine these three river segments as suitable for inclusion in the NWSRS. Alternative B would determine that the eligible segments are not suitable for inclusion in the NWSRS and release them from interim management afforded to eligible segments.

ES.9 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

The following alternatives were considered but eliminated from detailed study because they do not meet the purpose of and need for the RMP (see **Section 1.1**) or because they do not fall within technical, legal, or policy constraints for BLM resources and resource uses.

Implement Recreation-Centered Alternative

An alternative that proposes to meet increased demand for motorized recreation on BLM-administered lands within the planning area was considered but dismissed from detailed analysis. Because the FLPMA mandates that BLM-administered lands be managed for multiple use and sustained yield, alternatives that promote exclusive use or maximum development, production, or protection of one resource at the expense of other resources or resource uses were eliminated from further consideration.

Each proposed alternative allows for some level of support, protection, or use of all resources in the planning area. In some instances, the alternatives include various considerations for eliminating or maximizing individual resource values or uses in specific areas where conditions warrant. In addition, one of the main considerations for Alternative D is enhanced recreational opportunities within the urban interface area where the majority of the recreation use is occurring in the CCD.

Close Entire Decision Area to Livestock Grazing

The BLM considered but did not analyze in detail an alternative that would make all acres of BLM-administered land in the planning area unavailable for livestock grazing because such an alternative is not reasonable, viable, or necessary in light

of resource conditions and BLM's consideration of a range of alternatives that includes a meaningful reduction in livestock grazing. Livestock grazing is a well-established use within the BLM's multiple-use mandate under the FLPMA and a traditional use of the planning area. The BLM issues and administers grazing leases or permits in the planning area in accordance with the laws applicable to the issuance and administration of such leases and permits on other lands under the jurisdiction of the BLM.

Management of livestock grazing in the RMP, including proposed reductions and closures, were based on criteria developed for each alternative. The criteria outlined include, but are not limited to, allotments not meeting land health standards, allotments containing sage-grouse habitat (when habitat makes up 50 percent or more of the allotment), ACECs, and habitat for threatened and endangered species. Additional criteria were outlined to adjust forage allocations for livestock. Some of these criteria include areas not accessible to livestock, unstable or highly erodible soils, areas more than 2 miles from water, unique habitats such as jurisdictional wetlands and springs, and areas that receive high levels of recreational use.

During this planning process, including public scoping, the BLM did not identify issues or conflicts that can only be resolved through the elimination of all livestock grazing throughout the decision area. Where appropriate, the preclusion or adjustment of livestock use within an allotment or area was incorporated into the alternatives to address issues noted above. This resulted in a reduction in animal unit months (AUMs) and the amount of BLM-administered land available for livestock grazing in all alternatives, with the greatest meaningful reduction in Alternative C.

In all alternatives, the BLM would be able to adjust livestock grazing permits (e.g., AUMs, acres, and period of use) based on monitoring, land health assessments, and Land Health Standards. Permit terms and conditions could also be modified in all alternatives. For these reasons, the no grazing alternative for the entire planning area was dismissed from further consideration.

ES.10 Comparison and Summary of Alternatives and Environmental Consequences

ES.10.1 Resources

Air

RMP air quality management objectives and actions under all alternatives include maintaining compliance with state and federal requirements and programs. This includes Nevada Bureau of Air Quality Planning rules, which prohibit the use, maintenance, or construction of roadways without taking appropriate dust abatement measures (Nevada Administrative Code 445B.22037); the Smoke Management Memorandum of Agreement, which requires reporting size, date of burn, fuel type, and estimated air emissions for each prescribed burn (USDA, US

DOI, and State of Nevada 2010); and Nevada and California prescribed burn permitting requirements. Alternatives B through E would implement BMPs and mitigation measures on a case-by-case basis to minimize adverse impacts on air quality from BLM and BLM-authorized activities.

Climate

Compared to Alternative A, Alternatives B, C, D, and E would be more proactive in assessing current and potential climate change-induced threats on BLM special status species and ecosystems functions by prioritizing and conserving habitat to ensure adequate conditions. Alternatives B and D would implement adaptive management strategies to maintain ecosystem resiliency where human-caused ecosystem stressors have crossed thresholds, while Alternatives C and E would manage to reduce human-caused ecosystem stressors and promote habitat connectivity and integrity by working cooperatively with multiple agencies and stakeholders to establish and maintain a network of climate monitoring sites and stations.

Soils and Water Resources

Soils

Alternatives C, D, and E would prohibit surface disturbance on slopes greater than 40 percent. Alternative B would require an erosion control strategy. Alternative C provides for improving biological crusts and vegetation and would possibly restrict uses to minimize breaking up or shearing of crusts.

Water Resources

Under all alternatives, water resources would receive various levels of protection due to management in accordance with the Clean Water Act and other applicable state and federal water quality standards. Site-specific mitigation and BMPs for surface-disturbing activities would further reduce impacts on water resources. Alternatives A and B would not manage priority watersheds to include use restrictions that would protect resource values. Alternatives C, D, and E would protect priority watersheds through implementation of use restrictions applicable to certain minerals and rights-of-way. Alternative C would emphasize the most use restrictions by closing priority watersheds to mineral material disposals and nonenergy solid mineral leasing, applying no surface occupancy to fluid mineral leasing, and closing areas to rights-of-way. Alternatives D and E would provide similar protective measures but would allow some uses based on a set of management criteria.

Vegetation

Vegetation – Forest and Woodlands

Alternative B proposes to treat the most acres annually by removing up to 8,500 acres of low density pinyon-juniper and thinning up to 6,500 acres of medium and high density pinyon-juniper. Alternative C would have the fewest acres of pinyon-juniper management, removing up to 3,500 acres of low density

pinyon-juniper and thinning up to 1,500 acres of medium and high density pinyon-juniper. The potential to improve woodland health in the short term would be higher under Alternatives B and E. However, these alternatives would create more disturbances to wildlife habitat.

Vegetation – Rangeland

Alternatives C, D, and E would prioritize vegetative treatment in areas that are in the "at-risk" community phase and have not yet passed an ecological threshold. Treatment would maintain and improve healthy diverse vegetative communities with species appropriate to the site potential, while providing for multiple use and sustained yield. Alternative C would require use of native species for revegetation efforts, which could result in lower revegetation success rates in the short term. Overall rangeland health would improve under these alternatives. Alternative B would focus vegetative treatment in areas that have the greatest potential to produce higher yields. Higher yields would increase potential for livestock forage but may decrease vegetation diversity. Alternatives C, D, and E would promote maintenance of large, intact sagebrush stands to varying degrees, while Alternative B would allow for removal of stands, resulting in fewer large stands and habitat fragmentation within sagebrush vegetation communities.

Vegetation – Restoration and Rehabilitation

Alternative C would focus stabilization and rehabilitation efforts to reestablish high-value wildlife habitat, improving the potential of wildlife habitat recovery. Alternative C would also have lower rehabilitation success potential in the short term, as only native plant species would be used. Alternative D would focus efforts to reestablish vegetation near urban interface areas in order to protect these areas from future wildfire events by using fire-resistant species. The potential for protection of urban interface areas would be improved. Alternative E would serve to protect urban interface areas, while providing wildlife habitat. Rehabilitation success would potentially be higher under this alternative depending on the site and other conditions. Alternative B would focus rehabilitation efforts on preventing the establishment and spread of invasive species. Potential revegetation success in the short term would be the highest under this alternative; however, species diversity may be limited and efforts may not provide for restoration of wildlife habitat.

Vegetation – Riparian Wetlands

Alternatives C, D, and E would improve riparian and wetland lotic and lentic areas (Proper Functioning Condition [PFC] and functioning at risk with an upward trend) to 85 percent to attain PFC over the next 20 years. Riparian areas would improve; however, certain use restrictions would be implemented to reach PFC objectives. Alternative C would propose the most use restrictions. Alternative B would improve riparian and wetland lotic and lentic areas by managing PFC and functioning at risk with an upward trend to 75

percent, progressing towards or attaining PFC. The BLM would implement fewer use restrictions under Alternative B than under Alternatives C, D, and E.

Vegetation – Invasive, Nonnative Species, and Noxious Weeds
All alternatives would coordinate with local governments and weed districts and would utilize multiple control methods to control invasive and noxious species, increasing the potential to improve rangeland health and achieve resource goals and objectives. Alternative C would have more restrictive control measures.

Fish and Wildlife
Alternatives C, D, and E would ensure wildlife habitat would be maintained and improved. Alternative B would focus on maintaining existing wildlife habitat values. Alternatives C and E would also apply a no surface occupancy stipulation for fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed and BLM sensitive aquatic and semi-aquatic species, increasing the potential to protect these areas. Alternatives B and D would apply a controlled surface use stipulation for fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed aquatic and semi-aquatic species. Alternatives B and D would provide a lower degree of protection but would allow flexibility for fluid minerals leasing. Alternatives B, D, and E would manage fish and wildlife priority habitat as rights-of-way avoidance areas, while Alternative C would manage priority habitat as exclusion areas, affording a higher degree of protection of resource values by precluding rights-of-way development.

Special Status Species
Alternatives B, C, D, and E would protect special status species and their habitat to varying degrees by implementing use restrictions, seasonal restrictions, and buffer zones, and by designating ACECs specifically for protection of special status species habitat. Alternatives B and D propose three ACECs, Alternative C proposes five ACECs and Alternative E proposes two ACECs. Special status species and related habitat would receive the highest degree of protection under Alternative C due to more stringent use restrictions. Alterative B would provide the fewest protections as compared to the other alternatives.

Wild Horses and Burros
Each alternative would manage differing acreages as herd areas and herd management areas. Alternative A would manage 1,235,200 acres, the highest number of acres. Alternatives B and D would manage 996,500 acres, the lowest number of acres. Alternatives C and D would manage 1,090,000 and 1,070,200 acres, respectively. The number HMAs is reduced under all alternatives compared to Alternative A.

Wildland Fire Ecology and Management
All alternatives propose to conduct fire management actions in a manner that is consistent with the primary objective of firefighter and public safety, regardless of whether they are related to fire suppression, fuels treatment, community

education and assistance, or emergency stabilization and rehabilitation. Alternatives B and D would apply a full range of fire management activities as outlined in the fire management plan, and options would be utilized to protect all identified values at risk. Alternative C proposes minimum impact suppression tactics such that the environmental impacts of emergency fire management methods would be no greater than necessary to meet fire management objectives. Alternative E would be similar to Alternatives B and D; however, values at risk would also include efforts to sustain healthy ecosystems within acceptable risk levels. The potential for wildland fire spread and loss of resource values would be lower under Alternatives B, D, and E.

Cultural Resources

Alternatives B and D would protect cultural and historic values of rock art sites within 0.125 mile by prohibiting surface disturbance and visual intrusions that adversely affect values through the evaluation of eligibility for the National Register of Historic Places. Alternative E would protect these areas with a 0.5 mile buffer, while Alternative C would protect these areas within 1 mile. Prohibiting disturbance would limit the potential for uses on public lands within these distances. Alternatives B, D, and E would protect National Register-listed properties and districts, National Historic Landmarks, and Traditional Cultural Properties that are listed, eligible, or known but not yet formally designated for the National Register as right-of-way avoidance areas. Alternative C would manage these areas as right-of-way exclusion areas. Alternative A proposes one cultural ACEC, Alternative B proposes eight cultural ACECs, Alternative C proposes nine cultural ACECs, Alternative D proposes six cultural ACECs, and Alternative E proposes three cultural ACECs. All ACECs would be managed with varying degrees of use restrictions.

Paleontological Resources

All action alternatives would manage paleontological resources to prioritize research needs, facilitate educational needs, and protect significant sites through designation of ACECs. Alternatives A and D propose one ACEC, while the other alternatives propose two ACECs to protect paleontological resources. Resource uses would be restricted within designated ACECs.

Visual Resources

Alternative C would have the most acres managed as VRM Classes I and II. These areas would have a greater number of use restrictions applied to achieve VRM objectives. Alternative D would propose the most acres under VRM Class IV; this alternative would have the fewest use restrictions, resulting in the potential for more intrusions within landscape settings.

Lands with Wilderness Characteristics

Actions for managing areas identified as having lands with wilderness characteristics apply under Alternatives C and E only. The BLM would manage 416,500 acres within 12 inventoried units specifically for wilderness

characteristics under Alternative C and 332,600 acres within 8 inventoried units under Alternative E. Under Alternatives C and E, the actions outlined for management of these areas would provide protection for the indicators of wilderness characteristics by limiting or closing activities and development within these areas.

Cave and Cave Resources

Alternatives C, D, and E would protect culturally significant caves by implementing fuel treatment programs. Alternatives A and B propose fewer protective measures, making culturally significant caves more vulnerable to wildfire.

ES.10.2 Resource Uses

Livestock Grazing

Alternative C proposes the highest number of acres (2,702,000) as not available for livestock grazing. Alternatives B and E each propose 6,100 acres as not available. Rangeland not available for grazing would reduce the income potential and increase operational costs to livestock producers. Other impacts on grazing would include loss of forage from wildfire, wild horse and burro management, and surface disturbance from minerals and energy development. Emergency stabilization and rehabilitation efforts following wildfires would close burned areas to livestock grazing while seeding and/or natural vegetation recovery of areas burned become established.

Geology and Minerals

Locatable Minerals

All alternatives propose 194,900 acres as withdrawn from locatable mineral entry. Alternative C proposes to petition 117,500 acres for withdrawal from locatable mineral entry. Alternative E proposes to petition 470,600 acres for withdrawal from locatable mineral entry. Areas withdrawn from locatable mineral entry would not be available for locatable exploration and development. Acres proposed for petition are in addition to currently withdrawn lands.

Nonenergy Leasable Minerals

Alternative C proposes 2,960,800 acres be managed as closed to nonenergy leasable exploration and development and is, therefore, the most restrictive for development of nonenergy leasable minerals. Alternative E proposes the second highest number of acres (1,785,900 acres) be managed as closed to nonenergy leasable exploration and development.

Leasable (Fluid Minerals)

Alternative D proposes the highest number of acres (4,066,200 acres) be managed as open to fluid mineral leasing, representing the highest number of acres available as open. Alternative B proposes the second highest acreage (4,034,700 acres) be managed as open. Alternative C would close 2,081,700

acres to fluid mineral leasing to protect resource values, and Alternative E would close 1,007,200 acres

Mineral Materials

Alternatives A, B, and D propose the highest number of acres as available for mineral entry (4,239,100 acres, 3,996,100 acres, and 3,995,600 acres, respectively). Proposed closed areas are highest under Alternatives C and E (3,004,800 acres and 1,778,700 acres, respectively). Alternative C would be the most restrictive for mineral material development.

Recreation and Visitor Services

Maintaining existing and designating new Special Recreation Management Areas (SRMAs) would protect recreation resources and would encourage appropriate recreation use in these areas. Alternatives A and D propose the lowest acreage for designation as SRMAs. Recreational experiences and opportunities would be more limited in these areas. Alternative E proposes the highest number of acres as SRMAs and the most areas to be designated as SRMAs. Alternative E also proposes the highest number of acres to be managed as Extensive Recreation Management Areas (ERMAs) and the most areas to be designated as ERMAs. Recreation user experiences would potentially increase under this alternative.

Comprehensive Travel and Transportation Management

Motorized and mechanized travel use would be open on the greatest number of acres (3,840,300) under Alternative A. More areas would be available to unrestricted travel under this alternative, resulting in more surface disturbance and resource damage. Alternative C would close the highest number of acres (598,000) to motorized and mechanized use in order to protect resource values. Under Alternatives B through D, the majority of the planning area is proposed to be managed as limited to existing routes for motorized and mechanized travel. Alternatives D and E propose 4,748,400 and 4,717,300 acres, respectively, to be managed as limited to existing routes for motorized and mechanized travel.

Lands and Realty

Alternative C proposes the highest acreage as right-of-way exclusion areas (2,675,800 acres) followed by Alternative E (605,900 acres). Alternatives A, B, and D propose a similar number of acres delineated as exclusion areas; rights-of-way would not be allowed in these areas. Alternative E proposes the highest number of avoidance acres (1,448,200 acres), followed by Alternatives D and B. The lands identified for disposal are similar under alternatives and range from 179,700 acres under Alternative A to 332,500 acres under Alternative D (except for Alternative C where no lands are identified for disposal).

Renewable Energy

Alternative A identifies 905,900 acres as variance areas for utility-scale (greater than 20 megawatts) solar development, followed by Alternative B with 773,400 acres identified. Alternative C represents the lowest number of acres (578,400)

as solar variances areas. Alternatives A, B, and D propose no wind energy exclusion areas, while Alternatives C and E propose 2,073,200 acres and 629,000 acres, respectively, as exclusion areas. Alternatives B and D propose similar acreages (1,220,200 and 1,228,100, respectively) as avoidance areas for wind energy development. Alternative E proposes the fewest acres as avoidance areas (956,900 acres).

ES.10.3 Special Designations

Areas of Critical Environmental Concern

In general, alternatives that propose a higher number of ACECs or ACEC acreage would provide more protection of resource values within these areas. Nevertheless, management restrictions vary for each ACEC and each alternative, and protections may already be in place (e.g., Endangered Species Act) to protect a sensitive resource so the number of ACECs or number of acres managed as ACECs may not convey the actual level of protection. Alternative A proposes 5 ACECs and 21,800 acres for ACEC designation, which is the fewest number and lowest acreage of all alternatives. Alternative C proposes 23 ACECs and 786,270 acres, followed by Alternative B with 13 ACECs and 371,170 acres. Alternative C proposes the greatest number of ACECs and the most restrictions on uses within the ACECs. Therefore, Alternative C provides the highest level of protection of resource values. Alternatives D and E offer an intermediate level of protection of resources.

Back Country Byways

Alternatives B, D, and E would modify the designation of the Fort Churchill Back Country Byway, while Alternative C would rescind the designation. Alternatives B, C, and E propose to designate the Marietta Back Country Byway and the New Pass to Hawthorne Back Country Byway; however, Alterative C would focus management to maintain natural settings for visitor viewing, while the other alternatives would include historical uses.

National Trails

All alternatives would protect National Historic and Recreation Trails. Alternatives B and D would manage National Historic Trails utilizing a National Historic Trail management corridor of 0.25 miles from the center line of the trail. Alternative C proposes a 2.5-mile management corridor, while Alternative E proposes a 1-mile management corridor. Potential impacts on the trail setting would be higher under Alternatives B and D as compared to Alternatives C and E. The National Historic Trail corridor would be open to mineral material sales under Alternatives B and D and closed under Alternative C. Alternative E would close high potential historic sites and high potential route segments to mineral material sales. Alternatives B and D would have a higher potential for disturbance to National Historic Trails compared to other alternatives. The BLM will maintain a list of trails that have been authorized by Congress which

are under study and trails that have undergone the study process and are either recommended as suitable or not suitable.

Wild and Scenic Rivers

Alternatives C, D, and E would manage identified Wild and Scenic River segments to preserve and enhance outstandingly remarkable values as suitable for Congressional designation as part of the National Wild and Scenic River System. Use restrictions would be implemented to preserve outstandingly remarkable values. Alternative B would identify segments as not suitable and would allow for more multiple use and sustained yield.

Wilderness Study Areas

Management of all nine designated WSAs would be the same under all alternatives. Wilderness values would be protected in accordance to the BLM wilderness policy and handbook.

Back Country Wildlife Conservation Areas

Alternative C would delineate nine areas totaling 817,800 acres as Back Country Wildlife Conservation Areas to provide for high quality fish and wildlife habitat or for significant recreational opportunities, such as hunting and fishing. Proposed management would include safeguarding fish and wildlife habitat. Proposed management under Alternative C would include restricting livestock grazing to prescriptive grazing and closing delineated areas to mineral materials and non-energy mineral leasing, as well as applying no surface occupancy restrictions for fluid minerals. Back Country Wildlife Conservation Areas are not proposed under any other alternatives.

ES.10.4 Social and Economic Features

Tribal Interests

All alternatives propose actions that ensure tribal issues and concerns are given consideration and that continue the BLM's ongoing working relationship with Native American tribes. All alternatives contain actions that would protect cultural properties, places, or objects important to the tribes to the degree possible under law, regulations, and guidance. Alternatives C and E would evaluate areas that qualify as Traditional Cultural Properties and nominate National Register of Historic Places-eligible properties. Alterative D would be similar to Alternatives C and E but would only evaluate areas within the urban interface area. Alterative B would not evaluate areas to determine if they qualify as Traditional Cultural Properties. Protection of Native American values would be higher under Alternatives C and E.

Social and Economic Conditions

Alternative A would maintain current management practices and would not induce new changes to socioeconomic indicators. Actions proposed under Alternative B would promote the use of public lands by proposing fewer use restrictions, special stipulations, and exclusion or closed areas. Alternative B

would provide the highest potential and opportunity for economic development. Alterative C would include the most use restrictions to protect sensitive resources, which would limit economic growth and development. Alternatives D and E would provide a mix of management strategies in order to provide for multiple use and sustained yield while protecting important resource values. Potential for economic development and improved socioeconomic health under these alternatives would be higher than Alternative C but would not be as robust as Alternative B.

Public Health and Safety

All alternatives would protect public safety by providing public safety information, signage, and protection from unexploded ordnance, and by working with the Abandoned Mine Land program and the Nevada Division of Minerals. All alternatives would also prohibit the discharge of firearms at the American Flat Mill, Pine Nut Road #2, and Moonrocks.

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Chapter 1

Introduction

CHAPTER 1
INTRODUCTION

The United States (US) Department of the Interior (DOI), Bureau of Land Management (BLM) has prepared this draft resource management plan (RMP) and environmental impact statement (EIS). This document provides:

- Consolidated direction for managing public lands under the jurisdiction of the BLM Carson City District (CCD)
- Analysis of the environmental effects that could result from the implementation of the alternatives addressed in the RMP

The new RMP will replace the Carson City Field Office Consolidated RMP (BLM 2001c), including amendments.

In accordance with the Federal Land Policy and Management Act (FLPMA) of 1976 (43 US Code [USC] 1701 et seq.) and BLM Land Use Planning Handbook, H-1601-1 (BLM 2005a), this RMP provides planning-level guidance for the management of resources and designation of uses on BLM-administered lands. The RMP was developed in coordination with federal, state, and local governments, Native American tribes, and interested members of the public. Rather than providing entirely new management direction, this RMP carries forward existing management strategies where appropriate while incorporating updated information and regulatory guidance made available since the adoption of the previous RMP. New management direction in the RMP also addresses land use issues and conflicts that have emerged since the previous RMPs were adopted.

The EIS incorporated as part of this document meets the requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ 1978) regulations for implementing the NEPA (40 Code of Federal Regulations [CFR] 1500-1508), the BLM's Land Use Planning Handbook, H-

1601-1 (BLM 2005a), and the requirements of the BLM's NEPA Handbook, H-1790-1 (BLM 2008a).

1.1 PURPOSE AND NEED FOR THE RESOURCE MANAGEMENT PLAN

According to the FLPMA, the BLM shall "develop, maintain, and, when appropriate, revise land use plans" (43 USC 1712 [a]). Accordingly, the purpose of this RMP is to ensure that BLM-administered lands in the planning area are managed in accordance with the multiple use and sustained yield principles mandated by the FLPMA. With the support of new data, this RMP provides planning-level management strategies that are expressed in the form of goals, objectives, allowable uses, and management actions necessary to achieve the preferred conditions for resources and resource uses. The RMP neither prioritizes certain projects, nor describes how particular programs would be implemented; rather, those decisions are deferred to more detailed implementation-level planning.

The need for the RMP is to address policies and resource issues that have arisen since the adoption of the previous RMP. Issues prompting the need for this RMP include the following:

- Management of energy resources, including renewable resources such as geothermal, wind, and solar
- Management of resources for which there is a high demand but limited supply
- Management for the protection of sensitive resources
- Management of increased conflicts between competing resource values and land uses, particularly as a result of increased off-highway vehicle (OHV) use
- Management of the urban interface in light of expanding urban areas throughout the planning area

The BLM prepared this document using a collaborative planning process, which included an interdisciplinary approach for fulfilling the need for new planning data. The BLM prepared the following plans, studies, and reports to support this RMP:

- CCD RMP/EIS Preparation Plan (March 2012)
- CCD RMP/EIS Collaboration and Communication Plan (May 2012)
- Scoping Summary Report (December 2012)
- Travel Management Workshop Report (January 2013)
- Socioeconomic Baseline Report (January 2013)
- Socioeconomic Report and Addendum (February 2013)

- Wild and Scenic River Eligibility Report (February 2013)
- Areas of Critical Environmental Concern Report (March 2013)
- Analysis of the Management Situation (April 2013)
- Lands with Wilderness Characteristics Report (July 2014)
- Mineral Potential Report (June 2013)
- Foreseeable Development Scenario for Solar, Wind, and Biomass (RFD) Report (June 2013)
- Air Analysis Framework Report (June 2013)
- Cultural Overview/Synthesis Report completed (Draft April 2014)
- Ethnographic Report (December 2013)

As new policy requirements, planning issues, and scientific information emerge over time, the BLM may review the RMP and consider the need for updated management prescriptions and resource allocations. Per CFR Regulations 43 CFR 1610.4-9, the BLM is required to monitor and evaluate land use plans (LUPs) such as RMPs. Evaluation is the process that determined if LUP decisions remain relevant, effective, need revision, be dropped or require new decisions. The LUP evaluation process is described in H-1601.1. The BLM may only change adopted LUP decisions through the amendment or revision process, which includes adherence to the environmental review requirements under NEPA.

1.2 DESCRIPTION OF THE PLANNING AREA

The CCD planning area is comprised of approximately 9 million acres of public and private lands in Carson City, Churchill, Douglas, Lyon, Mineral, Nye, Storey, and Washoe Counties in western Nevada and portions of Alpine, Lassen, and Plumas Counties in eastern California. The BLM administers nearly half of the land (4.8 million acres) in the planning area. The remaining area is composed of US Department of Agriculture (USDA), Forest Service (Forest Service); Bureau of Reclamation (Reclamation); Department of Energy (US DOE); Department of Defense (US DOD); State of Nevada; State of California; private lands; and tribal lands governed by sovereign Native American tribes in consultation with the Bureau of Indian Affairs (BIA). See **Figure 1-1**, Carson City District RMP Planning Area, and **Table 1-1**, Land status within the Carson City District RMP Planning Area.

Management direction and actions provided in the RMP apply only to the decision area, which is comprised of BLM-administered surface lands in the planning area and federal mineral estate lying beneath other surface ownership but administered by the BLM (split estate). A split estate can be either federal surface/private minerals or private surface/federal minerals. Where the BLM manages the surface, BLM authority extends beyond mineral exploration and

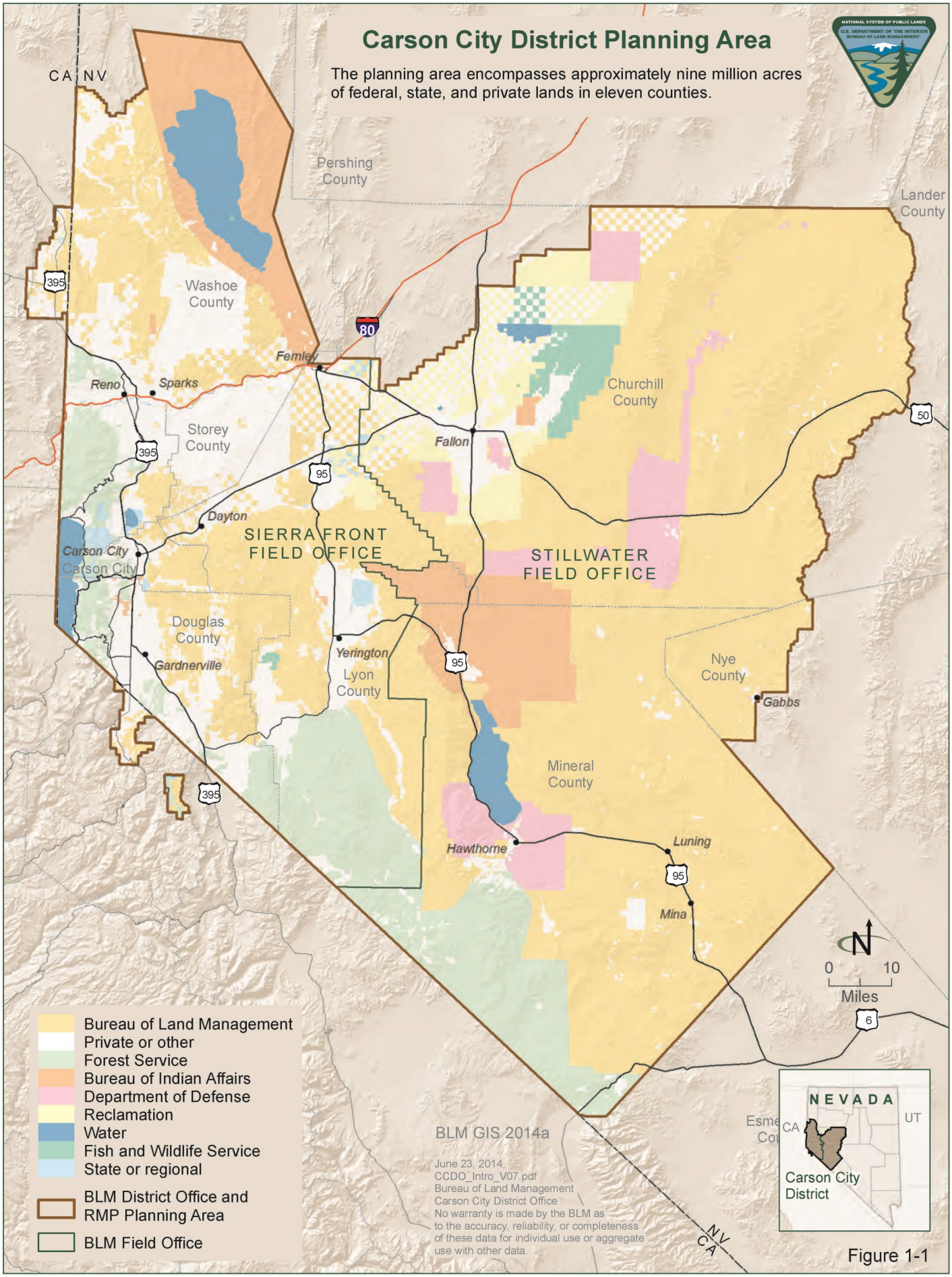
Carson City District Planning Area
The planning area encompasses approximately nine million acres of federal, state, and private lands in eleven counties.
CA NV
Pershing County
Lander County
Washoe County
Churchill County
Storey County
Douglas County
Lyon County
Nye County
Mineral County
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Hawthorne
Luning
Mina
Gabbs
80
395
95
50
6
0 10
Miles
Bureau of Land Management
Private or other
Forest Service
Bureau of Indian Affairs
Department of Defense
Reclamation
Water
Fish and Wildlife Service
State or regional
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014a
June 23, 2014,
CCDO_Intro_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
NEVADA
CA
UT
Carson City District
NV
CA

Figure 1-1

Table 1-1
Land Status within the Carson City District RMP Planning Area

Agency	Acres
Bureau of Land Management	4,803,300
Forest Service (Nevada and California)	866,900
Bureau of Reclamation	304,000
Bureau of Indian Affairs	653,900
US Fish and Wildlife Service	103,900
Department of Defense	360,100
State of Nevada (including Nevada Department of Wildlife)	24,200
State of California	2,300
Private	1,507,900
Other (local, regional, water bodies)	312,600
Total	*8,939,100*

Source: BLM GIS 2014a

development and includes other efforts, such as travel and wildlife management. When it comes to BLM-administered surface and private minerals, the BLM has limited authority over public access for mineral exploration and development. On split estates where the surface is managed by another federal agency, the agency managing the surface establishes the mineral leasing requirements, which the BLM subsequently adopts.

1.3 PLANNING PROCESS

The planning process consists of developing, approving, maintaining, and amending or revising an RMP. The BLM carries out this process under the authority of Section 202(f) of the FLMPA and Section 202(c) of the NEPA. The process, which includes a land use planning tier and implementation tier, follows BLM planning regulations codified in 43 CFR 1600 and the CEQ regulations codified in 40 CFR 1500.

Land use planning decisions consist of identifying and clearly defining goals and objectives (desired outcomes) for resources and resource uses, followed by developing allowable uses and management actions necessary for achieving the goals and objectives. These critical determinations guide future land management actions and subsequent site-specific implementation actions to meet multiple use and sustained yield mandates while sustaining land health. Adaptive management may result in adjustments of goals, objectives, management area prescriptions, standards and guidelines constraining land uses. This process is discussed in more detail in **Section 1.8.4**, Adaptive Management and Regional Mitigation Strategies. The BLM may also establish criteria in the land use plan to guide the identification of site-specific use levels for activities during plan implementation.

In the land use planning tier, the BLM develops and maintains the RMP, which will guide BLM management decisions for BLM-administered lands in the CCD planning area. Subsequent site-specific management decisions require implementation plan decisions at a smaller geographic scale. Accordingly, the implementation tier consists of the more detailed activity or implementation-level planning that takes place as part of the BLM's daily operations. Activity planning can include the development of recreation management plans, allotment management plans (AMPs), and the implementation of other similar plans that authorize, limit, or restrict the use of resources on BLM-administered lands. Implementation planning requires public outreach and NEPA compliance. Unlike LUP decisions, implementation decisions are not subject to protest under the planning regulations. Instead, implementation decisions are subject to various administrative remedies, particularly appeals to the Interior Board of Land Appeals. The Proposed RMP/Final EIS will outline LUP and implementation decisions, if necessary (and clearly distinguish between the two types of decisions).

In preparing this RMP, the BLM will follow a standardized process. See **Table 1-2**, BLM Planning Process. As part of the planning process, the BLM will sequentially publish three documents for the CCD: a draft RMP/EIS, a proposed RMP/final EIS, and the approved RMP/Record of Decision (ROD). Based on input from public outreach, federal, state, local agencies and tribes, cooperating agencies, and other stake holders, the approved RMP/ROD will incorporate the following major components:

- Resource conditions goals and objectives
- Range of alternatives for allowable resource uses, including desired levels of resource production or use to be maintained
- Range of alternatives for prescriptions for the management of resources and resource uses
- Range of alternatives for land areas to be managed for limited, restricted, or exclusive resource uses
- Range of alternatives for land areas to be transferred to or from BLM administration
- Management program constraints, general practices, and protocols
- General implementation schedule
- Expectations and intervals for reviewing the RMP

Table 1-2
BLM Planning Process

BLM Planning Process Step	Description	Timeframe
Step 1—Identify planning issues	Issues and concerns are identified through a scoping process that includes the public, Native American tribes, other federal agencies, state and local governments, and internal BLM staff.	Scoping February 2012 to December 2012
Step 2—Develop planning criteria	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, coordinating other agencies' programs, and the results of public and agency scoping. The planning criteria may be updated and changed as planning proceeds.	Ongoing
Step 3—Collect data and information	Data and information for the resources in the planning area are collected based on the planning criteria.	Ongoing
Step 4—Analyze management situation	The current management of resources in the planning area is assessed.	Spring 2013
Step 5—Formulate alternatives	A range of reasonable management alternatives is developed to address issues identified during scoping.	January 2013 to February 2014
Step 6—Assess alternatives	The effects of each alternative are estimated.	Winter/Spring 2014
Step 7—Select preferred alternative	The alternative that best resolves planning issues is identified as the preferred alternative.	Spring 2014
Step 8—Select RMP	First, a draft RMP/EIS is issued and is made available to the public for a review period of 90 days. After comments to the draft document have been received and analyzed, the RMP/EIS is modified as necessary, and the proposed RMP/final EIS is published and made available for public review for 30 days. A ROD is signed to approve the RMP/EIS.	Draft RMP/EIS: estimated October 2014 Proposed RMP/Final EIS: estimated September 2015 Approved RMP/ROD: estimated May 2016
Step 9—Implementation Monitoring	Management measures outlined in the approved plan are implemented on the ground, and future monitoring is conducted to test their effectiveness. Changes are made as necessary to achieve desired results.	Ongoing after RMP approval

1.4 SCOPING AND PLANNING ISSUES

After identifying the need to prepare the RMP, the BLM initiated a scoping and issue identification process. Public involvement in the RMP process allows the public to provide input into the decisions that will ultimately guide BLM management of public lands. Public involvement is a requirement of NEPA (40 CFR 1506.6), which states that federal agencies must make a diligent effort to involve the public in the NEPA process. The FLPMA, under Section 202, further

directs the Secretary of the Interior to establish procedures for public involvement during land use planning actions on public lands. As part of this process, the BLM has included the public at regular intervals. The public will also have the opportunity to review and comment on the draft EIS and final EIS. Public involvement during the CCD RMP process includes the following:

- Public scoping to determine the scope of the issues and possible alternative management actions to be addressed in the RMP/EIS
- Public outreach via the CCD website, mailings, and press releases
- Outreach to local stakeholders via public presentations
- Collaboration with federal, state, local and tribal governments and the Sierra Front-Northwestern Great Basin Resource Advisory Council (RAC)
- Public comment periods for public review and comment on the draft RMP/EIS

The BLM completed the public scoping process, which is described in **Section 1.4.1**, Public Scoping. Public outreach via the website and other means will be ongoing through the adoption of the approved RMP/ROD. The BLM maintains an up-to-date RMP website with information about the RMP/EIS process and status at: http://www.blm.gov/nv/st/en/fo/carson_city_field.html.

1.4.1 Scoping Process

Public outreach for the CCD RMP/EIS during the public scoping period has included:

- A postcard mailed in February 2012 to over 630 agency officials, organizations, and members of the public
- 6 scoping open houses in March 2012 in Fallon, Yerington, Hawthorne, Minden, Reno, and Carson City, Nevada
- Notices published in newspapers
- A public website that provided access to materials distributed at scoping meetings as well as information on the public involvement process (http://www.blm.gov/nv/st/en/fo/carson_city_field.html)

The formal public comment period as required by the NEPA began on February 24, 2012, with the publication of a Notice of Intent in the *Federal Register* and ended on April 29, 2012. A project update was posted to the RMP website and mailed in postcard format to the project mailing list in July 2013.

1.4.2 Issue Identification

As shown above in **Table 1-2**, BLM Planning Process, the identification of planning issues is the first step in the RMP process. Planning issues are typically concerns or disputes regarding BLM management of resources or uses that

require some form of resolution. Issues and possible resolutions must be within BLM authority to resolve.

The BLM took the first step in the issue-identification process when it released both the CCD RMP Preparation Plan (March 2013) and the CCD RMP Collaboration and Communication Plan (May 2012). Collectively, the plans identify anticipated planning issues and management concerns, provide strategies for communicating with the public and other agencies, list preliminary planning criteria, identify available data and GIS needs, develop a format and process for the plan, list the participants in the process, and provide the expected schedule and budget.

The preparation plan initially identified 23 anticipated planning issues. Based on the comments received during the public scoping process, 4 additional issue categories were added for a total of 27 planning issues. The BLM used the planning issue categories to help guide the development of a reasonable range of alternative management strategies for the RMP. Section 3 of the Carson City RMP/EIS Scoping Summary Report lists the 27 preliminary issues categories and includes a series of questions under each along with a summary of the public comments received. The Carson City RMP/EIS Scoping Summary Report contains the individual comments organized by issue category. Nearly 25 percent of all planning issue comments received were for wild horses and burros, with another 20 percent for recreation and visitor services. Other anticipated planning issues, such as environmental justice and sustainable development, received no comments. The questions and comments will be addressed to the fullest extent possible through the RMP process.

The BLM received 291 unique written submissions (referred to as comment letters or letters throughout this report) yielding 1,692 discrete comments. In addition, 6 different form letters with a total of 3,543 submissions were received during the public scoping period. Comments were entered into a database, categorized, coded, tallied, and analyzed. Categories included RMP process categories, planning issues, and commenter affiliation. Members of the general public submitted 250 comment letters (88 percent of the total) during the scoping period, organizations or non-profit groups submitted 24 comment letters (8.4 percent of the total), and businesses submitted 4 comment letters (1 percent of the total). Federal agencies submitted 1 comment letter (less than 1 percent of the total), state agencies submitted 3 comment letters (1 percent of the total), and local governmental agencies submitted 2 comment letters (less than 1 percent of the total); comments letters received from government agencies accounted for 2.5 percent of the total letters submitted. One comment letter (less than 1 percent of the total) was received from a tribal representative.

Based on internal (within the CCD) and external scoping, the following planning issues have been identified. Comments received were classified into the planning issues below and into subcategories for each issue.

Issue No. 1: Restoring Ecological Health

- What areas should BLM prioritize for restoration activities?
- Under what conditions should the BLM use non-native plants in place of native plants for restoration activities?
- What descriptions should be developed for Desired Plant Communities?
- What criteria should the BLM use to apportion the forage allocated among wildlife, livestock, and wild horses and burros?
- How will the BLM manage areas occupied by invasive species to prevent their dominance and provide for desired plan communities?
- What areas should the BLM prioritize for wetlands and riparian management?
- What criteria will be used to prescribe management actions in wetland and riparian areas?

Issue No. 2: Air and Atmospheric Values

- How will the BLM address air quality in nonattainment areas?
- How will the BLM address the effects climate change has on the natural resources?

Issue No. 3: Water

- How will the BLM protect, maintain, or enhance water quality and quantity?
- How will the BLM manage public lands to protect class waters and water bodies with state water quality standards?
- How will the BLM manage water rights?

Issue No. 4: Cultural Resources, Native American Concerns and Paleontology

- How will the BLM develop and manage baseline information for cultural resources, Native American traditional use areas, and paleontological resources?
- How will the BLM ensure management of cultural and paleontological resources for present and future generations in ways consistent with their scientific, educational, recreational, and traditional uses?
- How should cultural and paleontological sites, especially those open to interpretation and recreation, be monitored, preserved and protected?

- How will the BLM ensure tribal access to natural and traditional resources?

Issue No. 5: Visual Resource Management

- Based on a Visual Resource Management inventory and management considerations for public land uses and allocations (e.g. renewable energy considerations), how should Visual Resource Management classes be established?
- What are current and potential conflicts with managing Visual Resource Management values, and how can they be mitigated?

Issue No. 6: Special Status Species (includes Threatened, Endangered and Sensitive Status Species)

- How will the BLM manage habitat of Special Status Species found on public lands to ensure the continued existence of these species, including development of guidance criteria for habitat and species protection?
- What areas should be identified as important habitat for Special Status Species?
- Is the current Carson wandering skipper ACEC boundary appropriate?
- Should the RMP identify a new Carson wandering skipper ACEC in the Hot Springs Mountain area?
- How should the BLM manage historic Lahontan Cutthroat Trout streams that are not identified in the 1995 Lahontan Cutthroat Trout Recovery Plan?

Issue No. 7: Fish and Wildlife

- What are the criteria to be used in considering historical bighorn sheep areas for reintroductions and management?
- Fish and wildlife are considered a major use in FLPMA; how will fish and wildlife be proactively managed?
- How will the BLM address wildlife species that pioneer into new areas?
- When would and which criteria would be used by the BLM to authorize introductions, reintroductions, or augmentations of wildlife and plant species?
- Should the BLM continue to allow domestic sheep grazing in areas of historic or high potential bighorn sheep habitat?
- How will bat species and land use conflicts be managed?
- Should some or all streams capable or historically capable of supporting a fishery be managed primarily for that purpose?

- How should riparian and wetland areas be managed to maintain or enhance resource and habitat values in systems containing native fishes and/or introduced sport fishes and other aquatic species?
- How will the BLM implement the State of Nevada Wildlife Action Plan?
- Which existing planning decisions for fish, wildlife and plants should be carried forward into the new RMP?
- What measureable goals and objectives for priority wildlife, fish and rare plant species should be developed for the planning area?
- How will the new RMP establish consistent treatment of migratory birds with national and regional goals and objectives?

Issue No. 8: Wild Horses and Burros

- Should Herd Management Area boundaries be adjusted, combined, returned to Herd Area status and no longer managed for wild horse and burro maintenance?
- Which Herd Management Areas are suitable for the long-term management of wild horses and burros?
- What criteria should be used to make habitat and population suitability and viability determinations?
- What methods, other than removal through gathers, should be considered to achieve and maintain Appropriate Management Levels?
- Where are habitat improvement projects appropriate? What kinds of improvement projects are feasible? When is it appropriate to develop or augment water for wild horses and burros within Herd Management Areas?
- How should BLM address wild horse and burro urban interface issues?

Issue No. 9: Fire Management

- What is the Appropriate Management Response for all public lands and adjacent areas of the CCD with respect to resource protection and protection of life and property?
- Which areas of the CCD should be identified for managing naturally caused fire to meet resource objectives?
- What damages to or impacts on resources may result from fire suppression activities?

Issue No. 10: Livestock Grazing

- How will the BLM determine which areas are and are not available for livestock grazing?

- For areas that are deemed available to livestock grazing, which livestock grazing management practices will be used to maintain and make progress towards achieving rangeland health standards?
- How will vacant allotments be managed?
- What criteria will be used to determine if livestock grazing is appropriate for newly acquired lands?
- What management objectives should the BLM use to determine if forage for livestock is annually or seasonally available for non-renewable use permitting?
- What criteria should the BLM use to determine if a request for temporary change to the terms and conditions of a preference-based permit has merit?
- What considerations should the BLM take into account when evaluating a proposal to change the kind of livestock authorized to graze an allotment from cattle to sheep or vice versa?
- What criteria should the BLM use to determine appropriate triggers and end-point indicators for incorporation into the terms and conditions of grazing permits?
- How will BLM manage livestock grazing if invasive plant species or noxious weeds are present?
- How will BLM address grazing management needs that involve lands administered by more than one field office?
- What management criteria should the BLM develop to resolve use conflicts (e.g. urban interface)?

Issue No. 11: Recreation and Visitor Services

- Which Recreation Opportunity Spectrum classes should be identified for the District?
- Which areas will be identified as Special Recreation Management Areas (SRMAs)? Are there areas that should be specified for more intensive management?
- What are the recreation management objectives for the specific recreation opportunities to be produced and the outcomes to be attained (activities, experiences and benefits)?
- What are the recreation setting character conditions required to produce recreation opportunities?
- What are the recreation objectives for the Extensive Recreation Management Areas (ERMAs)?
- Should new recreation facilities be developed?

- Should areas be designated for specific recreation use (e.g. paragliding, recreational shooting areas and windsailing) and what criteria would be employed?
- How can historic linear features (trails, historically significant roads, railroad grades, etc.) be developed and maintained for recreational use while retaining the historical value of the features?
- What is the impact of recreational use in urban interface areas?
- What level of public awareness and education should be promoted for recreational opportunities?
- How should the BLM address threshold levels and locations for recreation activities?

Issue No. 12: Lands and Realty

- Which existing withdrawals should be continued, modified, or revoked? How would lands be managed if an existing withdraw terminates?
- Which lands should be withdrawn from operation of the public land laws (e.g. saleable, locatable and leasable minerals)?
- Should the existing utility and ROW corridors be revised to provide for anticipated future needs? If so, what changes are needed?
- Which areas, if any, should be identified for potential new communication site locations, renewable energy projects or other uses?
- What criteria will the BLM use to identify ROW avoidance and/or exclusion areas?
- Are there areas that should be designated for ROW avoidance and/or exclusion areas?
- What criteria will the BLM use to identify lands or interest in lands for acquisition?
- Which public lands should be identified for disposal? What criteria will be used to determine lands suitable for disposal?
- Should the BLM identify lands available for specific types of disposal (e.g. Recreation and Public Purposes, etc.)?
- How will the BLM address the issue of "trespass town sites"?

Issue No. 13: Mineral Resources (includes Oil, Gas, Geothermal, Coal, Saleable, Solid Leasable (except coal) and Locatable)

- Where should protective constraints be included as a condition of land use authorizations? Possible constraints include, but are not limited to:

  - No Surface Occupancy (NSO) (To protect existing rights or fragile resources)
  - Controlled Surface Use (to protect areas with erosive and fragile soils, watershed areas, special status species habitat, visually sensitive areas, nominated ACECs, etc.)
  - Timing Limitation (to protect OHV areas, sage-grouse leks, deer winter ranges, etc.)
  - Controlled Surface Use & Timing Limitation (to protect wildlife habitat, grazing allotments, Herd Management Areas, etc.)
- Should any areas be closed to oil, gas and geothermal leasing?
- How will the BLM manage energy and mineral resources consistent with other public land uses?
- How will the BLM identify hazards to the public associated with inactive or abandoned mines or mining related activities?
- Should the BLM identify areas for mineral material disposal?
- What areas should be open to oil & gas and geothermal leasing?

Issue No. 14: Hazardous Materials

- How will the BLM manage the use of hazardous materials?
- How will the BLM manage public lands within the Carson River Mercury Comprehensive Environmental Response, Compensation, and Liability Act site under the multiple-use mandate?

Issue No. 15: Special Designations

- What areas warrant special designation? Possible special designations include, but are not limited to:
  - ACECs
  - Wild Horse Ranges
  - Back Country Byways
  - National Historic Landmarks
  - National Historic Trails
  - Natural Areas
  - Wilderness Area(s)
  - Wild and Scenic Rivers
  - National Landscape Conservation System Units
  - Properties of Cultural and Religious Importance/Traditional Cultural Properties

- Which citizen-proposed areas contain wilderness characteristics?
- How will existing special designations be managed and monitored?
- Are there existing special designation areas that need to be modified or removed?

Issue No. 16: Renewable Energy

- How can BLM accommodate development of renewable energy resources such as biomass, solar power, wind energy, and geothermal energy?
- What suitability criteria may be used for geothermal, biomass, solar and wind generation locations?

Issue No. 17: Socio-Economics

- What can the BLM and collaborators do to enhance positive impacts that special land designations or recreational use and development might have on local communities?
- What are the economic effects from maintaining public lands on a sustainable level?
- What are the existing social and economic conditions of the communities and local or regional governments affected by this plan and how will they be affected by the RMP?

Issue No. 18: Environmental Justice

- How can the BLM use Environmental Justice analysis to assist in the development and consideration of planning alternatives?
- How will the BLM promote and provide opportunities for full involvement of minority populations, low-income communities and tribes in BLM decisions that affect their lives, livelihoods, and health?

Issue No. 19: Sustainable Development

- How can the BLM ensure coordination, consultation, and cooperation processes are in place and working effectively with partnerships and stakeholders?
- Are the RMP decisions economically viable and is the community and regional economy adequately considered?
- Is the viability of traditional and non-market activities in the community and surrounding area maintained or improved with the RMP decisions?

Issue No. 20: Comprehensive Travel and Transportation Management

- How will the RMP address travel and transportation management? Will it specify travel management areas, guidelines, and numbering

systems, or will it provide a complete road and trail inventory including roads and trail numbering and marking?

- Where does the BLM need access across private lands?
- What guidelines may be developed for a District Transportation Plan?
- How many miles of road are maintained, and how are maintenance priorities determined?
- How will road re-alignment and new construction be identified?
- What agreements are in place with counties and other government agencies for road maintenance? Do they need re-negotiation to address new concerns?
- How will the BLM identify areas as open/closed/limited to motorized vehicles?
- Are existing travel restrictions still valid? Are there new areas in need of travel restrictions?
- How should OHVs be managed? What criteria would be used to designate OHV use areas (routes) and the uses permitted on each?
- How will public access be provided and maintained for uses such as bike trails, horseback riding trails, hiking trails, all-terrain vehicle and mountain bicycle use? What criteria would be used to designate these trails and the uses permitted on each?
- Which roads in the CCD are needed to provide adequate access? How will these roads, additional needed access, and the trails system be incorporated into the Transportation Plan?
- How will appropriate access points to public lands be identified within urban interface?

Issue No. 21: Cave and Karst Resources

- Does the CCD have any cave resources and karst resources?

Issue No. 22: Urban Growth

- How will the BLM address urban growth issues?
- How will urban interface issues be identified?
- How will the BLM address local government concerns with urban growth issues?

Issue No. 23: Forest/Woodland Management

- What are the characteristics (desired future conditions and historic range of variability) of a healthy forest/woodland within the planning units?

- What management tools and practices should be used to maintain healthy forest and woodlands (e.g., pinyon, juniper, aspen, mountain, mahogany) conditions?
- How does the BLM manage for the values of forest and woodlands within the context of an overall ecological framework?
- How would the BLM address commercial, non-commercial and tribal utilization of forest and woodland resources?

Issue No. 24: Geology and Soils

- How will fragile resources such as fossils be protected with the ongoing mineral resource extractions on BLM administered land?
- How will BLM address issues related to accelerated soil erosion?
- What stocking rates will be applied to ensure limited disturbance to soils, microbiotic crusts, and native plants including seedlings?

Issue No. 25: Drought Management/Climate Change

- What are the effects of current and future climate change management on BLM lands?
- How does the western United States going through a severe drought affect management on BLM lands?

Issue No. 26: Public Health and Safety

- How will potential shooting ranges or other areas of public land where concentrated recreational shooting activities occur be identified?
- What are the cumulative impacts of toxins such as Mercury and the herbicide 2,4-D on public lands?

Issue No. 27: Other Resource Concerns

- What actions will be taken to help deter illegal dumping on public lands?

The BLM will use the planning issues to help guide the development of a reasonable range of alternative management strategies for the RMP. In addition to planning issues, comments also addressed issues that are policy or administrative actions, issues that have been or will be addressed by the BLM outside of the RMP, and issues that are outside the scope of the RMP.

1.4.3 Issues Considered but Not Further Analyzed

In addition to planning issues, the BLM received 37 public scoping comments addressing issues that are policy or administrative actions, issues that have been or will be addressed outside the RMP, or issues that are outside the scope of the RMP. Tables C-1 through C-3 in Appendix C of the Carson City RMP/ EIS Scoping Summary Report contain the comments received that are outside the

scope of the RMP, are related to issues to be solved by national policy, are related to implementation actions, or are general comments related to the RMP process.

1.5 PLANNING CRITERIA AND LEGISLATIVE CONSTRAINTS

The BLM carries out all planning actions under the authority and overarching guidance of the FLPMA and the NEPA. The BLM manages public lands under the primary authority of the FLPMA, which establishes provisions for land use planning, rangeland management, right-of-way (ROW) authorizations, designated management areas, and land tenure adjustments. In addition to the FLPMA, NEPA requires the BLM to take public input and information into consideration when considering the environmental impacts of federal actions affecting the quality of the human environment. NEPA also requires the BLM to make information about those impacts available to the public.

In addition to the overarching legislative constraints provided in the FLPMA and NEPA, the BLM develops planning criteria to establish standards, rules, and other factors to guide the planning process. Planning criteria assist the BLM in defining the scope of work and estimate the extent of data collection and analysis. They also help guide the final plan selection and provide a basis for judging the responsiveness of the planning options. Planning criteria are based on several factors, including applicable laws and regulations; agency guidance, including guidance from other federal, state, local, and tribal governments; analysis of information relevant to the planning area; results of public involvement processes; and professional judgment.

Prior to the public scoping process, the BLM internally developed preliminary planning criteria. These criteria would focus the CCD's planning effort and guide decision-making. During the public scoping process, the BLM introduced the preliminary criteria to the public. Preliminary planning criteria are as follows:

- The proposed RMP will comply with the FLPMA and all other applicable laws, regulations, and policies.
- Impacts from the management alternatives considered in the RMP will be analyzed in an EIS developed in accordance with planning and CEQ regulations at 43 CFR 1610, 40 CFR 1500, and in the Department Manual (DM 516 DM 1-8).
- The BLM will use a collaborative public process and multi-jurisdictional approach, where possible, to jointly determine the desired future condition of public land.
- Management of migratory birds within the planning area will be consistent with the Migratory Bird Treaty Act (MBTA). Migratory birds are protected and managed under the MBTA of 1918, as amended (16 USC 703 et seq.) and Executive Order (EO) 13186. Under the MBTA, nests with eggs or young of migratory birds may

not be harmed, nor may migratory birds be killed. EO 13186 directs federal agencies to promote the conservation of migratory bird populations.

- Other federal, state, and local agencies, including military departments, with jurisdiction by law or special expertise will be invited to participate in the planning process.
- Lifestyles, concern, safety, and health of area residents will be recognized in the RMP.
- The RMP will recognize the State of Nevada's responsibility to manage wildlife.
- The RMP will preserve and protect certain BLM-administered lands in their natural condition so that these lands continue to provide food and habitat for fish and wildlife and domestic animals in conformance with the requirements of Section 102(a)(8) of the FLPMA and the Public Rangelands Improvement Act.
- The RMP will recognize the state's authority to regulate air quality and adjudicate water rights.
- The RMP will recognize the existence of valid existing rights. Lands covered in the RMP will be public land, including split estate, administered by the BLM. Management decisions on lands not administered by the BLM will not be made in the RMP. In addition to public land, the BLM administers fluid mineral interests on other federal lands, including lands managed by the Forest Service, Reclamation, and US DOD military withdrawn lands, and manages federal mineral estate beneath private or state surface estates.
- The RMP will be developed cooperatively and collaboratively with the State of Nevada, tribal governments, county and municipal governments, other federal agencies, the Sierra Front-Northwestern Great Basin RAC, and other interested groups, agencies, and individuals.
- The RMP will follow the procedures outlined in the Air Quality Memorandum of Understanding (MOU) Among the USDA, DOI, and US Environmental Protection Agency (EPA), Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the NEPA Process.
- The RMP/EIS will incorporate management decisions that are brought forward from the existing Consolidated RMP and amendments.
- RMP development will include government-to-government consultation with Native American tribes in conformance with the requirements of Section 202(c)(9) of the FLPMA; Section 101(d)(6) of the National Historic Preservation Act (NHPA); the American

Indian Religious Freedom Act; Treaty Rights where applicable; EO 13007 (Indian Sacred Sites); EO 13084 (Consultation and Coordination with Indian Tribal Governments); EO 12898 (Environmental Justice); BLM Handbook H-8160-1 revised by Manual Section 8120 (Tribal Consultation Under Cultural Resources); BLM Nevada Instruction Memorandum (IM) NV-2005-008; and other applicable laws, regulations, and policies.

- Based on public scoping results, the BLM will develop alternatives for resolution of resource management issues.
- The planning process will incorporate by reference the appropriate standards and guidelines (developed by the RAC) as approved by the Nevada BLM State Director.
- The State Historic Preservation Officer (SHPO) in Nevada and California will be consulted and involved throughout the RMP/EIS process under provisions in the National Programmatic Agreement and the State [of Nevada and California] Protocol Agreements between BLM and the SHPOs.
- Endangered species recovery plan goals, including plans for the reintroduction of endangered species and other species, will be addressed. In accordance with the Memorandum of Agreement on the Endangered Species Act (ESA) Section 7 Consultations and Coordination, dated August 30, 2000, the BLM and US Fish and Wildlife Service (USFWS) will jointly prepare a programmatic consultation agreement.
- Areas potentially suitable as areas of critical environmental concern (ACECs) or other special management designations will be identified and analyzed in the RMP/EIS.
- The mineral development scenario will be based on mineral potential within the CCD, projected demand from the mineral industries, and the National Energy Plan. The planning process will address areas closed to mining, constraints to surface use, and post-mining land use.
- The BLM's Planning for Fluid Minerals Handbook H-1624-1 (BLM 2013i) will be followed in the development of fluid minerals determinations. Leasing stipulations requirements for exceptions, modifications and waivers will also follow H-1624-1 and H-1601-1.
- Baseline reasonably foreseeable management/development scenarios will be developed based on historical, existing, and projected levels for all programs.
- The RMP will address transportation and access per guidance outlined in BLM Manual Section 1626, Travel and Transportation

Management, and the BLM Travel and Transportation Management Handbook H-8342 (BLM 2012n).

- Soil/vegetation correlations from Natural Resource Conservation Service (NRCS) soil surveys will be used to determine ecological site potentials. Ecological Site Inventory will be used to establish and document current vegetation conditions.
- The NRCS Major Land Resource Areas will be used to describe ecological or range site vegetative potential.
- Fire and fuels management strategies will be consistent with the 2009 Federal Wildland Fire Policy, and other handbooks, manuals, and IMs in effect.
- The RMP/EIS will be consistent with US Department of Homeland Security policies to the extent practicable.
- For NEPA analysis purposes, the short-term will be 5 years, and the long-term will be 20 years. The RMP will be evaluated every 5 years to determine if amendments or revisions are necessary.
- The RMP will recognize lifestyles and concerns of area residents and stakeholders. Analysis of economic matters will comply with established acceptable standards and environmental justice factors will be considered using analytical parameters recommended by the EPA (EPA 1998).
- Geographic Information System (GIS) and metadata information will meet Federal Geographic Data Committee standards, as required by EO 12906, signed April 11, 1994.
- Other applicable BLM data standards will be followed. The goal is to develop a plan with spatial data that can be easily accessed for use in subsequent NEPA analyses.
- The requirements to address sage-grouse habitat and conservation as outlined in the National Sage-Grouse Habitat Conservation Strategy and Washington Office IM 2012-033, or most current guidance will be followed.
- The BLM will consider airspace use as well as military use of public lands in developing allocations and management guidance in the RMP.
- The RMP will consider the guidance for ROWs and corridors contained in Washington Office IM 2002-196 or the most current guidance available. The RMP will also consider setting resource management objectives (e.g., vegetation and wildlife) within designated corridors.
- Management of energy and nonenergy mineral resources will be consistent with the acts of Congress relating to the Mineral Leasing

Act of 1920; Domestic Minerals Program Extension Act of 1953; the Mining and Minerals Policy Act of 1970; the Geothermal Act of 1970; the FLPMA; the National Materials and Minerals Policy, Research and Development Act of 1980; the Energy Policy Act of 2005; IB 2008 BLM Energy and Mineral Policy; and 43 CFR 3100, 3200, 3500, 3600, 3800.

- Best management practices (BMPs) for all BLM management activities will be incorporated into the RMP. Adaptive management principles will be adopted as appropriate.

The BLM also received four public comments during the public scoping process that were identified as additional suggestions for planning criteria. The following is a summary of these comments:

- The BLM must prepare and maintain, on a continuing basis, an inventory of all BLM-administered lands and their resources and values giving priority to areas of critical environmental concern, including data on current population and trends for sensitive, rare, threatened, and endangered species.
- In accordance with NEPA, the BLM must take a "hard look" at the consequences of the proposed action before making its decision. To comply, the BLM must study, develop, and describe alternative actions.

1.5.1 Relationship to BLM Policies, Plans, and Programs

The BLM planning regulations require that RMPs be consistent with approved or adopted land use plans and similar plans of other federal, state, local, and tribal governments, to the extent that such plans are consistent with federal laws and regulations applicable to public lands. **Table 1-3**, RMP Amendments and Other Documents Considered for Implementation-level Planning, identifies those policies, plans, and programs that apply to the management of public lands and resources in the CCD and that were considered in the process of preparing this RMP/EIS.

Table 1-3
RMP Amendments and Other Documents Considered for Implementation-level Planning

Consolidated RMP*
Southern Washoe County Urban Interface Plan Amendment 2001
BLM/Navy Amendment for Certain Lands in Churchill County, NV 2001
North Douglas County Specific Plan Amendment 2001
Alpine County RMP Amendment 2007
Denton-Rawhide Mine RMP Amendment 2007

Table 1-3
RMP Amendments and Other Documents Considered for Implementation-level Planning

Implementation-Level Plans
BLM Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, (2007)
ROD and RMP Amendments for Geothermal Leasing in the Western United States (2008)
Approved RMP Amendments/ROD for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (2009)
Final Programmatic EIS on Wind Energy Development on BLM-Administered Lands in the Western United States (2005)
Programmatic EIS for Solar Energy Development in Six Southwestern States (2011)
BLM Policy and Program Guidance for Implementation-Level Planning
BLM Manual 6500, Wildlife and Fisheries Management (1988)
BLM Manual 1737, Riparian-Wetland Area Management (1992)
BLM Manual Section 1745 Introduction, Transplant, Augmentation and Reestablishment of Fish, Wildlife and Plants (1992)
National Fire Plan: Federal Wildland Fire Management Policy (1995)
BLM Manual 1601, Land Use Planning (2000)
National Fire Plan: Review and Update of the 1995 Federal Wildland Fire Management Policy (2001)
National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands (2001)
Air Quality MOU Among the USDA, DOI, and EPA, Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the NEPA Process (June 2011)
Standards for Rangeland Health & Guidelines for Grazing Management, Sierra Front Northwestern Great Basin Area. Reno. (2007)
BLM Manual 6840, Special Status Species Management (2001)
Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (January 10, 2001)
Priorities for Recreation and Visitor Services (2003)
Avian Protection Plan Guidelines (Avian Power Line Interaction Committee and USFWS 2005)
Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee 2006)
West-Wide Energy Corridor-Final Programmatic EIS-Western United States (2008)
Conservation Plans for Sage Grouse, Columbia Spotted Frog ; Lahontan Cutthroat Trout Recovery Plan.
Multiple Use Decisions For Grazing Allotments/Allotment Complexes since 1986
Biological Opinions for Lahontan cutthroat trout
Protecting People and Natural Resources: A Cohesive Fuels Treatment Strategy (February 2006)
A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy (August 2001)
A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Strategy Implementation Plan (December 2006)
BLM Manual 7300, Air Resource Management Program (2009)
Wetland Riparian Initiative (1990)
Healthy Forest Initiative (Ongoing)
Programmatic Environmental Assessment – Integrated Weed Management on Bureau of Land Management Lands (1998)
Environmental Assessment – Herbicide Application for Control of Noxious Weeds (1999)

Table 1-3
RMP Amendments and Other Documents Considered for Implementation-level Planning

Environmental Assessment – Integrated Weed Management (2002)
ROD, Vegetation Treatment on BLM Lands in Thirteen Western States (1991)
Final Vegetation Treatments Using Herbicides Programmatic EIS—Western United States (2007)
Final Environmental Impact Statement: Wilderness Recommendations for Nevada Contiguous Lands (1990)
Hawthorne Army Depot Integrated Natural Resources Management Plan (2013)
National Fire Plan: Review and Update of the 1995 Federal Wildland Fire Management Policy (2001)
National Fire Plan: Federal Wildland Fire Management Policy (1995)
National Management Strategy for Motorized OHV Use on Public Lands (2001)
National Scenic and Historic Trail Administration – Manual #6250 (2012)
Management of National Scenic and Trails Under Study or Recommended as Suitable for Congressional Designation – Manual #6280 (2012)
Aquatic Resource Management – Manual #6720 (1991)
Management of Wilderness Study Areas – Manual #6330 (July 2012)
Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process – Manual #6320 (2012)
Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management – Manual #6400 (July 2012)
Special Status Species Management – Manual #6840 (2008)
Guidance for Implementation of Federal Wildland Fire Management Policy (2009)
Draft Regional Mitigation Strategy Manual #1794 (2013)
Aquatic Resource Management – Manual #6720 (1991)
Wetland Riparian Initiative (1990)
Healthy Forest Initiative (Ongoing)
Nevada Statewide Wilderness Report (1991)
Big Game Habitat Management Plan (1993)

1.6 COLLABORATION

Effective collaboration among agencies in preparing NEPA analyses, such as for this RMP, has many benefits, including the following:

- Disclosing relevant information early in the process, thereby avoiding duplication with other federal, state, local, and tribal planning efforts and procedures while maximizing agency efforts
- Including technical expertise and staff support from a variety of backgrounds
- Establishing a mechanism for resolving intergovernmental issues should they arise in the future

The following sections describe collaboration and consultation efforts with government agencies, tribes, and the Sierra Front-Northwestern Great Basin

RAC. The CCD RMP/EIS Collaboration and Communication Plan (BLM 2012k) as well as **Chapter 5**, Consultation and Coordination, contain additional information regarding collaboration with government agencies and tribal representatives.

1.6.1 Intergovernmental and Interagency Collaboration

At the outset of the RMP process, the BLM identified a list of potential federal, state, and local government as well as tribal stakeholders. February 2012 through July 2013, the BLM sent formal invitations to 50 representatives. **Table 1-4**, Cooperating Agency Participation, lists the agencies invited and identifies the 26 that have agreed to participate in the RMP process as of July 3013.

Table 1-4
Cooperating Agency Participation

Agencies and Tribes Invited to be Cooperators	Accepted	Declined
USFWS	✓	
USFWS Stillwater Wildlife Refuge	✓	
Forest Service, Humboldt-Toiyabe National Forest	✓	
Forest Service Plumas National Forest	✓	
EPA Region IX		✓
US Department of Navy -Naval Air Station Fallon	✓	
US DOD – NV Army National Guard	✓	
US DOD – US Marine Corps Mountain Warfare Training Center	✓	
US DOD – Hawthorne Army Depot	✓	
Reclamation	✓	
Nevada Governor's Office		✓
Nevada Department of Conservation and Natural Resources	✓	
Nevada Army National Guard	✓	
Nevada Division of State Lands		✓
Nevada Division of Minerals		✓
Nevada Department of Wildlife	✓	
Washoe County (Nevada)	✓	
Storey County (Nevada)	✓	
Douglas County (Nevada)	✓	
Lyon County (Nevada)	✓	
Churchill County (Nevada)	✓	
Mineral County (Nevada)	✓	
Nye County (Nevada)	✓	
Carson City (Nevada)	✓	
Alpine County (California)	✓	
Plumas County (California)		✓
Lassen County (California)		✓
City of Reno (Nevada)		✓
City of Sparks (Nevada)		✓
City of Fernley (Nevada)		✓
City of Yerington (Nevada)		✓
City of Fallon (Nevada)		

Table 1-4
Cooperating Agency Participation

Agencies and Tribes Invited to be Cooperators	Accepted	Declined
Town of Gardnerville (Nevada)		✓
Town of Minden (Nevada)		✓
Washoe Tribe of California and Nevada	✓	
Reno Sparks Indian Colony	✓	
Bridgeport Indian Colony	✓	
Susanville Indian Rancheria		✓
Lovelock Indian Colony		✓
Yerington Paiute Tribe		✓
Walker River Paiute Tribe	✓	
Fallon Paiute- Shoshone Tribe		✓
Yomba Shoshone Tribe		✓
Pyramid Lake Paiute Tribe	✓	

1.6.2 Resource Advisory Council Collaboration

The BLM notified the Sierra Front-Northwestern Great Basin RAC of the RMP revision project on March 5, 2012. The RAC is comprised of 15 members representing a range of interests. The RAC provides input on public land management issues, including land use planning, recreation fees, public land classification, management, and tenure within the BLM CCD and Winnemucca District. The group is facilitated by the public affairs officer from the BLM. The first meeting with the new RAC was held on June 14, 2012, at the CCD Office. After a presentation of the RMP process highlighting the components and issues of the planning area, preliminary planning criteria, and project status.

1.6.3 Tribal Relationships and Indian Trust Assets

The unique political relationship between the US government and federally recognized Native American tribes is defined by treaties, statutes, executive orders, judicial decisions, and agreements. This relationship has created a special federal trust responsibility, involving the legal commitments and obligations of the US toward Native American tribes, tribal lands, tribal trust resources, and the exercise of tribal rights. These trust responsibilities supersede any and all actions taken by the BLM.

Indian trust assets means lands, natural resources, money or other assets held by the US government in trust or restricted against alienation for Native American tribes and individual Native Americans. Trust is a formal, legally defined, property-based relationship that depends on the existence of three elements: (1) a trust asset (e.g., lands, resources, and money); (2) a beneficial owner (the Native American tribe or individual allottee); and (3) a trustee (the Secretary of the Interior). Many things and ideas that are commonly represented in terms of "trust" obligations are not actually part of the government's trust responsibility toward Native Americans. Cultural resources and sacred sites on BLM-administered lands are not Indian trust assets. Human remains and cultural

items subject to Native American Graves Protection and Repatriation Act (NAGPRA) are not Indian trust assets. The BLM is legally required to notify the tribes of all federal actions on federal land. For nonemergency actions, the BLM is required to provide a 30-day window in which the tribes can institute consultation on the action.

The CCD initiated consultation with 10 tribes identified as having an interest or traditional cultural properties in the planning area. CCD staff provided a summary presentation of the RMP process to each of the identified tribes. **Table 1-4**, Cooperating Agency Participation, above, identifies the potentially interested tribes and whether the tribe has agreed to participate in the process. Consultation is required by and will be consistent with the NHPA and the American Indian Religious Freedom Act.

1.6.4 Public Presentations

In addition to public scoping conducted for the RMP, travel management workshops were held on October 10, 2012, in Reno, Nevada, at John Ascuaga's Nugget Poolside Terrace Room; on October 16, 2012, in Fallon, Nevada, at the Fallon Convention Center; and on October 18, 2012, in Minden, Nevada, at the Carson Valley Inn.

The BLM staff was in attendance to answer questions. Comment forms were provided to collect public input. Input gathered during the workshops was used to help the BLM create a comprehensive route inventory. This route inventory will form the basis for a system of designated routes to guide all modes of travel in the CCD.

As of December 2013, BLM staff from the CCD had conducted more than 90 public information meetings with or presentations for public, local, and state government, and tribal groups. **Table 1-5**, CCD RMP Presentations, outlines the presentations and dates they were conducted.

Table 1-5
CCD RMP Presentations

RMP Presentation: Group and Location	Public Meeting	Date
Alpine County Board of Supervisors	✓	April 3, 2012
Churchill County Commissioners	✓	April 18, 2012
Mineral County Commissioners	✓	April 18, 2012
Bridgeport Indian Colony	✓	April 24, 2012
NV Trail Stewards	✓	April 19, 2012
Lovelock Indian Colony		April 24, 2012
Susanville Indian Rancheria		April 25, 2012
Alpine County Board of Supervisors	✓	April 3, 2012
NV Trail Stewards	✓	May 1, 2012
Reno-Sparks Indian Colony	✓	May 7, 2012

Table 1-5
CCD RMP Presentations

RMP Presentation: Group and Location	Public Meeting	Date
Yerington Paiute Tribe	✓	May 9, 2012
Walker River Paiute Tribe	✓	May 10, 2012
Yomba Tribe	✓	May 11, 2012
Washoe Tribe of NV and CA	✓	May 11, 2012
Fallon Paiute-Shoshone Tribe	✓	May 22, 2012
Storey County Commissioners	✓	June 5, 2012
NV Allstar Trail Riders	✓	June 13, 2012
Sierra Front-Northwestern Great Basin RAC	✓	June 14, 2012
Carson City Advisory Board to Manage Wildlife	✓	June 18, 2012
Back Country Horseman (High Sierra Chapter)	✓	June 20, 2012
Socioeconomic Workshop Carson City		June 27, 2012
Socioeconomic Workshop Fallon		June 28, 2012
Nye County Commissioners	✓	July 3, 2012
Pyramid Lake Paiute Tribe ID Team		July 10, 2012
Alpine County Board of Supervisors	✓	July 17, 2012
Mineral County Commissioners	✓	July 18, 2012
Churchill County Commissioners	✓	July 18, 2012
Lyon County Commissioners	✓	July 19, 2012
Carson City Board of Supervisors	✓	August 2, 2012
Douglas County Commissioners	✓	August 2, 2012
Pyramid Lake Paiute Tribe	✓	August 3, 2012
Mineral County Commissioners	✓	August 15, 2012
Churchill County Commissioners	✓	August 15, 2012
Lassen County Board of Supervisors	✓	August 21, 2012
Washoe County Commissioners	✓	August 28, 2012
Carson River Advisory Committee	✓	September 17, 2012
Back Country Horseman (Reno Chapter)	✓	September 19, 2012
Mineral County Commissioners	✓	September 19, 2012
Churchill County Commissioners	✓	September 19, 2012
Carson City Open Space Advisory Committee	✓	September 24, 2012
Travel and Transportation Workshop	✓	October 10, 2012
Travel and Transportation Workshop	✓	October 16, 2012
Mineral County Commissioners	✓	October 17, 2012
Churchill County Commissioners	✓	October 17, 2012
Travel and Transportation Workshop	✓	October 18, 2012
Lyon County Commissioners	✓	October 18, 2012
Pine Nut Trails Association	✓	November 6, 2012
Reno-Sparks Indian Colony	✓	November 14, 2012
Mineral County Commissioners	✓	December 5, 2012
Churchill County Commissioners	✓	December 6, 2012

Table 1-5
CCD RMP Presentations

RMP Presentation: Group and Location	Public Meeting	Date
Mineral County Commissioners	✓	January 16, 2013
Churchill County Commissioners	✓	January 16, 2013
Sierra Front-Northwestern Great Basin RAC	✓	February 1, 2013
Fallon Paiute-Shoshone Tribe	✓	February 12, 2013
Battle Born Cruisers of Northern NV	✓	February 12, 2013
Mineral County Commissioners	✓	February 20, 2013
Churchill County Commissioners	✓	February 20, 2013
Mineral County Commissioners	✓	March 20, 2013
Churchill County Commissioners	✓	March 20, 2013
Churchill County one-on-one meeting		April 8, 2013
Mineral County Commissioners	✓	April 17, 2013
Churchill County Commissioners	✓	April 17, 2013
Washoe County one-on-one meeting		April 24, 2013
Nevada State Grazing Board CCD N-3	✓	April 25, 2013
Douglas County one-on-one meeting		May 7, 2013
Mineral County Commissioners	✓	May 8, 2013
Carson City one-on-one meeting		May 10, 2013
Mineral County Commissioners	✓	May 16, 2013
Churchill County Commissioners	✓	May 16, 2013
Fallon Paiute-Shoshone Tribe		May 17, 2013
Alpine County one-on-one meeting		May 22, 2013
Nye County one-on-one meeting		May 28, 2013
Cooperating Agency meeting		June 13, 2013
Mineral County Commissioners	✓	June 20, 2013
Churchill County Commissioners	✓	June 20, 2013
Fallon Paiute-Shoshone Tribe		June 27, 2013
RAC informal presentation		July 17, 2013
Mineral County Commissioners	✓	July 18, 2013
Churchill County Commissioners	✓	July 18, 2013
Fallon Paiute-Shoshone Tribe	✓	August 9, 2013
Reclamation relinquishment meeting in Fallon with grazing permittees	✓	August 13, 2013
Mineral County Commissioners	✓	August 21, 2013
Churchill County Commissioners	✓	August 21, 2013
Theodore Roosevelt Conservation Partnership		September 4, 2013
Yomba Tribe		September 17, 2013
Mineral County Commissioners	✓	September 18, 2013
Churchill County Commissioners	✓	September 18, 2013
Fallon Paiute-Shoshone Tribe		September 18, 2013
Storey County one-on-one meeting		November 7, 2013

Table 1-5
CCD RMP Presentations

RMP Presentation: Group and Location	Public Meeting	Date
Washoe County one-on-one meeting		November 7, 2013
Douglas County one-on-one meeting		November 13, 2013
Fallon Paiute-Shoshone Tribe		November 15, 2013
Mineral County Commissioners	✓	November 20, 2013
Churchill County Commissioners	✓	November 20, 2013
Marine Corp Mt Warfare Training Center one-on-one meeting		November 22, 2013
Lyon County one-on-one meeting		November 26, 2013
Reno-Tahoe Airport Authority		December 3, 2013
Mineral County Commissioners	✓	December 18, 2013
Churchill County Commissioners	✓	December 18, 2013
Susanville Indian Rancheria		January 15, 2014
Yomba Tribe		February 14, 2014
Fallon Paiute-Shoshone Tribe		February 28, 2014
Walker River Paiute Tribe		March 13, 2014
Mineral County Commissioners	✓	March 19, 2014
Churchill County Commissioners	✓	March 19, 2014
Sierra Front Permittee Outreach Meeting		March 28, 2014
Alpine County Board of Supervisors	✓	April 1, 2014

1.7 OTHER RELATED PLANS

The BLM planning regulations require that its RMPs be consistent with officially approved or adopted resource-related plans of other federal, state, local, and tribal governments to the extent those plans are consistent with federal laws and regulations applicable to BLM-administered lands. The plans formulated by federal, state, local, and tribal governments that relate to management of lands and resources that have been reviewed and considered as the RMP/EIS has been developed include:

1.7.1 Consistency with Other Federal Plans

- Final Programmatic EIS on Wind Energy Development on BLM-Administered Lands in the Western United States (2005)
- ROD and RMP Amendments for Geothermal Leasing in the Western United States (2008)
- West-Wide Energy Corridor Final Programmatic EIS—Western United States (2008)
- Programmatic EIS for Solar Energy Development in Six Southwestern States (2011)
- Western Association of Fish and Wildlife Agencies – Greater Sage-Grouse Comprehensive Conservation Strategy (December 2006)

- National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300; 1994, revised 2007)
- Naval Air Station Fallon Integrated Natural Resources Management Plan (June 2006)
- Toiyabe National Forest Land and Resource Management Plan (1986)
- Plumas National Forest Land and Resource Management Plan (1988)

1.7.2 State Plans

- Nevada Division of State Lands, Nevada Statewide Policy Plan for Public Lands (1985)
- Nevada Division of State Lands, Lands Identified for Public Acquisition (1999)
- Nevada Division of State Lands, Nevada Natural Resources Status Report (2002)
- State of Nevada Drought Plan (1993)
- Nevada's 2003 Statewide Comprehensive Outdoor Recreation Plan—Assessment and Policy Plan (2003)
- Nevada BLM Statewide Wilderness Report (1991)
- Statewide Wildfire Management Plan (developing)
- Nevada Comprehensive Preservation Plan (2004)
- Nevada Comprehensive Preservation Plan (2012)
- Nevada's Coordinated Invasive Weed Strategy (2000)
- Nevada Wildlife Action Plan (March 2013)
- NDOW Nevada Elk Species Management Plan (1997)
- Bi-State Action Plan. Past, Present, And Future Actions for Conservation of the Greater Sage-Grouse Bi-State Distinct Population Segment (2012)
- State of Nevada Sagebrush Ecosystem Program (2014)

1.7.3 Local Government Plans

- Alpine County General Plan (2009)
- Carson City Comprehensive Master Plan (2006)
- Churchill County Master Plan (2010)
- Churchill County Water Resource Plan (2007)
- City of Reno Master Plan (2012)
- Douglas County Master Plan (2012)

- Douglas County Open Space Plan (2007)
- Lassen County General Plan (1999)
- Lyon County Comprehensive Master Plan (2010)
- Lyon County Public Lands Policy (2013)
- Nye County Comprehensive Master Plan (2011)
- Plumas County General Plan (1984)
- Storey County Master Plan (1994)
- Truckee Meadows Regional Plan (2007)
- Washoe County Open Space and Natural Resource Management Plan (2008)
- Washoe County Comprehensive Master Plan (2005)
- Washoe County Water Resources Management Plan (2011)

1.8 Implementation and Monitoring of the Resource Management Plan

1.8.1 Introduction

The CCD RMP would provide broad direction for managing the decision area. Implementation of the RMP would involve completion of several tasks, some of which are completed when the plan is adopted, while others would continue over the 20-year life of the plan. This section provides a framework to guide implementation of the planning decisions contained in the RMP, and future actions that may occur as a result of this plan. Implementation of future actions would often require additional site-specific planning to implement the broad guidance contained in the RMP. This chapter also contains information on the process to maintain the RMP in the future as additional information becomes available and changes in conditions or resource uses change.

The BLM would have the authority to implement the RMP when the Nevada BLM State Director signs the ROD for the RMP. The availability of the approved ROD and RMP will be announced in the *Federal Register* and posted on the CCD RMP website. The BLM will develop a schedule for systematically implementing the decisions in the approved RMP. All implementation decisions would be contingent on BLM budget constraints and subject to the environmental review requirements in NEPA.

The BLM will monitor implementation of the RMP and periodically evaluate the need for revisions or amendments at a minimum every five years. RMP evaluations will also be completed prior to any plan revisions and for major RMP amendments. Revisions to the RMP will be required to comply with FLPMA planning guidelines as well as the environmental review requirements in NEPA. An adaptive management approach would also apply and is discussed in Section 1.8.4.

To receive updates on the current and future status of the CCD RMP/EIS, the public can visit the project website at: http://www.blm.gov/nv/st/en/fo/carson_city_field.html or to be added to the mailing list, send an email to blm_nv_ccdo_rmp@blm.gov.

1.8.2 Compliance with NEPA

The RMP includes goals, objectives, and decisions that were subjected to environmental analysis as required by the NEPA during the preparation of the RMP. Subsequent planning at the project or activity plan level would require additional NEPA analysis in most cases and rarely an amendment to the RMP.

1.8.3 Consultation, Coordination and Collaboration

This plan and all implementation plans would be prepared in close coordination and collaboration with other federal agencies, state, tribal, and local governments, the public, and other interested parties. Collaborative approaches to implementation are necessary to assure success. While the BLM retains the responsibility and authority for land management decisions, these decisions are more meaningful, effective and enduring if made in a collaborative and open process. Therefore, close working relationships among management and regulatory agencies need to be developed and maintained. In addition, others outside of the BLM (e.g., state and local agencies, universities, and volunteers) should be involved in subsequent analysis, monitoring, evaluation, research, and adaptive management processes.

Continuing opportunities for public participation may include, among other things:

- RAC recommendations relating to the management of the planning area
- Volunteer partnerships or assistance agreements with other agencies to complete assessments, establish baseline data, monitor, and recommend management actions as a result of these processes
- Working groups, agreements and memorandums of understanding with state and tribal governments

1.8.4 Adaptive Management and Regional Mitigation Strategies

The RMP would be implemented using an adaptive management process. The BLM Land Use Planning Handbook (H-1601-1) defines adaptive management as ". . . a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes."

Under adaptive management, decisions, plans and proposed activities are treated as working hypotheses rather than final solutions to management of resources and uses. For the purposes of this plan, adaptive management would

represent a process that tests, evaluates and adjusts the assumptions, objectives, actions, and subsequent on-the-ground results from the implementation of RMP decisions. Used effectively, adaptive management would provide resource managers with the flexibility to respond quickly and effectively to changing resource and user conditions. Changes in management actions would be based on site-specific resource monitoring and evaluation. On February 1, 2008, the DOI published its Adaptive Management Implementation Policy (DOI 2008). The adaptive management outlined within this RMP/EIS complies with this policy.

As previously noted, adaptive management requires ongoing adjustment of goals, objectives, management area prescriptions, standards, and guidelines constraining land uses. A land use plan amendment could be initiated in response to monitoring and evaluation findings, new data, new or revised policy, a change in circumstances or a proposed action that may result in a change in the scope of resource uses, or a change in the standards and guidelines of the approved RMP. Implementation-level planning may also address findings from adaptive management and thus eliminate the need for land use plan amendment. For example, an allotment management plan, which is an implementation-level plan may be able to address resource conditions through modifications in the season of use or animal unit months rather than an area being identified as not available to grazing, which is a land use-level decision and would require an amendment to the RMP.

The RMP would also be implemented using regional mitigation strategies per BLM IM 2013-142, Interim Policy, Draft Regional Mitigation Manual Section 1794.

1.8.5 Sage-grouse Management and Planning

This Draft RMP/EIS includes sage-grouse habitat management allocations consistent with the Nevada and Northeastern California Greater Sage-Grouse Draft LUP Amendment/EIS and the Bi-State Sage Grouse Draft Forest Plan/LUP Amendment. These plan amendment documents have been released as public drafts and no decisions have been made; however, decisions on these documents are expected prior to the Carson City District Proposed RMP/Final EIS. The decisions for the Greater and bi-state sage grouse efforts will help inform the CCD Proposed RMP/Final EIS. To facilitate district-level planning during the interim period, the CCD has developed a range of alternatives for analysis.

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Chapter 2

Alternatives

CHAPTER 2
ALTERNATIVES

2.1 INTRODUCTION

This chapter describes Alternatives A through E for the Carson City Draft RMP/ EIS in detail and includes references to figures identifying where actions would be applicable (**Appendix A**, Alternatives A, B, C, D, and E Figures). The proposed alternatives were formulated in response to issues and concerns identified through public scoping. The proposed alternatives resolve deficiencies with current management strategies and explore opportunities for enhanced management of resources and resource uses.

Plan Maintenance

This RMP is based on current scientific knowledge and the best available data. Effective implementation requires the flexibility to adapt the RMP in response to changing information and conditions. As discussed in Chapter 1, the BLM will periodically review decisions in this RMP to ensure that specified measures continue to support stated goals and objectives and that implementation guidance remains adequate. As new information becomes available, or as needed to address identified deficiencies, the BLM may update and revise the RMP in accordance with the appropriate environmental review and documentation processes.

Decision Area for the Carson City RMP

The Carson City RMP decision area covers approximately 4.8 million acres of BLM-administered surface land as well as federal subsurface mineral estate underneath private or state surface estates in the planning area (shown in **Figure 2-1**). In addition to public land, the BLM administers fluid mineral interests on other federal lands, including lands managed by the Forest Service and the Bureau of Reclamation (Reclamation) as well as US DOD military withdrawn lands. The US Navy at Naval Air Station Fallon administers approximately 240,717 acres of withdrawn and acquired lands associated with Naval Air Station Fallon and the Fallon Range Training Complex. The BLM

retains the management for all of the natural resources on approximately 205,860 acres of these Navy-withdrawn lands. These acres are not calculated into the overall BLM-administered acres but rather are shown on maps in this document as US DOD or not specified.

2.2 INTRODUCTION TO RMP ALTERNATIVES

RMP decisions consist of identifying and clearly defining goals and objectives (desired outcomes) for resources and resource uses, followed by developing allowable uses and management actions necessary for achieving the goals and objectives. These critical determinations guide future land management actions and subsequent site-specific implementation actions to meet multiple use and sustained yield mandates while sustaining land health.

2.2.1 Purpose of Alternative Development

Alternative development is the cornerstone of the RMP/EIS process. Land use planning and NEPA regulations require the BLM to formulate a reasonable range of alternatives. Established planning criteria, as outlined in 43 CFR Section 1610, guide the alternative development process.

The basic goal of alternative development is to produce distinct potential management scenarios that:

- Address the identified major planning issues
- Explore opportunities to enhance management of resources and resource uses
- Resolve conflicts among resources and resource uses
- Meet the purpose of and need for the RMP
- Are feasible

The NEPA regulation at 40 CFR 1501.2(c) states that federal agencies shall "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." This pursuit provides the BLM and the public with an understanding of the diverse ways in which conflicts regarding resources and resource uses might be resolved, and offers the BLM State Director a reasonable range of alternatives from which to make informed decisions. The components and broad aim of each alternative considered for the Carson City RMP are discussed below.

2.3 ALTERNATIVE DEVELOPMENT PROCESS FOR THE CCD RMP

The CCD RMP interdisciplinary team employed the BLM planning process (outlined in **Table 1-2**, BLM Planning Process) to develop a reasonable range of alternatives for the RMP. The RMP/EIS interdisciplinary team is composed of personnel from the BLM and EMPSi with expertise in all areas of resource

impact analysis. The steps in this process involved frequent reexamination following periods of public and staff review.

2.3.1 Identifying Planning Issues

The planning team developed preliminary planning issues to be addressed in the new RMP based on broad concerns or controversies related to conditions, trends, needs, and existing and potential uses of planning area lands and resources identified during review of current land management documents, including the 2001 Carson City Consolidated RMP and associated plan amendments (see **Table 1-3**, RMP Amendments and Other Documents Considered for Implementation-level Planning).

During public scoping between February 24, 2012, and April 29, 2012, the public was asked to comment on the preliminary planning issues and submit relevant issues not identified by the team. Also as a part of this issue identification process, the BLM sought input from cooperating agencies (see **Section 1.6**, Collaboration) and the Sierra Front-Northwestern Great Basin RAC. The CCD manager requested that the RAC appoint one member and one alternate of the RAC to represent the RAC during the RMP/EIS process. The cooperating agencies assisted in the development of the range of alternatives for the RMP/EIS and aimed to ensure that the alternatives adequately reflect public concern. The BLM planning team subsequently compiled the public input, cooperating agency feedback, and RAC input into 27 planning issues, listed in **Section 1.4.2**, Issue Identification.

2.3.2 Analyze the Management Situation

BLM resource specialists assessed existing RMP goals, objectives, and actions in relation to measurement tools (such as land health standards, biological assessments, NEPA actions, and fuel monitoring data) to gauge successes and deficiencies in addressing the planning issues. This assessment was compiled in the Analysis of the Management Situation for the Carson City planning area, providing information useful to the BLM for the purpose of:

- Summarizing existing conditions
- Explaining the need for change
- Identifying management opportunities

2.3.3 Develop a Reasonable Range of Alternatives

Between January 16, 2013, and May 9, 2013, the BLM interdisciplinary team met to develop management goals while small teams met to identify objectives and actions to address the goals within their fields of expertise. The various groups met numerous times throughout this period to refine their work. The interdisciplinary team developed one no action alternative (Alternative A) and four action alternatives. The action alternatives were designed to:

- Address the 27 planning issues compiled from public input, cooperating agency feedback, and RAC input
- Fulfill the purpose and need for the RMP (outlined in **Section 1.1**, Purpose of and Need for the Resource Management Plan)
- Meet the multiple use and sustained yield mandates of FLPMA

2.4 ALTERNATIVES CONSIDERED FOR DETAILED ANALYSIS

The four action alternatives (Alternatives B, C, D, and E) offer a range of possible management approaches. While the goals are the same across alternatives, each alternative contains a discrete set of objectives and management actions constituting a separate RMP. Each alternative addresses resource program goals to varying degrees, with the potential for different long-range outcomes and conditions.

The relative emphasis given to particular resources and resource uses differs as well, including allowable uses, restoration measures, and specific direction pertaining to individual resource programs. When resources or resource uses are mandated by law or are not tied to planning issues, there are typically few or no distinctions between alternatives.

Table 2-1, Comparative Summary of Alternatives, compares the meaningful differences in allocations among the five alternatives. **Table 2-2**, Description of Alternatives A, B, C, D, and E, describes the proposed decisions for each alternative, including goals, objectives, management actions, and allowable uses for individual resource programs. Figures in **Appendix A** provide a visual representation of differences between alternatives. In some instances, varying levels of management from different resource programs overlap. For example, the BLM proposes management for Hidden Cave, which is within the proposed Grimes Point Archeological ACEC. The ACEC management prescribes a no surface occupancy (NSO) stipulation for fluid mineral leasing under Alternative B; however, the Hidden Cave prescription calls for a controlled surface use (CSU) stipulation. In such instances where varying management levels overlap, the stricter management prescriptions would apply. However, if the Authorized Officer makes an exception to the stricter prescription, then the less strict management prescription would prevail.

GIS data have been used to perform acreage calculations and to generate the figures in **Appendix A**. Calculations are dependent upon the quality and availability of data, and most calculations in this RMP are rounded to the nearest 100 acres or 0.1 mile. Given the scale of the analysis, the compatibility constraints between datasets, and the lack of data for some resources, all calculations are approximate, and serve for comparison and analytic purposes only. Likewise, the figures in **Appendix A** are provided for illustrative purposes and are subject to the limitations discussed above. The BLM may receive additional or updated data; therefore, acreages may be recalculated and revised at a later date.

In **Chapter 4**, Environmental Effects, the proposed uses and restrictions discussed in this chapter were analyzed to determine where restrictions for one resource might provide indirect impacts (such as protection or restriction on use) for another resource not expressly described in this chapter.

2.4.1 Management Common to All Alternatives

Certain allowable uses and management actions from the existing RMPs remain valid and do not require revision. All of the proposed alternatives carry these forward, while other decisions are common only to the action alternatives (Alternatives B, C, D, and E).

Although each alternative is distinct in the resources and resource uses it emphasizes, all five alternatives do the following:

- Comply with state and federal laws, regulations, policies, and standards, including the FLPMA multiple use and sustained yield mandates.
- Implement actions originating from laws, regulations, and policies and conform to day-to-day management, monitoring, and administrative functions not specifically addressed.
- Preserve valid existing rights, which include any leases, claims, or other use authorizations established before a new or modified authorization, change in land designation, or new or modified regulation is approved. Existing fluid mineral leases are managed through Conditions of Approval (COAs) outlined in the RMP.
- Offer diverse recreational opportunities that foster outdoor-oriented lifestyles and enhance quality of life.
- Apply Best Management Practices (BMPs), Standard Operating Procedures (shown in **Appendix B**, Best Management Practices and Standard Operating Procedures), and other site-specific mitigation measures to all resource uses to promote rapid reclamation, maximize resource protection, and minimize soil erosion.
- Make every effort to avoid adverse impacts if cultural or paleontological sites are found at project locations. Consult with the SHPO and the Advisory Council on Historic Preservation in accordance with the State Protocol Agreement between the BLM and the Nevada SHPO, dated January 2012.
- Seek to enhance collaborative opportunities, partnerships, and communications with other agencies and interested parties to implement the RMP, including education and outreach and project-specific activities.

- Apply the exceptions, modifications, and waivers for fluid mineral leasing stipulations outlined in **Appendix C,** Fluid Mineral Leasing Stipulations, unless otherwise stated under a specific action.
- Identify and apply mitigation measures and conservation actions in order to achieve land use plan goals and objectives. The sequence of mitigation action will be the mitigation hierarchy (avoid, minimize, rectify, reduce or eliminate over time, compensate), as identified by the CEQ (40 CFR 1508.20) and the BLM's Draft Manual Section (MS)-1794, Regional Mitigation.
- The ROW avoidance and exclusion areas for renewable energy in this plan are in conformance with the Final Programmatic EIS for Solar Energy Development in Six Southwestern States, as reflected in the acres below in **Table 2-1,** Comparative Summary of Alternatives**.**

In addition to the shared elements above, **Table 2-2** indicates management actions common to all five alternatives by using a single cell across the table row.

2.4.2 Alternative A: No Action

Alternative A meets the NEPA requirement in 40 CFR 1502.14 that the BLM consider a no action alternative. This alternative provides the baseline against which to compare the other alternatives. This alternative would continue present management direction and practices based on existing LUPs and LUP amendments. Direction contained in existing laws, regulations, policies, and standards would also continue to be implemented, sometimes superseding provisions of the 2001 Consolidated RMP and subsequent LUP amendments. The current levels, methods, and mix of multiple use management of BLM-administered lands in the CCD decision area would continue, and resource values would continue to receive attention at present levels.

2.4.3 Alternative B

Alternative B emphasizes resource use and economic development (e.g., livestock grazing, energy, mineral development, and recreation) in the planning area. This alternative has the fewest restrictions to development and land use. Potential impacts on sensitive resources (e.g., soils and sensitive plant habitat) would be mitigated on a case-by-case basis. Sustainable development concepts are included to maintain economic productivity.

2.4.4 Alternative C

Alternative C would develop management strategies to preserve and protect ecosystem health and resource values across the planning area, while providing multiple uses. Resource development would be more constrained than under Alternatives B, D, or E, and in some cases and some areas, uses would be excluded to protect sensitive resources. This alternative includes the most special designations, with specific measures to protect or enhance resource

values within these areas. This alternative emphasizes active and specific measures to protect and enhance vegetation and habitat for special status species, fish, and wildlife. Likewise, this alternative would reflect a reduction in resource production goals for forage, renewable energy, and minerals. Resource production would generally be secondary to restoring and protecting important habitats, such as sagebrush and riparian areas. Sustainable development principles would focus on preserving ecological functions and environmental values.

2.4.5 Alternative D

Alternative D emphasizes the increased demand on BLM-administered lands within the urban interface area. The interface is a set of conditions that affect resources and how they can be managed, rather than a geographic place. It is an area or zone where human infrastructure and urban development meet or intermingle with undeveloped BLM-administered land. Enhanced community development through a change in land tenure would be reflected. Alternative D provides for increased management of recreational opportunities in areas of high use while reducing conflict between use of the BLM-administered land and adjacent private landowners. Specific measures would also be applied to manage for increased pressures on the land and a higher demand from the public while minimizing adverse effects on the local communities. Where management is not specified for the urban interface areas, the current management (represented by Alternative A) would continue.

2.4.6 Alternative E: Agency Preferred

Alternative E, Agency Preferred, represents a mix of management actions that best resolve the issues identified from the assessment of need for changing management, concerns raised during public scoping, and future management considerations. This alternative would reflect a combination of goals and objectives for all values and programs. This alternative emphasizes an intermediate level of protection, restoration, enhancement, and use of resources and services to meet ongoing programs and land uses. The management strategy would be accomplished by using a variety of proactive and prescriptive measures that would protect vegetation and habitat and would promote the continuation of multiple-use management. Vegetation and special status species habitat would be restored and enhanced to provide for the continued presence of an ecologically healthy ecosystem using a suite of proactive and specific prescriptive management tools and implementation measures. Commodity and development-based resources such as livestock grazing and minerals production would be maintained on BLM-administered lands through specific actions to meet resource goals and protect ecosystem health. Management strategies would continue to provide for recreational opportunities on and access to BLM-administered lands and would take into consideration the result of management actions on the economies of communities within the region and user conflicts.

Table 2-1
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Resources					
Wild Horses and Burros (acres)					
Herd Areas/Herd Management Areas	1,235,200	996,500	1,090,000	996,500	1,070,200
Visual Resource Management (VRM) (acres)					
VRM Class I	564,100	564,100	981,900	564,100	564,100
VRM Class II	38,300	56,800	733,900	66,400	513,600
VRM Class III	320,600	1,379,400	213,400	185,900	1,383,900
VRM Class IV	385,700	2,803,000	2,874,100	3,986,900	2,341,700
Undesignated	3,494,900	0	0	0	0
Total	4,803,300	4,803,300	4,803,300	4,803,300	4,803,300
Resource Uses					
Livestock Grazing (acres)					
Available for livestock grazing	4,796,600	4,797,200	2,101,300	4,792,600	4,797,200
Not available for livestock grazing	6,700	6,100	2,702,000	10,700	6,100
Special Recreation Management Areas (SRMAs) (acres)					
Alpine	7,600	5,800	10,700	7,400	7,700
Dead Camel Mountain	N/A	16,800	N/A	37,400	37,400
Hungry Valley	N/A	21,600	N/A	21,800	16,200
Sand Mountain	N/A	7,400	3,900	N/A	19,700
Walker Lake	60,100	24,000	60,100	N/A	24,600
Wilson Canyon	N/A	500	N/A	500	520
Total	67,700	76,100	74,700	67,100	106,100
Extensive Recreation Management Areas (ERMAs) (acres)					
Bagley Valley	N/A	N/A	2,600	N/A	2,600
Dry Valley	N/A	N/A	84,100	N/A	83,000
Faye-Luther	N/A	N/A	40	600	110
Middlegate	N/A	268,700	195,300	N/A	268,700
Mina	N/A	824,700	486,400	N/A	824,700
Mustang	N/A	400	400	400	400
Pah Rah	N/A	20,000	20,000	20,000	20,000
Peterson	N/A	N/A	42,200	N/A	42,200
Pine Nut	N/A	201,100	201,100	201,100	201,100
Reno Urban Interface	N/A	70,600	91,000	70,400	70,600
Salt Wells	N/A	292,700	113,700	N/A	280,400
Singatse	N/A	N/A	174,900	N/A	174,900
Virginia Mountains	N/A	N/A	68,100	N/A	68,100
Virginia Range	N/A	N/A	48,800	N/A	48,800
102 Ranch	N/A	120	120	120	120
Total	0	1,678,320	1,528,760	292,620	2,085,730
Comprehensive Travel and Transportation (acres)					
Open to motorized and mechanized travel	3,840,300	95,300	1,300	22,700	55,700
Closed to motorized and mechanized travel	6,900	4,300	598,000	1,600	6,200
Closed to motorized travel (mechanized limited to existing routes)	31,800	26,700	1,190,500	30,600	24,100

Table 2-1
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Limited to existing routes for motorized and mechanized travel	924,300	4,677,000	3,013,500	4,748,400	4,717,300
Fluid Mineral Leasing (acres)					
Closed to fluid mineral leasing	839,100	768,500	2,081,700	737,000	1,007,200
Open to fluid mineral leasing	3,964,200	4,034,700	2,721,500	4,066,200	3,796,000
Open with NSO stipulations	700	404,600	1,039,200	864,800	1,151,600
Open with CSU stipulations	N/A	2,120,200	1,242,800	2,071,400	1,844,900
Nonenergy Leasable Minerals (acres)					
Closed to nonenergy leasable mineral exploration and development	738,800	981,900	2,960,800	981,900	1,785,900
Open for consideration of nonenergy leasable mineral exploration or development	4,064,500	3,821,300	1,842,400	3,821,300	3,017,400
Locatable Minerals (acres)					
Withdrawn from locatable mineral entry	194,900	194,900	194,900	194,900	194,900
Petitioned for withdrawal from locatable mineral entry	3,700	439,600	117,500	440,800	470,600
Mineral Materials (acres)					
Closed to mineral material entry	564,200	807,200	3,004,800	807,700	1,778,700
Open to mineral material entry	4,239,100	3,996,100	1,798,400	3,995,600	3,024,600
Lands and Realty (acres)					
Right-of-way (ROW) exclusion areas	564,100	580,000	2,675,800	564,100	605,900
ROW avoidance areas	N/A	1,195,800	369,300	1,226,100	1,448,200
Identified for disposal	179,700	273,300	0	332,500	267,200
Renewable Energy (Solar and Wind) (acres)					
Variance areas for utility-scale solar (greater than 20 megawatts)	905,900	773,400	578,400	672,100	629,900
Exclusion areas for wind energy development	N/A	N/A	2,073,200	N/A	629,900
Avoidance areas for wind energy development	N/A	1,220,200	0	1,228,100	956,900
Special Designations					
Areas of Critical Environmental Concern (ACECs) (acres)					
Black Mountain/Pistone Archaeological District ACEC (Proposed)	N/A	3,400	3,400	3,100	N/A
Carson Wandering Skipper ACEC (Existing)	330	N/A	330	N/A	N/A
Churchill Narrows Buckwheat Botanical ACEC (Proposed)	N/A	6,600	6,600	6,600	6,600
Clan Alpine Greater Sage-Grouse ACEC (Proposed)	N/A	N/A	98,400	N/A	N/A
Desatoya Greater Sage-Grouse ACEC (Proposed)	N/A	N/A	105,100	N/A	N/A
Dixie Valley Toad ACEC (Proposed)	N/A	N/A	410	N/A	N/A
Fox Peak Cultural ACEC (Proposed)	N/A	48,400	48,400	48,400	49,000
Greater Sand Mountain ACEC (Proposed)	N/A	17,000	17,000	N/A	N/A
Grimes Point Archaeological District ACEC (Proposed)	N/A	15,900	15,900	15,900	2,100

Table 2-1
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Incandescent Rocks Scenic ACEC (Existing)	1,100	1,100	1,100	1,100	1,100
Lassen Red Rock Scenic ACEC (Proposed)	N/A	N/A	800	N/A	N/A
Namazii Wunu Cultural ACEC (Proposed)	N/A	158,300	158,300	N/A	N/A
Pah Rah High Basin Petroglyph ACEC (Existing)	3,900	5,300	5,300	5,300	5,300
Pine Nut Bi-State Sage-Grouse ACEC (Proposed)	N/A	N/A	100,400	N/A	N/A
Ruhenstroth Paleontological ACEC (Proposed)	N/A	2,300	2,300	2,300	2,300
Pine Nut Mountains Williams Combleaf Botanical ACEC (Proposed)	N/A	N/A	330	330	N/A
Sand Springs Desert Study Area ACEC (Proposed)	N/A	N/A	50	N/A	N/A
Steamboat Buckwheat Botanical (Proposed)	N/A	N/A	80	N/A	N/A
Steamboat Hot Springs Geyser Basin (Existing)	40	N/A	N/A	N/A	N/A
Stewart Valley Paleontological (Existing)	15,900	15,900	15,900	N/A	15,900
Tagɨm aša Cultural ACEC (Proposed)	N/A	81,800	81,800	81,800	N/A
Virginia City National Landmark Historic District (Proposed)	N/A	14,700	14,700	14,700	N/A
Virginia Mountains Greater Sage-Grouse ACEC (Proposed)	N/A	N/A	109,200	N/A	N/A
Virginia Range Williams Combleaf Botanical (Existing)	470	470	470	470	470
Total	21,800	371,170	786,270	180,000	82,770
Wilderness Study Areas (WSAs) (acres)					
Augusta Mountains	46,400	46,400	46,400	46,400	46,400
Burbank Canyons	12,700	12,700	12,700	12,700	12,700
Carson Iceberg	500	500	500	500	500
Clan Alpine	195,700	195,700	195,700	195,700	195,700
Desatoya Mountains	42,200	42,200	42,200	42,200	42,200
Gabbs Valley Range	80,500	80,500	80,500	80,500	80,500
Job Peak	89,400	89,400	89,400	89,400	89,400
Slinkard	2,400	2,400	2,400	2,400	2,400
Stillwater Range	94,200	94,200	94,200	94,200	94,200
Total	564,000	564,000	564,000	564,000	564,000
National Trails on BLM-administered land (miles)					
Pony Express National Historic Trail	92	92	92	92	92
California National Historic Trail	25	25	25	25	25
Eligible or Suitable Wild and Scenic River (WSR) Study Segments (acres crossing BLM-administered land)[2]					
East Fork Carson River Segment 1	N/A	N/A	400	400	400
East Fork Carson River Segment 2	N/A	N/A	400	400	400
East Fork Carson River Segment 3	N/A	N/A	600	600	600
Total	N/A	N/A	1,400	1,400	1,400

Table 2-1
Comparative Summary of Alternatives[1]

Resource or Resource Use	Alt A	Alt B	Alt C	Alt D	Alt E
Back Country Wildlife Conservation Areas (acres)					
Gillis West	N/A	N/A	42,500	N/A	N/A
Gillis East	N/A	N/A	63,900	N/A	N/A
Gabbs Valley Range North	N/A	N/A	50,800	N/A	N/A
Gabbs Valley Range South	N/A	N/A	154,400	N/A	N/A
Pilot Mountains	N/A	N/A	93,700	N/A	N/A
Excelsiors	N/A	N/A	125,800	N/A	N/A
Fairview	N/A	N/A	131,400	N/A	N/A
Sand Springs	N/A	N/A	53,700	N/A	N/A
Clan Alpine	N/A	N/A	101,600	N/A	N/A
Total	N/A	N/A	817,800	N/A	N/A
Lands with Wilderness Characteristics (acres)					
Agai Pah Hills	N/A	N/A	27,200	N/A	27,200
Chukar Ridge	N/A	N/A	29,100	N/A	29,100
Excelsior North	N/A	N/A	54,400	N/A	54,400
Excelsior South	N/A	N/A	49,200	N/A	49,200
Finger Rock	N/A	N/A	41,500	N/A	N/A
Job South	N/A	N/A	77,400	N/A	77,400
Lyon Peak	N/A	N/A	16,300	N/A	N/A
Monte Cristo North	N/A	N/A	9,800	N/A	N/A
Peterson Mountain	N/A	N/A	16,300	N/A	N/A
Rawe Peak	N/A	N/A	39,800	N/A	39,800
Stillwater Additions	N/A	N/A	19,100	N/A	19,100
Tule Peak	N/A	N/A	36,400	N/A	36,400
Total	N/A	N/A	416,500	N/A	332,600

[1]Acres were GIS generated and rounded to the nearest hundred acres. Includes BLM-administered and non-BLM-administered land in the CCD and outside of the CCD where the associations make up larger geographic areas for managing wild horses and burros.

[2]Alternative A identifies 3 segments of the East Fork Carson River as eligible for inclusion in the National Wild and Scenic River System (NWSRS), whereas Alternatives C, D, and E would determine these 3 river segments as suitable for inclusion in the NWSRS. Alternative B would determine that the eligible segments are not suitable for inclusion in the NWSRS and release them from interim management afforded to eligible segments.

2.5 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

The following alternatives were considered but eliminated from detailed study because they do not meet the purpose of and need for the RMP (see **Section 1.1**, Purpose of and Need for the Resource Management Plan) or because they do not fall within technical, legal, or policy constraints for BLM resources and resource uses.

2.5.1 Implement Recreation-Centered Alternative

An alternative that proposes to meet increased demand for motorized recreation on BLM-administered lands within the planning area was considered

but dismissed from detailed analysis. Because the FLPMA mandates that BLM-administered lands be managed for multiple use and sustained yield, alternatives that promote exclusive use or maximum development, production, or protection of one resource at the expense of other resources or resource uses were eliminated from further consideration.

Each proposed alternative allows for some level of support, protection, or use of all resources in the planning area. In some instances, the alternatives include various considerations for eliminating or maximizing individual resource values or uses in specific areas where conditions warrant. In addition, one of the main considerations for Alternative D is enhanced recreational opportunities within the urban interface area where the majority of the recreation use is occurring in the CCD.

2.5.2 Close Entire Decision Area to Livestock Grazing

The BLM considered but did not analyze in detail an alternative that would make all 4,803,300 acres of BLM-administered land in the planning area unavailable for livestock grazing because such an alternative is not reasonable, viable, or necessary in light of resource conditions and the BLM's consideration of a range of alternatives that includes a meaningful reduction in livestock grazing. Livestock grazing is a well-established use within the BLM's multiple-use mandate under the FLPMA and a traditional use of the planning area. The BLM issues and administers grazing leases or permits in the planning area in accordance with the laws applicable to the issuance and administration of such leases and permits on other lands under BLM jurisdiction. Management of livestock grazing in the RMP, including proposed reductions and closures, were based on criteria developed for each alternative. The criteria outlined include, but are not limited to, allotments not meeting land health standards, allotments containing sage-grouse habitat (when habitat makes up 50 percent or more of the allotment), ACECs, and habitat for threatened and endangered species. Additional criteria were outlined to adjust forage allocations for livestock. Some of these criteria include areas not accessible to livestock, unstable or highly erodible soils, areas greater than 2 miles from water, unique habitats such as jurisdictional wetlands and springs, and areas that receive high levels of recreational use.

During this planning process, including public scoping, the BLM did not identify issues or conflicts that can only be resolved through the elimination of all livestock grazing throughout the decision area. Where appropriate, the preclusion or adjustment of livestock use within an allotment or area was incorporated into the alternatives to address issues noted above. This resulted in a reduction in animal unit months (AUMs) and the amount of BLM-administered land available for livestock grazing in all alternatives, with the greatest meaningful reduction in Alternative C.

In all alternatives, the BLM would be able to adjust livestock grazing permits (e.g., AUMs, acres, and period of use) based on monitoring, land health assessments, and land health standards. Permit terms and conditions could also be modified in all alternatives.

For these reasons, the no grazing alternative for the entire planning area was dismissed from further consideration.

2.6 Considerations in Selecting a Preferred Alternative

The proposed alternatives offer a range of discrete strategies for resolving deficiencies in existing management, exploring opportunities for enhanced management, and addressing issues identified through internal assessment and public scoping. Comments submitted by other government agencies, public organizations, state and tribal entities, and interested individuals were given careful consideration. Public scoping efforts enabled the BLM to identify and shape significant issues pertaining to wild horse and burros, potential ACECs, land with wilderness characteristics, public land access, restoring ecological health, wildlife habitat, cultural resources, land tenure, and other program areas. Cooperating agencies reviewed the alternatives and provided comments during the alternative development process, and the RAC Subgroup was provided updates during ongoing RAC meetings.

NEPA regulations developed by the CEQ require the BLM to identify a preferred alternative in the Draft RMP/EIS. Formulated by the interdisciplinary team, the proposed alternative represents those goals, objectives, and actions determined to be most effective at resolving planning issues and balancing resource use. Collaboration was critical in developing and evaluating alternatives; however, the final designation of a preferred alternative remains the exclusive responsibility of the BLM.

2.6.1 Recommendation and Resulting Actions

The district manager recommends Alternative E as the preferred alternative. During public review of this Draft RMP/EIS, the BLM is seeking constructive input regarding the proposals for managing resources and resource uses. After considering these comments, the BLM will develop a Proposed RMP to be evaluated in the Final EIS.

2.7 Management Guidance for Alternatives A, B, C, D, and E

Table 2-2 is a description of all decisions proposed for each alternative, including goals and objectives. All decisions in **Table 2-2** are LUP-level decisions, with the exception of some implementation-level decisions. Implementation-level decisions will be identified in the Proposed RMP/Final EIS.

NSO, CSU, and timing limitations (TL) are stipulation decisions and apply to fluid mineral leasing and development of federal mineral estate underlying BLM-administered lands, privately owned lands, and state-owned lands, but not National Forest System lands.

Acreages for alternatives in this chapter are calculated based on current information and may be adjusted in the future through RMP maintenance as conditions warrant.

2.7.1 How to Read Table 2-2

The following describes how **Table 2-2** is written and formatted to show the LUP decisions proposed for each alternative. Refer to the diagram on the next page for an example of how to read **Table 2-2**.

- Per Appendix C of BLM Land Use Planning Handbook H-1601-1, land use plan decisions are broad-scale decisions that guide future land management actions and subsequent site-specific implementation decisions. LUP decisions fall into two categories that establish the base structure for **Table 2-2**: desired outcomes (goals and objectives) and allowable uses and actions to achieve outcomes.
  - *Goals* are broad statements of desired outcomes and management direction that usually are not quantifiable.
  - *Objectives* identify specific desired outcomes for resources. Objectives may be quantifiable and measurable and may have established timeframes for achievement, as appropriate.
  - *Actions* identify measures or criteria to achieve desired outcomes (i.e., objectives), including actions to maintain, restore, or improve land health.
  - *Allowable uses* identify uses, or allocations, that are allowable, restricted, or prohibited on BLM-administered lands and mineral estate.
  - *Stipulations* (NSO, CSU, TL), which fall under the allowable uses category, are applied to fluid mineral leases to achieve desired outcomes (i.e., objectives).
- In general, only those resources and resource uses that have been identified as planning issues have notable differences between the alternatives.
- Actions that are applicable to all alternatives are shown in one cell across a row. These particular objectives and actions would be implemented, regardless of which alternative is ultimately selected.
- Actions that are applicable to more than one but not all alternatives are indicated by either combining cells for the same alternatives, or by denoting those objectives or actions as the "same as Alternative B," for example.

Diagram 2-1
How to Read Table 2-2

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
27.	**Water Resources**				
28.	**GOAL:** Maintain and improve existing water quality by ensuring that all authorized uses comply with State water quality standards				
29.	**Action common to all:** The Navy and BLM will not allow access to the subsurface by drilling or any other means and/or removal of any subsurface material from the Shoal Site without thorough evaluation and coordination with Department of Energy.				
30.	**Objective:** Maintain or enhance water quality and availability on public lands in the field office Area of jurisdiction.	**Objective:** Maintain or improve water quality and availability by ensuring that all authorized uses comply with State water quality standards.	**Objective** Maintain or improve water quality and availability by ensuring that all authorized uses comply with State water quality standards and with AIM for the upland springs and seeps When specific, class waters, and/or beneficial uses do not exist, use default indicators described in Technical Reference 1734-6 (or newer version in the future).	**Objective:** Same as Alternative C.	
31.	**Action:** Retain public lands within 100-year flood plain boundaries. Authorize development within 100-year flood plain only if consistent with existing federal, state and local government restrictions.	**Action:** No similar action.	**Action:** Evaluate and manage for water conservation (flood and drought protection) through land acquisitions and restorations projects.	**Action:** Evaluate and manage for water conservation (flood and drought protection) through land acquisitions, restoration projects, and public outreach and education.	**Action:** Same as Alternative D.

Goals, objectives, or actions that are applicable to more than one alternative are indicated by combining cells for the same alternative

Row numbers provided for quick reference and commenting.

Where an action in one or more alternative does not apply to another, for example, Alternative B, it states "No similar action."

Air Quality (p. 18)	Geology and Minerals (p. 116)	Renewable Energy (p. 215)
Areas of Critical Environmental Concern (p. 217)	Interpretation and Education (p. 263)	Soils and Water Resources (p. 23)
Back Country Byways (p.242)	Lands and Realty (p. 186)	Special Status Species (p. 58)
Back Country Wildlife Conservation Areas (p. 254)	Lands with Wilderness Characteristics (p. 100)	Tribal Interests (p. 257)
Caves and Cave Resources (p.103)	Livestock Grazing (p. 109)	Vegetation (p. 30)
Climate Change (p. 21)	National Historic Trails (p. 245)	Visual Resources (p. 93)
Comprehensive Travel and Transportation (p. 175)	National Recreation Trails (p. 249)	Wild and Scenic Rivers (p. 252)
Cultural Resources (p. 81)	Paleontological Resources (p. 91)	Wild Horses and Burros (p. 72)
Fish and Wildlife (p. 49)	Public Health and Safety (p. 260)	Wilderness Study Areas (p. 250)
Forest and Woodland Products (p. 107)	Recreation and Visitor Services (p. 138)	Wildland Fire Ecology and Management (p. 77)

DRAFT ALTERNATIVE DEFINITION LANGUAGE

Alternative A, referred to as the **No Action Alternative**, provides the baseline against which to compare the other alternatives. This alternative would continue present management practices based on existing LUP and LUP amendments. Direction contained in existing laws, regulations, policies, and standards would also continue to be implemented, sometimes superseding provisions of the 2001 Consolidated RMP and subsequent LUP amendments. The current levels, methods, and mix of multiple use and sustained yield management of BLM-administered lands in the CCD would continue, and resource values would continue to receive attention at present levels.

Alternative B emphasizes **resource use/economic development** (e.g., livestock grazing, energy, mineral development, and recreation) in the planning area. This alternative has the fewest restrictions to development and land use. Potential impacts on sensitive resources (e.g., soils and sensitive plant habitat) would be mitigated case by case. Sustainable development concepts are included to maintain economic productivity.

Alternative C would develop management strategies to **preserve and protect** ecosystem health and resource values across the planning area, while providing multiple uses. Resource development would be more constrained than under Alternatives B, D, or E, and in some cases and some areas, uses would be excluded to protect sensitive resources. This alternative includes the most special designations, with specific measures to protect or enhance resource values within these areas. This alternative emphasizes active and specific measures to protect and enhance vegetation and habitat for special status species, fish, and wildlife. Likewise, this alternative would reflect a reduction in resource production goals for forage, renewable energy, and minerals. Resources production would generally be secondary to restoring and protecting important habitats, such as sagebrush and riparian areas. Sustainable development principles would focus on preserving ecological functions and environmental values.

Alternative D emphasizes the **increased demand on BLM-administered lands within the urban interface area**. The interface is a set of conditions that affect resources and how they can be managed. It is an area or zone where human infrastructure and urban development meet or intermingle with public land. Enhanced community development through a change in land tenure would be reflected. Alternative D provides for increased management of recreational opportunities in areas of high use while reducing conflict between use of the BLM-administered land and adjacent private

landowners. Specific measures would also be applied to manage for increased pressures on the land and a higher demand from the public while minimizing adverse effects on the local communities. Where management is not specified for the urban interface areas, the current management represented by Alternative A would continue.

Alternative E represents a **mix and variety of management actions** that best resolve the issues identified from the assessment of need for changing management, concerns raised during public scoping, and future management considerations. This alternative would reflect a combination of goals and objectives for all values and programs. This alternative emphasizes an intermediate level of protection, restoration, enhancement, and use of resources and services to meet ongoing programs and land uses. The management strategy would be accomplished by using an array of proactive and prescriptive measures that would protect vegetation and habitat and would promote the continuation of multiple-use management. Vegetation and special status species habitat would be restored and enhanced to provide for the continued presence of an ecologically healthy ecosystem using a suite of proactive and specific prescriptive management tools and implementation measures. Commodity and development-based resources such as livestock grazing and minerals production would be maintained on BLM-administered lands through specific actions to meet resource goals and protect ecosystem health. Management strategies would continue to provide for recreational opportunities and access to and on BLM-administered lands and would take into consideration the result of management actions on the economies of communities within the region and user conflicts.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
1.	***RESOURCES***				
2.	**Air Quality**				
3.	**GOAL**: Maintain existing air quality and air quality related values (e.g., visibility) by ensuring that all authorized uses on BLM-administered lands comply with and support federal, state, and local laws and regulations for protecting air quality.				
4.	**Action common to all alternatives**: • Comply with Nevada Revised Statutes 445B.100 through 445B.825 and Nevada Revised Statutes 486A.010 through 486A.180. Additionally, comply with the State of California's Air Resources Board standards for criteria air pollutants on California lands, and with the Clean Air Act. The best air quality control technology, as per guidance from the Bureau of Air Quality Planning or California's Air Resources Board, would be applied to actions as needed to meet air quality standards. • Comply with Bureau of Air Quality Planning, which prohibits the use maintenance, or construction of roadways without taking appropriate dust abatement measures. Compliance would be obtained through special stipulations as a requirement on new projects and through the use of dust abatement control techniques in problem areas. • Comply with the current Smoke Management Memorandum of Agreement between the BLM, Forest Service, Bureau of Air Quality Planning, Great Basin Unified Air Pollution Control District, and Washoe County Health District, as well as Title 17 of the California Code of Regulations. Application of Smoke Management MOU requires reporting size, date of burn, fuel type, and estimated air emissions for each prescribed burn. • Conduct prescribed burns consistently with the State of Nevada Division of Environmental Protection, Bureau of Air Pollution Control or the California's Air Resources Board permitting process and timed to minimize smoke impacts. • Manage all BLM and BLM-authorized activities to maintain air quality within the thresholds established by the State of Nevada Air Quality Standards, National Ambient Air Quality Standards (NAAQS), and California's Air Resources Board for California lands, to ensure that those activities continue to keep as attainment[1], and meet prevention of significant deterioration (PSD) Class II standards. • Coordinate with local governments for compliance with local ordinances for projects that require local permitting. [1]Washoe County is currently listed as being in nonattainment for particulate matter less than 10 microns in diameter (PM_{10}) values.				
5.	**Objective:** Maintain air quality standards through case by case review of activities on BLM-administered lands.				
6.	**Action:** No similar action.	**Action:** Minimize adverse impacts on air quality from BLM and BLM-authorized activities by implementing BMPs and mitigation measures on a case-by-case basis.	**Action:** Same as Alternative B.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
7.	**Action:** Authorized activities will be reviewed to determine appropriate measures or stipulations to enhance positive and reduce negative air quality impacts.	**Action:** No similar action.			
8.	**Action:** Air quality will be protected through compliance with the Clean Air Act of 1990 and all federal, state, and local emission standards for air quality. Section 176(c) of the Clean Air Act 42 (USC 7506) states that, "No department, agency or instrumentality of the federal Government shall engage in, support in any way, or provide federal assistance for, license or permit, or approve any activity that does not conform to an implementation plan after it has been promulgated under section 110 of the Clean Air Act."	**Action:** No similar action.			
9.	**Action:** Limit any BLM development, authorized activity, or land treatment so not to exceed a 50 percent reduction in ground cover in High	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Erosion Susceptibility Areas. Exceptions include water stabilization projects designed to promote vegetative cover, "open" off-highway vehicle (OHV) designations on Prison Hill, North Flannigan, Pah Rah Mountains, McClellan Peak, and East Churchill Canyon, nondiscretionary mining and prospecting activities, lands disposal in High Erosion Susceptibility Areas, green firewood cutting in Bailey Canyon High Erosion Susceptibility Area and Christmas tree cutting in the Brunswick Canyon.				
10.	**Action:** Limit OHV use to designated roads and trails in areas of severe erosion hazard susceptibility and in watersheds where OHV use is causing flood and sediment problems. The areas to be limited include: Petersen Mountain, Warm Springs, Hungry Valley, Sun Valley, Jumbo/Geiger Grade, Portions of Prison, and Hill Mullen Pass.	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
11.	**Climate Change**				
12.	**GOAL:** Conserve habitat to support healthy fish, wildlife, and plant populations and ecosystem functions in a changing climate.				
13.	**Objective:** No similar objective.	**Objective:** Enhance capacity for effective management in a changing climate and reduce non-climate stressors to help fish, wildlife, plants, and ecosystems adapt to a changing climate.			
14.	**Action:** No similar action.	**Action:** If feasible, identify and develop further actions for primary non-climate stressors through climate adaptation scenario planning workshops with local stakeholders, or utilize results from other scenario planning efforts currently being conducted by the Great Basin Landscape Conservation Cooperative within the Central Basin and Range Ecoregion.			
15.	**Action:** No similar action.	**Action:** Incorporate when appropriate current climate policy and adaptation strategies, climate science, and appropriate decision support tools when evaluating land use authorization decisions through the NEPA process.			
16.	**Action:** No similar action.	**Action:** Consider current and potential climate change-induced threats to BLM special status species and ecosystems functions. Prioritize habitat treatments to remove existing threats that may exacerbate the negative effects of climate change on BLM special status species and ecosystem functions.	**Action:** Assess current and potential climate change-induced threats to BLM special status species and ecosystems functions. Prioritize habitat treatments to remove existing threats that may exacerbate the negative effects of climate change on BLM special status species and ecosystem functions. Conserve habitat to ensure adequate conditions.	**Action:** Assess current and potential climate change-induced threats to BLM special status species and ecosystems functions. Prioritize habitat treatments to remove existing threats that may exacerbate the negative effects of climate change on BLM special status species and ecosystem functions. Develop proactive steps that can be taken to mitigate the effects of climate change on BLM special status species and unique plant assemblages through community workshops, tribal consultations, and other organizations.	
17.	**Objective:** No similar objective.	**Objective:** Apply ecosystem-level climate adaptation management strategies where changing climate conditions necessitate (as indicated by changes to plant communities, drought conditions, and similar events).			
18.	**Action:** No similar action.	**Action:** Manage for connectivity between habitats and sustainability of resource uses by: • Conducting quantitative monitoring to inform an adaptive management framework. • Utilize integrated monitoring protocols, such as the Assessment Inventory and Monitoring strategy, for terrestrial and aquatic indicators when available. Indicators include vegetation, animal species, and fire regime. These indicators are based on current available information and must be kept up to date with new information. • Consider the data and future forecasts/trends produced by the Central Basin and Range Rapid Ecoregional Assessment, including step-down recommendations or analysis updates. • Adaptive management strategies would identify specific climate change vulnerabilities. Scale would vary with			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		affected resources per project or resource use. • Collaborate with other agencies to develop cross-jurisdictional conservation plans to protect and restore connectivity and other landscape-scale components of resilience.			
19.	**Action:** No similar action.	**Action**: Manage for habitat resistance and resilience to climate stressors by: • Planning, evaluating, and diversifying management approaches for current / future need to facilitate transition to other ecosystem types where human-caused ecosystem stressors have crossed thresholds.	**Action**: Manage for habitat resistance and resilience to climate stressors by: • Reducing human-caused ecosystem stressors. • Promoting habitat connectivity and integrity. • As climate change data become available through Rapid Ecological Assessments or other ecological studies, identify areas on unfragmented Greater Sage-Grouse habitat and key habitat linkages that provide the life cycle and genetic transfer need for Greater Sage-Grouse. Manage the identified areas as Preliminary Priority Management Areas (PPMAs). • Working cooperatively with multiple agencies and stakeholders to establish and maintain a network of climate monitoring sites and stations.	**Action**: Same as Alternative B.	**Action**: Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
20.	**Soils and Water Resources**				
21.	**GOAL:** Manage soils and water resources to maintain watershed health, enhance ecosystem health, and provide for public uses while insuring ecological diversity and sustainability.				
22.	**Actions common to all** • Maintain satisfactory watershed conditions as indicated by maintenance of proper functioning conditions and Standards for Rangeland Health and Guidelines for Grazing Management (**Appendix D**) and Guidelines for Grazing and Standards for Public Health and Guidelines for Recreation Management for BLM-administered lands. • Allotment management plans will be used in combination with standards and guides. • Define watershed function so the BLM can manage for and make decisions based on cumulative effects within watersheds and or neighboring watersheds. • Any proposed activities that are located in sensitive soils (e.g., hydric, saline, biological crusts, or highly erodible soils, as shown in (Figure 2-2) would incorporate BMPs and other mitigation measures to minimize soil erosion and maintain soil stability. • Collaborate with federal agencies, tribal governments, the States of Nevada and California, counties, and local municipalities on management of municipal watersheds to meet local needs and on the management of water resources within the CCD, taking into account local land use planning policies.				
23.	**Objective:** Reduce soil loss and associated flood and sediment damage on BLM-administered lands caused by accelerated wind and water erosion due to human actions.	**Objective:** Reduce soil loss and associated flood and sediment damage caused by accelerated wind and water erosion due to ground-disturbing activity.			
24.	**Action:** No similar action.	**Action:** Maintain and improve vegetation cover in areas of high erosion potential (Figure 2-2) by applying soil amendments or requiring a growth medium.	**Action:** Improve vegetative cover by increasing litter, biological soil crust and vegetation as appropriate for soil type. Minimize breaking up or shearing of biological crusts.	**Action:** Same as Alternative C plus: utilize deep-rooted stabilizing vegetation including native and nonnative plants in order to improve the soil surface.	
25.	**Action:** No similar action.	**Action:** During surface-disturbing activities, stockpile topsoil or the best available material for growth medium for reuse	**Action:** During surface-disturbing activities, stockpile topsoil or the best available material for growth medium for reuse during reclamation. If reclamation is not scheduled to be completed within 1 year, stockpiles must have mulch applied to prevent the loss and degradation of the stockpiled topsoil. If reclamation is not scheduled to be completed within 2 years, stockpiles must be seeded to prevent the loss and degradation of the		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		during reclamation.	stockpiled topsoil or the best available material for growth medium.		
26.	**Action:** Limit any BLM development, authorized activity, or land treatment so not to exceed a 50 percent reduction in ground cover in High Erosion Susceptibility Areas. Exceptions include water stabilization projects designed to promote vegetative cover; open OHV designations on Prison Hill, North Flannigan, Pah Rah Mountains, McClellan Peak, and East Churchill Canyon; nondiscretionary mining and prospecting activities; lands disposal in High Erosion Susceptibility Areas; green firewood cutting in Bailey Canyon High Erosion Susceptibility Area; and Christmas tree cutting in the Brunswick Canyon.	**Action:** No similar action (addressed within other actions in this section).			
27.	**Action:** Limit OHV use to designated roads and trails in areas of severe erosion hazard susceptibility and in watersheds where OHV use is causing flood and sediment problems. The areas to be limited include:	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Petersen Mountain, Warm Springs/Hungry Valley, Sun Valley, Jumbo/Geiger Grade, portions of Prison and C Hill, and Mullen Pass.				
28.	**Action:** No similar action.	**Action:** If surface-disturbing activities cannot be avoided on slopes greater than 30 percent, an erosion control plan would be required. The plan must be approved by the BLM prior to construction and maintenance and include the following: • An erosion control strategy (see *Wildland Fire Ecology and Management*). • BLM-approved survey, design, and engineering plans.	**Action:** If surface-disturbing activities cannot be avoided on slopes between 21 percent and 39 percent, an erosion control plan would be required. The plan must be approved by the BLM prior to construction and maintenance and include the following: • An erosion control strategy (see *Wildland Fire Ecology and Management*). • BLM-approved survey, design, and engineering plans. Prohibit surface disturbance on slopes greater than 40 percent. If it is determined that it would cause undue or unnecessary degradation at slopes lower than 40 percent, placement alternatives would be pursued. An erosion control plan would be required.		
29.	**Action:** No similar action.	**Action:** Apply a CSU stipulation for fluid mineral leasing to lands with slopes greater than 15 percent and less than 50 percent and NSO stipulations for lands with slopes greater than 50 percent (as mapped on US Geological Survey [USGS] 1:24,000 scale topographic maps or as determined by the BLM).			
30.	**Action:** No similar action.	**Action:** Apply a CSU stipulation for fluid mineral leasing to lands with a severe soil wind or water erosion hazard rating (as designated by NRCS soil survey data when available).			
31.	**Objective:** No similar objective.	**Objective:** Manage watershed to promote natural hydrologic pathways and residence times.			
32.	**Action:** Critical or at-risk watersheds will be delineated as necessary in order to give these areas special consideration in	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	activity plan development, with the goal of preventing accelerated soil loss and watershed degradation, associated flood and sediment damage to private property or adjacent lands, or to prevent destruction of important wildlife habitat. Delineate high erosion hazard and/or flood-prone areas within the urban interface areas.				
33.	**Action:** No similar action.	**Action:** Identify and maintain a listing of priority watersheds and priority water supply areas based on the following criteria: • Watersheds with threatened and endangered species habitat (occupied and recovery streams). • Presence of well head protection zones as defined in community well head protection plans, in accordance to the State of Nevada's well head protection program. • Watersheds that serve as important source	**Action:** Manage priority watersheds (defined in Alternative B) and protect habitat containing threatened and endangered species habitat (occupied and recovery) as follows: • Close to mineral material disposals (except for government use at the Authorized Officer's discretion). • Close to nonenergy solid mineral leasing. • Apply a NSO stipulation for fluid mineral leasing. • Manage as a ROW exclusion area.	**Action:** Protect priority watersheds (defined in Alternative B) containing municipal water supply within 1,000 feet radius of municipal well heads (Figure 2-3) as follows: • Close to mineral material disposals. • Close to nonenergy mineral leasing. • Apply a NSO stipulation for fluid mineral leasing. • Manage as a ROW exclusion area. The Authorized Officer may consider allowing surface disturbance and/or surface occupancy in priority watersheds on a case-by-case basis based on the project meeting one of the following management criteria: • Recognition of valid existing rights. • A determination made through consultation with USFWS. • Determination that the proposed actions and associated surface disturbance would: a. Protect, mitigate, or improve wildlife/fish habitat.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		areas for municipal and agricultural water supplies. Priority watersheds are identified on Figure 2-3.		b. Provide for public safety or local water supply. • A proposed ROW and associated surface disturbance is located within a designated ROW corridor. • Surface disturbance defined as casual use.	
34.	**GOAL:** Maintain and improve existing water quality by ensuring that all authorized uses comply with state water quality standards.				
35.	**Action common to all:** The Navy and the BLM will not allow access to the subsurface by drilling or any other means and/or removal of any subsurface material from the Shoal Site without thorough evaluation and coordination with Department of Energy (Figure 2-4).				
36.	**Objective:** Maintain or enhance water quality and availability on BLM-administered lands.	**Objective:** Maintain or improve water quality and availability by ensuring that all authorized uses comply with state water quality standards.	**Objective:** Maintain or improve water quality and availability by ensuring that all authorized uses comply with state water quality standards and with Analysis Inventory and Monitoring for the upland springs and seeps. When specific, class waters, or beneficial uses do not exist, use default indicators described in Technical Reference 1734-6 (or current version).		
37.	**Action:** Retain BLM-administered lands within 100-year flood plain boundaries. Authorize development within 100-year flood plain only if consistent with existing federal, state, and local government restrictions.	**Action:** No similar action.	**Action:** Evaluate and manage for water conservation (flood and drought protection) through land acquisitions, land disposals and restorations projects.	**Action:** Evaluate and manage for water conservation (flood and drought protection) through land acquisitions, land disposals, restoration projects, and public outreach and education. Authorize development within 100-year flood plain only if consistent with existing federal, state, and local government restrictions.	
38.	**Action:** Eliminate OHV use in the following locations: • Through or near enough to the any surface water source that its water quality or water quantity may be affected, such as a spring or seep. • Any riparian area	**Action:** No similar action (see *Comprehensive Travel and Transportation Management*).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	associated with meadows, marshes, springs, seeps, ponds, lakes, reservoirs or streams. • Any channel bank, or streambed of a perennial stream.				
39.	**Action:** Limit or prohibit BLM and BLM-authorized activities in watersheds that are degrading, or in specific portions of those watersheds that are in the most immediate risk of degradation. These areas include but are not limited to the following: Northwest Reno, Sun Valley, Sparks, Virginia Foothills, East Washoe Valley, Pyramid Lake Area, Honey Lake Valley, and other critical watersheds.	**Action:** No similar action.			
40.	**Action:** No similar action.	**Action:** Acquire water rights as needed to provide sufficient quantity and quality water for multiple use and sustained yield land management activities consistent with state water laws.	**Action:** Acquire water rights as needed to provide sufficient quantity and quality water on BLM-administered lands with a priority on assuring healthy ecosystems and secondarily for multiple use and sustained yield land management activities consistent with state water laws.	**Action:** Same as Alternative B.	**Action:** Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
41.	**Action:** No similar action.	**Action:** Use land acquisition and other realty actions to acquire minimum pool and in stream flows or to gain access to water sources and developments for other resources (e.g., recreation, wildlife, fire protection, road and trail maintenance, and aquatic habitat).	**Action:** Use land acquisition and other realty actions to acquire minimum pool and in stream flows or to gain access to water sources and developments for wildlife habitat.	**Action:** Same as Alternative B.	
42.	**GOAL:** Ensure BLM-administered lands are capable of providing long-term sustainable water for local community needs and for land management activities, while minimizing impacts on the local ecosystem hydrologic functions and processes.				
43.	**Objective:** No similar objective.	**Objective:** Acquire or provide sufficient quantity and quality water on BLM-administered lands for multiple use and sustained yield land management activities consistent with state water law.			
44.	**Action:** No similar action.	**Action:** Develop partnerships with water rights holders to provide water for multiple uses.			
45.	**Action:** No similar action.	**Action:** Allow water importation and exportation projects that do not exceed the perennial yield of the source basin (as determined by the Nevada State Engineer) and can be implemented without compromising the multiple use and sustained yield mandate of FLPMA land health standards or those that can be mitigated.	**Action:** Allow water importation and exportation projects that do not exceed the perennial yield of the source basin (as determined by the Nevada State Engineer) and can be implemented without compromising the multiple use and sustained yield mandate of FLPMA land health standards as well as benefitting wildlife.	**Action:** Same as Alternative B.	
46.	**Action:** No similar action.	**Action:** In accordance with state water law, develop water sources or wells, as needed, on BLM-	**Action:** In accordance with state water law, develop water sources or wells, as needed, on BLM-administered	**Action:** Same as Alternative B.	**Action:** In accordance with state water law, develop water sources or wells, as needed, on BLM-administered

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		administered lands that can be used for multiple uses, including fire suppression activities.	lands that can be used for multiple uses, concentrating on wildlife use.		lands that can be used for multiple uses, including fire suppression activities and wildlife use.
47.	**Action:** No similar action.		**Action:** Use the state permitting process, land acquisitions, and other realty actions to acquire minimum pool and in-stream flows or to gain access to water sources or developments for other resources and uses.		
48.	**Action:** No similar action.	**Action:** Monitor water usage for geothermal developments by identifying and monitoring water sources within the watershed.	**Action:** Analyze water usage for geothermal developments with site-specific information regarding each water source within the watershed.	**Action:** No similar action.	**Action:** Same as Alternative B.
49.	**Action:** No similar action.	**Action:** No similar action.	**Action:** Prohibit surface-disturbing activities within source water protection zones.	**Action:** Restrict surface-disturbing activities within source water protection zones that are not compatible with maintaining water quality.	
50.	**Vegetation**				
51.	**Overall Vegetation Goal:** Manage for healthy, diverse, and productive vegetation communities while managing for multiple use and sustained yield objectives.				
52.	**Vegetation – Forest and Woodlands**				
53.	**GOAL:** Manage for healthy forests and woodland communities.				
54.	**Action:** Protect the 5-acre stand of western white pine located in T 11N., R 22E., Sec. 16, from damage or destruction.	**Action:** No similar action.			
55.	**Objective:** No similar objective.	**Objective**: Manage for sustained and diverse pinyon-juniper woodlands.			
56.	**Action:** No similar action.	**Action:** • Convert up to 20,000 acres of low density pinyon-juniper areas to sagebrush dominated communities per year	**Action**: • Remove up to 3,500 acres of low density pinyon-juniper areas annually to manage the expected rate of expansion into	**Action:** • Engage interested parties to develop a comprehensive restoration strategy prior to further	**Action:** • Remove up to 8,500 acres of low density pinyon-juniper areas annually to manage the expected rate of

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		for the first decade of the RMP or until approximately 200,000 acres of sagebrush habitat have been restored. After this goal is achieved, remove up to 8,500 acres of low density pinyon-juniper areas annually. • Thin up to 6,500 acres of medium and high density pinyon-juniper woodlands per year. Allow mechanical, hand, and prescribed fire treatments. • Allow extraction and utilization of vegetative products in order to supply material for personal use, commercial businesses, and biomass facilities.	sagebrush areas. • Thin up to 1,500 acres of medium and high density pinyon-juniper woodlands per year. • Allow extraction of wood products for personal use.	treatment of pinyon-juniper woodlands. • Develop a utilization plan that specifies levels of personal and commercial use for the wood byproducts produced by treatments.	expansion into sagebrush areas. Thin up to 6,500 acres of medium and high density pinyon-juniper woodlands per year. • Design all treatments in pinyon-juniper woodlands to create a diversity of stand ages, structures, and species on the landscape level, including the promotion of historic woodlands. • Allow extraction of wood products for personal use.
57.	**Objective:** No similar objective.	**Objective:** Manage for healthy and diverse pine, mixed conifer, riparian deciduous, and fir dominated forestlands to maximize sustained yield of forest products and economic development.	**Objective:** Manage for healthy and diverse pine, mixed conifer, riparian deciduous, and fir dominated forestlands with a focus on forest health concerns, wildlife needs, visual enhancement, and fuel hazard reduction.	**Objective:** Manage for healthy and diverse pine, mixed conifer, riparian deciduous, and fir dominated forestlands with a focus on scenic values, recreation, wildlife habitat enhancement, and reduction of fuels around communities.	**Objective:** Manage for healthy and diverse pine, mixed conifer, riparian deciduous, and fir dominated forestlands with a focus on forest health concerns, wildlife needs, recreation, visual enhancement, and fuel hazard reduction.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
58.	**Action:** No similar action.	**Action:** No similar action.	**Action:** Implement the following mitigation measures where appropriate to meet forest and woodland treatment objectives: 1. Treatment areas will be closed to livestock grazing and will have temporary fences to exclude wildlife until the following criteria are met, and then the fences will be removed. a. A mean sucker height of 7 feet with a minimum of 1,000 stems per acre within the treatment area (Kay 2002). 2. Forest/woodland treatments would be closed for livestock grazing until grazing management is modified through subsequent grazing decisions to achieve proper utilization rates and/or appropriate season of use. To ensure proposed treatment success, the following stipulations may be added to the Terms and Conditions of the grazing permit. a. The season of use may be shifted to late season (beginning of September; Jones 2010). b. If the season of use is not shifted to late season, then utilization of terminal leader browse on branches and suckers will be less than or equal to 20 percent. If utilization rates are reached, the permittee will have five days to move livestock to the next pasture in the rotation or from the allotment entirely. c. Existing nonfunctioning water developments and fences may be required to be repaired prior to implementation of the treatment if contributing to unacceptable use patterns by livestock.			
59.	**Action:** No similar action.	**Action:** • Develop a commodity-based management plan within Alpine County. • Make riparian stands throughout the planning area available for harvest of economically valuable species. • Allow the full suite of mechanical, hand, and prescribed fire treatments.	**Action:** • Allow only noncommercial treatments such as hand thinning, mastication, prescribed fire, planting, pruning, and stand release. With the exception of mastication, all of these treatments would be allowed in riparian stands. • Extraction and subsequent utilization may	**Action:** • Riparian stands would be managed to protect biological diversity, water yield, native plant, and tree health, and provide wildlife habitat. • Utilization of the material from treatments (except from riparian stands) would be available to meet local demand	**Action:** • Allow the full suite of mechanical, hand, and prescribed fire treatments, including within riparian stands, to meet the appropriate objective based on stand location. • Any utilization of material from these treatments, including riparian stands, would be a byproduct recovered from meeting

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			occur on a limited basis using winches or hand removal if the quantity of residual material is too large to meet stand health and fuel reduction objectives.	and enhance economic development. • Within riparian stands, extraction and subsequent utilization may occur on a limited basis using winches or hand removal if the quantity of residual material is too large to meet stand health and fuel reduction objectives.	noncommodity production goals.
60.	**Objective:** No similar objective.	**Objective**: Manage forest and woodlands to minimize mortality from insects, disease, and stand-replacing fires.			
61.	**Action:** No similar action.	**Action:** • Allow for the salvage of fire-killed trees within a year following a fire. • Treat or remove any invasive tree species or nonnative insect/pathogen (e.g., Russian olive). • Coordinate with the Nevada Department of Forestry and Forest Service to develop a strategy that prevents the spread of insects and diseases.	**Action**: • Salvage or removal of trees killed from insects, disease, and fire would only be allowed to protect public safety (e.g., along roads, in campgrounds, and near facilities). • Treat or remove any invasive tree species or nonnative insect/pathogen (e.g., Russian olive). • Coordinate with the Nevada Department of Forestry and Forest Service to develop a strategy that prevents the	**Action:** • Coordinate with the Nevada Department of Forestry and Forest Service to develop a strategy that prevents the spread of insects and diseases. Salvage or removal of tress killed from insects, disease, and fire would only be allowed to meet local wood product demand and to protect public safety. • Treat or remove any	**Action:** • Coordinate with the Nevada Department of Forestry and Forest Service to develop a strategy that prevents the spread of insects and diseases. • Salvage or removal of trees killed from insects, disease, and fire would only be allowed to meet local and regional woodland products, forest health, and to protect public safety. • Forest and woodland health treatments would

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			spread of insects and diseases.	invasive tree species or nonnative insect/pathogen (e.g., Russian olive).	be integrated into vegetation management projects to meet multiple objectives within the planning area. • Treat or remove any invasive tree species or nonnative insects/pathogens (e.g., Russian olive).
62.	**Vegetation – Rangelands**				
63.	**GOAL:** Maintain and improve healthy diverse vegetative communities with species appropriate to the site potential while providing for multiple use and sustained yield.				
64.	**Objective:** Work towards meeting Rangeland Health Standards throughout the CCD.	**Objective**: No similar objective.			
65.	**Action:** Maintain or improve the condition of the public rangelands so as to enhance productivity for all rangeland values (including wildlife).	**Action:** No similar action.			
66.	**Objective:** Manage vegetative resources to meet ecosystem functions and providing direct and indirect economic benefits as well as high-quality recreational opportunities.	**Objective:** No similar objective.			
67.	**Objective:** No similar objective.	**Objective**: Use the ecological site potential and current conditions as well as the applicable state	**Objective:** Manage towards ecological site potential of the reference state.	**Objective:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and transition models to establish Desired Future Conditions and manage towards them.			
68.	**Action:** No similar action.	**Action:** Revegetation efforts should include plant species that have high success rates and focus on long term site stability.	**Action:** Revegetation efforts should only include native plant species.	**Action:** Revegetation efforts should include species shown to provide site stability and ecological function.	**Action:** Include species that provide site stability, ecological function, have shown high success rates, and are appropriate to local ecological setting for revegetation efforts, favoring native species if seed is accessible and meets above criteria.
69.	**Action:** No similar action.	**Action:** Prioritize vegetative treatment in areas that have the greatest potential to produce higher yields.	**Action:** Prioritize vegetative treatment in areas that are in the "at-risk" community phase and have not yet passed an ecological threshold.		**Action:** Prioritize vegetative treatment in areas that are in the "at-risk" community phase and have not yet passed an ecological threshold, unless there is a very high-value resource at risk.
70.	**Objective:** No similar objective.	**Objective**: Maintain the health of native and desirable nonnative vegetation in the vegetative communities by providing for the physiological and phenological needs of key plant species. Ensure that vegetation within site capability is promoted to support ecological processes and diverse	**Objective**: Protect and enhance the health and diversity of native vegetation in the vegetative communities by providing for the physiological and phenological needs of key plant species. Ensure that vigorous, abundant, and appropriate native vegetation is present to support ecological processes and minimize fragmentation.	**Objective**: Restore, protect, and enhance the health and diversity of native (and some desirable nonnative) vegetation in the vegetative communities by providing for the physiological and phenological needs of key plant species. Ensure that vigorous, abundant and appropriate	**Objective**: Restore, protect, and enhance the health and diversity of native (and some desirable nonnative) vegetation in the vegetative communities by providing for the physiological and phenological needs of key plant species. Ensure that vigorous, abundant and appropriate vegetation is present to support

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		economic resource uses.		vegetation is present to support ecological processes and other valued resources and resource uses.	ecological processes and other valued resources.
71.	**Action:** No similar action.	**Action:** In areas of depleted understory, design treatments that increase the forage value of the vegetative resource.	**Action:** Identify areas of depleted understory and design treatments aimed at restoring a healthy and appropriate native understory.	**Action:** Same as Alternative B.	**Action:** Identify areas of depleted understory and design treatments that restore a healthy understory that is appropriate for the ecological site.
72.	**Action:** No similar action.	**Action:** Allow removal of sagebrush when there is a resource or resource use of higher priority, such as mineral extraction, energy development, or forage production.	**Action:** Maintain large, intact sagebrush communities by reducing fragmentation by limiting ground-disturbing activities.	**Action:** Manage current and create future stands of large, intact sagebrush communities while reducing fragmentation by ground-disturbing activities within the urban interface areas.	**Action:** Promote the maintenance of current and creation of future stands of large, intact sagebrush communities while allowing for some sagebrush removal on a case-by-case basis.
73.	**Action:** Maintain a sufficient quality and diversity of habitat and forage for livestock, wildlife, and wild horses through natural regeneration or vegetation manipulation methods.	**Action:** No similar action.			
74.	**Action:** No similar action.	**Action:** Allow a minimum of 2 growing seasons rest from uses post vegetative treatment (see *Special Status Species, Greater Sage-Grouse).*	**Action:** Define treatment objectives with appropriate monitoring and do not resume uses until treatment objectives have been met (see *Special Status Species, Greater Sage-Grouse).*	**Action:** Same as Alternative B.	**Action:** Define treatment objectives and allow a minimum of 2 growing seasons rest from uses post vegetative treatment. If objectives are not met, consider deeming the treatment a failure and

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
					resuming uses at a modified (appropriate for the new site conditions) level (see *Special Status Species, Greater Sage-Grouse).*
75.	**Vegetation - Restoration and Rehabilitation**				
76.	**Goal:** Maintain or reintroduce vegetative components to an ecosystem that allow infiltration and that have root mass capable of stabilizing the soil (Rehabilitation) and allow for transition to a site-appropriate diverse vegetative community based on state and transition modeling (Restoration).				
77.	**Objective**: No similar objective.	**Objective:** Rehabilitation projects will be conducted to stabilize soils, re-establish hydrologic function, maintain and enhance biological integrity, promote plant resiliency, limit expansion or dominance or invasive species, and reestablish native species.			
78.	**Action:** No similar action.	**Action:** Accommodate a cooperative agency component for planning and post event rehabilitation including non-profits and land trusts to address multi-jurisdictional areas.			
79.	**Action:** No similar action.	**Action:** Prevent cheatgrass and other invasive species from dominating burned areas and altering the natural fire regime.	**Action:** Design and implement emergency stabilization and burned area rehabilitation treatments for high value wildlife habitat by re-establishing appropriate species, subspecies, and understory plants relative to site potential.	**Action:** Design and implement emergency stabilization and burned area rehabilitation treatments to protect wildland urban interface areas from subsequent wildfires by using fire resistant species.	**Action:** Design and implement emergency stabilization and burned area rehabilitation treatments to protect wildland urban interface areas, improve high value wildlife habitat by re-establishing appropriate species, subspecies, and understory plants relative to site potential and prevent invasive species dominance.
80.	**Action:** No similar action.	**Action:** Select plant material based on availability, adaptation (site potential), and probability of success for restoration work.	**Action:** Use native plant material for restoration work.	**Action:** Based on availability, adaptation (site potential), and probability of success, use native plant material for restoration work. Where probability of success or native seed availability is low or where cost prohibitive, nonnative seed may be used. Native seed may be used in conjunction with nonnative seed on the same treatment area.	
81.	**Action:** No similar action.		**Action:** Use native plant material and restoration techniques to establish desired plant communities focusing on native communities and intact ecosystems. Allow for the use nonnative species when one or more of the following criteria are met:		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Suitable native species are not available. • The natural biological diversity of the proposed management area would not be diminished. • The use of nonnative species is needed due to site-specific conditions/needs such as the presence of invasive species, hostile soil conditions (e.g., priority habitat or salinity), and the use of green stripping is needed in response to wildfire. • Nonnative species can be confined within the proposed management area. • Analysis of ecological site inventory information indicates that a site would not support reestablishment of a species that historically was part of the natural environment. • Resource management objectives cannot be met with native species. See BLM's Integrated Vegetation Management Handbook, Chapter 8, H-1740-2 (BLM 2008c).		
82.	**Action:** No similar action.		**Action:** Prior to implementation of a treatment that has an objective to release the understory or reseed native species, the BLM will monitor treatment areas to determine and document resource conditions and current livestock grazing management (i.e., season of use and utilization levels). 1. If it is determined that livestock grazing management is resulting in utilization levels that are moderate to severe, then BLM will document resource conditions and current utilization levels in a monitoring report which will be used to determine if changes in the current terms and conditions of the grazing permit will be required to maintain the long term success of the proposed treatment. Changes to the permitted use will be completed through the issuance of subsequent grazing decisions in accordance with 43 CFR §§ 4110.3, 4130.3-3 and 4160. 2. Sagebrush treatments would not be conducted until grazing management is modified through subsequent grazing decisions to achieve proper utilization rates. To ensure treatment success, specific stipulations may be added to the Terms and Conditions of the grazing permit. Some of the potential stipulations are listed below. a. Timing and Duration of Grazing, the season of use may be shifted or the duration of grazing may be shortened to give the vegetation time to recover from grazing. b. In mountain big sagebrush communities, utilization rates will not exceed 45 percent for upland herbaceous species and 35 percent for upland shrub species. If utilization rates are reached, the permittee will have five days to move livestock to the next pasture in the rotation or from the allotment entirely as outlined in Range Management, Principles & Practices (Holechek et al. 1998).		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			c. In Wyoming and basin big sagebrush communities, utilization rates will not exceed 35 percent for upland herbaceous species and 35 percent for upland shrub species. If utilization rates are reached, the permittee will have five days to move livestock to the next pasture in the rotation or from the allotment entirely as outlined in Range Management, Principles & Practices (Holechek et al. 1998). d. In black sagebrush communities, utilization rates will not exceed 45 percent for upland herbaceous species and 35 percent for upland shrub species. If utilization rates are reached, the permittee will have 5 days to move livestock to the next pasture in the rotation or from the allotment entirely as outlined in Range Management, Principles & Practices (Holechek et al. 1998). e. Existing nonfunctioning water developments and fences may be required to be repaired prior to implementation of the treatment if contributing to unacceptable use patterns by livestock.		
83.	**Action:** No similar action.	**Action:** Design effectiveness monitoring for restoration projects to be consistent with the BLM's National Assessment, Inventory, and Monitoring Protocol, or other integrated management monitoring strategy that can be used to evaluate treatment outcomes.			
84.	**Vegetation - Riparian Wetlands**				
85.	**Goal**: Achieve and manage proper functioning condition of riparian areas.				
86.	**Action common to all:** In order to insure watershed health, control or eliminate noxious weeds on both upland and riparian areas in cooperation with federal, state, and local agencies, as well private groups or other interested parties.				
87.	**Objective:** No similar objective.	**Objective:** Ensure stream channel morphology and functions that are appropriate for local soil type, climate, and landform. Improve riparian and wetland lotic areas (Proper Functioning Condition [PFC] and functioning at risk with an upward trend) to 75 percent, progressing towards or attaining PFC. Improve riparian and wetland lentic areas so that	**Objective:** Ensure stream channel morphology and functions that are appropriate for local soil type, climate, and landform. Improve riparian and wetland lotic and lentic areas (PFC and functioning at risk with an upward trend) to 85 percent to attain PFC over the next 20 years. Continue improving riparian and wetland lotic and lentic areas so that 100 percent are attaining PFC within the next 30 years.	**Objective:** Ensure stream channel morphology and functions that are appropriate for local soil type, climate, and landform. Improve riparian and wetland lotic and lentic areas (PFC and functioning at risk with an upward trend) to 85 percent, progressing towards or attaining PFC over the next 20 years. Continue improving riparian and wetland lotic and lentic areas so that 100 percent are progressing towards or attaining PFC within the next 30 years.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		75 percent are progressing towards or attaining PFC. The improvements would occur over the life of the plan.			
88.	**Action:** No similar action.	**Action:** Avoid or minimize the disturbance, loss, or degradation of riparian, wetland, and associated floodplains. When avoidance is not feasible, use off-site mitigation through coordination, consultation, and cooperation with affected and interested public.	**Action:** Avoid the disturbance, loss, or degradation of riparian, wetland, and associated floodplains. Preserve, enhance and provide natural and beneficial values for fish, wildlife, and special status species habitats.	**Action:** Same as Alternative B.	
89.	**Action:** Improve and maintain the condition of the riparian habitat.	**Action:** Implement rehabilitation activities in riparian systems that are Functional-at Risk. Rehabilitation would focus on diversifying riparian communities, protecting natural flow requirements, protecting water quality, and managing for year-round flow.	**Action:** Implement rehabilitation activities in riparian systems with prioritization of areas as follows: • Functional-at Risk. • Rating with a downward trend. • Nonfunctioning. • Fish and wildlife priority habitat (including areas rated as meeting PFC). Rehabilitation would focus on diversifying or establishing riparian communities, protecting or engineering natural flow requirements,	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			protecting water quality, and managing for year-round flow.		
90.	**Action:** No similar action.	**Action:** Based on the cause of nonattainment of PFC, implement the appropriate actions from the list below in riparian/wetland areas identified to be nonfunctioning systems or systems that are Functional-at Risk: • Fence riparian or wetland areas to exclude wild horses and burros, livestock, and provide an off-site water source when conditions permit. • Revise grazing management during the grazing permit renewal process. • Implement other protective measures as necessary based on site-specific conditions.	**Action:** Based on the cause of nonattainment of PFC, implement the appropriate actions from the list below in riparian/wetland areas identified to be nonfunctioning systems or systems that are Functional-at Risk: • Fence riparian or wetland areas (including surrounding uplands) to exclude wild horses and burros, livestock, and provide an off-site water source when conditions permit. • Revise grazing management before next turn out date, or as soon as observation is made. • Implement other protective measures as necessary based on site-specific conditions.	**Action:** Based on the cause of nonattainment of PFC, implement the appropriate actions from the list below in riparian/wetland areas identified to be nonfunctioning systems or systems that are Functional-at Risk: • Fence riparian or wetland areas to exclude wild horses and burros, livestock, and provide an off-site water source when conditions permit. • Implement other protective measures as necessary based on site-specific conditions.	**Action:** Same as Alternative B plus: • Monitor OHV use near riparian areas and develop an awareness outreach program.
91.	**Action:** Reduce soil erosion and enhance watershed values by increasing ground cover and litter.	**Action:** Manage towards a minimum of 2 appropriate stabilizing riparian species to increase in ground cover.	**Action:** Manage towards more than 2 appropriate diverse stabilizing species to increase in ground cover.	**Action:** Same as Alternative B.	**Action:** Same as Alternative B, but with the recognition that more diversity is ideal and preferred.
92.	**Objective:** No similar objective.	**Objective:** Maintain or restore riparian areas for	**Objective:** Maintain or restore riparian areas for	**Objective:** Maintain or restore riparian areas	**Objective:** Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		resource use.	resource use and resource values.	for resource use and resource values with a focus in the urban interface area.	
93.	**Action:** No similar action.		**Action:** Meadows and riparian areas would be considered key areas in the development of wildlife, livestock, or recreation implementation plans.		
94.	**Action:** No similar action.		**Action:** Prior to implementation of a treatment to benefit riparian areas, the BLM will review the current livestock grazing management and current resource conditions (i.e., season of use, proper functioning condition rating) and determine if changes in the current terms and conditions of the grazing permit will be required to maintain the long term success of the proposed treatment. Changes to the permitted use will be completed through the issuance of subsequent grazing decisions in accordance with 43 CFR 4110.3, 4130.3-3 and 4160. To ensure treatment success, specific stipulations may be added to the Terms and Conditions of the grazing permit. Some of the potential stipulations are listed below. • Timing and Duration of Grazing, the season of use may shifted to avoid hot season grazing (July – September) or the duration of grazing may be shortened to give the riparian vegetation time to recover. • Average stubble height of at least 4 to 6 inches will be maintained for herbaceous riparian vegetation with consideration for habitat. If stubble height limits are reached, the permittee will have five days to move livestock to the next pasture in the rotation or from the allotment entirely. • Stream bank alteration rates will be set to a level appropriate to the particular stream in accordance with Guidelines for Establishing Allowable Levels of Streambank Alteration (2002). If designated stream bank alteration rates are reached, the permittee will have five days to move livestock to the next pasture in the rotation or from the allotment entirely. • Utilization rates will not exceed 35 percent for woody species. If utilization rates are reached, the permittee will have five days to move livestock to the next pasture in the rotation or from the allotment entirely. • Existing nonfunctioning water developments and fences may be required to be repaired prior to implementation of the treatment if contributing to unacceptable use patterns by livestock.		
95.	**Action:** No similar action.	**Action:** Where feasible and consistent with user	**Action:** Where feasible and consistent with user safety,	**Action:** Where feasible and consistent with user safety, developed travel routes would be located/relocated	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		safety, any new travel routes would be located away from sensitive riparian/wetland areas.	new and existing travel routes would be located/relocated away from sensitive riparian/wetland areas plus a 500-foot or more buffer as appropriate.	away from sensitive riparian/wetland areas, giving priority to high-use urban interface areas.	
96.	**Action:** No similar action.	**Action**: Avoid issuing Special Recreation Permits (SRPs) for recreation uses within 200 feet of a riparian area to reduce vegetation disturbance and sedimentation.	**Action**: Prohibit camping within 200 feet of a riparian area.	**Action:** Same as Alternative B.	
97.	**Action:** No similar action.	**Action:** Establish Winters Ranch, Mustang, 102 Ranch, and other acquired lands within regionally major surface water systems as a Riparian/Wetland Demonstration Area for the improvement and restoration of riparian, wetland, and wildlife resources.	**Action:** Establish, plan, and promote Winters Ranch, Mustang, 102 Ranch, and other acquired lands within regionally major surface water systems as a Riparian/Wetland Demonstration Area for the improvement and restoration of riparian, wetland and wildlife resources.	**Action:** Establish, plan, promote and pursue long-term cooperators for Winters Ranch, Mustang, 102 Ranch, and other acquired lands within regionally major surface water systems as Riparian/Wetland Demonstration Areas for the improvement and restoration of riparian, wetland, and wildlife resources and for educational opportunities.	
98.	**Action:** No similar action.	**Action:** Allow woodcutting or removal of vegetative materials in riparian areas as consistent with achievement of riparian, forest health, cultural, Native American values, wildlife, and fuels objectives.	**Action:** Close riparian areas to woodcutting or any other vegetative removal, except where important for traditional cultural practices identified for Native Americans or for restoration to benefit riparian values.		**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
99.	**Action:** No similar action.	**Action:** Limit new stream crossings as determined by topography, geology, and soil type. Design any necessary stream crossings to minimize sedimentation, soil erosion, and compaction.	**Action:** Same as Alternative B and redesign existing crossings to minimize sedimentation, soil erosion, and compaction.	**Action:** Same as Alternative B and redesign existing crossings in high-use recreation and OHV areas within the urban interface.	
100.	**Action:** No similar action.	**Action:** Any water developments associated with riparian areas would be designed and constructed to protect ecological processes and functions of the riparian areas. Developments would not be allowed where water is insufficient to maintain riparian vegetation and functionality.	**Action:** Prohibit new water developments in riparian areas.	**Action:** Same as Alternative B.	
101.	**Action:** No similar action.	**Action:** After a fire event, redesign and rebuild unmaintained water developments to ensure riparian functionality and water availability.	**Action:** Remove unmaintained water developments after a fire event.	**Action:** Same as Alternative B.	
102.	**Action:** No similar action.	**Action:** • Improve riparian and wetland management through coordination with interested publics and through cooperative monitoring.	**Action:** • Preclude surface-disturbing activities within 100-year floodplains, 200 feet of riparian and wetland areas, public water reserves, and 500 feet of springs (except for	**Action:** • Preclude surface-disturbing activities within 200 feet of riparian and wetland areas and 500 feet of springs (except for fencing) when needed	**Action:** Same as Alternative D except: • Apply a NSO stipulation for fluid mineral leasing within 500 feet of riparian and wetland areas, 100-year floodplains, and on or

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			fencing) when needed to maintain or restore riparian areas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the surface-disturbing activities scope. • Improve riparian/wetland management through coordination with interested publics and through cooperative monitoring. • Close riparian/wetland areas, including a 200-foot buffer, to mineral material disposal. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the surface-disturbing activities scope. • Implement BMPs to protect riparian and lowland communities from storage pool inundation. • Apply a NSO stipulation for fluid mineral leasing within 500 feet of riparian and wetlands areas, 100 year floodplains and on or	to maintain or restore riparian areas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the surface-disturbing activities scope. • Implement BMPs to protect riparian and lowland communities from storage pool inundation. • Improve riparian/wetland management through coordination with interested publics and through cooperative monitoring. • Apply a CSU stipulation for fluid mineral leasing within 200 feet of riparian and wetland areas, 100-year floodplains and on or within 500 feet of playas. Adjustments may be made to these buffers based upon the	within 500 feet of playas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the surface-disturbing activities scope.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			within 500 feet of playas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the surface-disturbing activities scope. • Manage the 200-foot buffer for riparian and wetland areas as ROW exclusion. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the surface-disturbing activities scope.	resource values associated with riparian/wetland areas and the surface-disturbing activities scope. • Manage as a ROW avoidance area.	
103.	**Action:** No similar action.	**Action:** To the extent possible, pipeline crossings of perennial, intermittent, and ephemeral stream channels should be constructed to withstand 100-year floods.	**Action:** Pipeline crossings of perennial, intermittent, and ephemeral stream channels would be constructed to withstand 100-year floods to prevent breakage and subsequent accidental contamination of runoff during high-flow events.	**Action:** Same as Alternative B plus: establish ecological goals, to reduce habitat fragmentation within ROW applications and grants. Habitat management goals would be tied to maintenance of the ROW throughout the life of the ROW grant.	
104.	**Action:** No similar action.	**Action:** Acquire riparian lands and water resources to preserve and maintain riparian habitat and instream flow.	**Action:** Acquire riparian lands and water resources to preserve and maintain riparian habitat and instream flow and obtained water rights and preclude any activities that contribute to dewatering.	**Action:** Acquire riparian lands and water resources to preserve and maintain riparian habitat and instream flow in coordination with communities.	**Action:** Acquire riparian lands and water resources to preserve and maintain riparian habitat and instream flow and obtain water rights.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
105.	**Action:** Protect and maintain existing and potential fisheries habitat and riparian habitats in a good or better condition.	**Action:** No similar action.			
106.	**Vegetation – Invasive, Nonnative Species, and Noxious Weeds**				
107.	**GOAL**: Prevent and minimize the introduction and spread of invasive and noxious plants with an emphasis on collaboration with federal, tribal, state, county governments, permitted land users and conservation groups.				
108.	**Objective:** No similar objective.	**Objective:** Use ecologically based invasive plant management practices for vegetation management efforts across resource programs for the States of Nevada and California-listed noxious weed and invasive annual species.			
109.	**Action:** No similar action.	**Action:** Implement the ecologically based invasive plant management approach for weed abatement projects, regardless of size including: public education, prevention, eradication, control, revegetation and evaluation.			
110.	**Action:** The Navy and BLM will coordinate with appropriate agencies and implement approved integrated pest management plans to control and remove undesirable vegetation.	**Action:** Coordinate with federal, state, and local governments and weed districts on weed management efforts.			
111.	**Action:** No similar action.	**Action:** Utilize appropriate control methods, including mechanical, biological and chemical to eradicate or control invasive, nonnative species and noxious weeds. Control methods include mechanical (digging or mowing), biological (livestock grazing, bio-pathogens or predator species) and chemical (BLM approved herbicides and additives) treatments	**Action:** Utilize appropriate control methods including mechanical and biological to eradicate or control invasive nonnative species and noxious weeds. Control methods may require multiple applications to achieve goals (see *Special Status Species, Greater Sage-Grouse*).	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		that may be used alone or in combination. Control methods may require multiple applications to achieve goals (see *Special Status Species, Greater Sage-Grouse*).			
112.	**Action:** No similar action.	**Action:** Implement weed management stipulations and public education to reduce spread of invasive, nonnative species and noxious weeds along perennial stream corridors.	**Action:** Implement weed management stipulations and public education to reduce spread of invasive, nonnative species and noxious weeds along perennial, intermittent, and ephemeral stream corridors.	**Action:** Implement weed management stipulations and public education to reduce spread of invasive, nonnative species and noxious weeds along perennial stream corridors in the urban interface.	
113.	**Objective:** Prioritize weed management areas based on location and degree of infestation district-wide.				
114.	**Action:** Assign priority ranking of weed projects based on degree of infestation, location, resource availability, and resouces at risk. Some weed-infested areas may be too widespread to meaningfully manage, and therefore abatement actions are postponed in the area until new technology and resources become available to deal with the situation.	**Action:** Assign priority ranking of weed projects based on degree of infestation, location, resource availability, and resouces at risk with a focus on areas with existing and new surface disturbance.	**Action:** Assign priority ranking of weed projects based on degree of infestation, location, resource availability, and resources at risk with a focus on priority fish and wildlife habitats.	**Action:** Assign priority ranking of weed projects based on degree of infestation, location, resource availability, and resources at risk with a focus on the urban interface and recreation areas.	**Action:** Assign priority ranking of weed projects based on degree of infestation, location, and resource availability.
115.	**Objective:** No similar objective.	**Objective:** Require the control of materials contaminated with noxious weed seeds or plant parts.			
116.	**Action:** No similar action.	**Action:** Require forage brought on to BLM-administered land to have Weed –Seed Free certification. Existing operations would be encouraged to obtain a Weed Free certification.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
117.	**Action:** No similar action.	**Action:** Require salable mineral materials obtained from BLM-administered land to have Weed Free certification. Existing operations would be encouraged to obtain a Weed Free certification.			
118.	**Action:** No similar action.	**Action:** Require all construction on BLM-administered land to utilize earth materials, as appropriate based on the geographic area of use, that are State of Nevada and/or State of California certified as Weed Free.			
119.	**Action:** No similar action.	**Action:** All new, renewal, and amendment requests for land use authorizations would require a stipulation in the authorization addressing noxious weed management.			
120.	**Action:** No similar action.	**Action:** New, renewal, and amendment requests for major category ROWs would require a BLM-approved noxious weed management plan, annually perform surveys, and conduct ecologically based invasive plant management weed abatement measures when infestations are determined to be present either within or adjacent to the project area.	**Action:** All land use authorization holders would develop a BLM-approved noxious weed management plan, annually perform surveys, and conduct ecologically based invasive plant management weed abatement measures. Reestablish native vegetation in disturbed areas after authorized construction activities have taken place where analysis as indicated it is appropriate.	**Action:** Same as Alternative B, except any category of new, renewal, or amendment request for a land use authorization in the urban interface would require the plan and annual surveys when infestations are determined to be present.	**Action:** Same as Alternative B, except whenever a compliance inspection on any category of land use authorization determines an infestation is present the land use authorization would require a plan. Annual surveys would be required until the holder can demonstrate that the infestation is eradicated from the project area.
121.	**Fish and Wildlife**				
122.	**GOAL:** Manage vegetation communities that provide the food, cover, and breeding requisites for existing and potential native or otherwise desirable species of fish and wildlife in order to sustain and optimize their distribution and abundance consistent with habitat capability.				
123.	**Action commons to all alternatives**: • Modify existing BLM fences during maintenance and build new fences to facilitate wildlife passage, unless the fences are intended to exclude wildlife. When necessary, mark fences to increase fence visibility and reduce wildlife collision risk. • Permanently cap all pipes used in fencing or claim markers to prevent wildlife from being trapped within the pipe. • Construct water troughs to allow access by wildlife. Water for wildlife will be made available at all livestock watering developments where appropriate. • Install wildlife escape ramps in all new and existing water troughs. • Authorize wildlife water developments in coordination with the Nevada Department of Wildlife (NDOW) as mitigation for disturbance, changes in habitat quantity or quality, or to supply a reliable, protected source of water for wildlife species. • Coordinate with NDOW prior to authorization of new wildlife water developments (e.g., near SRP event courses).				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Coordinate with other wildlife agencies (e.g., USFWS and NDOW) on mitigation measures for wildlife and wildlife habitat protection. • Design water developments to be constructed specifically for wildlife to exclude use from domestic livestock and wild horses and burros. • Design all spring boxes or other water development structures so as to not trap wildlife and conduct appropriate surveys prior to construction. • Implement timing restrictions and distance buffers, as appropriate, to minimize impacts on wildlife from activities during important life-cycle periods (e.g., breeding, nesting, fawning, and major migrations). • Support research efforts to ensure availability of data necessary for proper and efficient management of wildlife, fish, and special status species. • To the extent practical, support NDOW in achieving the goals and objectives outlined in the Nevada Wildlife Action Plan (or equivalent plan). • Recognize the wildlife values associated with Wildlife Management Areas, and to the extent practicable, provide consistent management across jurisdictional boundaries (e.g., Alkali Lake, Mason Valley, Scripps, Fernley, and Carson Lake and Pasture). • Support partnership opportunities for state and non-profit groups to assist with monitoring, identification, and protection of fish, wildlife, and plants.				
124.	**Wildlife Habitat** (for Greater Sage-Grouse habitat see *Special Status Species, Greater Sage-Grouse*)				
125.	**Objective:** No similar objective.	**Objective:** Maintain key habitat integrity, continuity, connectivity, productivity to support self-sustaining fish and wildlife populations on a landscape scale with an emphasis on priority species and habitats.	**Objective**: Maintain or improve key habitat integrity, continuity, connectivity, productivity, and minimize new disturbance to support self-sustaining fish and wildlife populations on a landscape scale with an emphasis on priority species and habitats.	**Objective:** Maintain key habitat integrity, continuity, connectivity, productivity, and minimize new disturbance to support self-sustaining fish and wildlife populations within the urban interface in coordination with landscape level habitat improvement.	**Objective:** Same as Alternative C.
126.	**Action:** No similar action.	**Action:** Implement habitat improvement projects where necessary to stabilize or improve unsatisfactory or declining wildlife habitat condition.			
127.	**Action:** No similar action.	**Action:** Remove nonnative, undesirable aquatic animal species (such as bullfrogs, New Zealand mudsnails, quagga/zebra mussels) from active native aquatic breeding grounds in fish	**Action:** Remove nonnative, undesirable aquatic animal species (such as bullfrogs, New Zealand mudsnails, and quagga/zebra mussels) from active native aquatic breeding grounds in fish and wildlife priority habitat.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and wildlife priority habitats when necessary.			
128.	**Action:** No similar action.	**Action:** Within fish and wildlife priority habitat, offset habitat loss from discretionary actions with mitigation to ensure no net unmitigated loss.			
129.	**Action:** No similar action.	**Action:** Authorize locatable mineral development activity per the 43 CFR 3809 regulations through Plan of Operation Approvals and apply mitigation and BMPs that minimizes the loss of fish and wildlife priority habitat.			
130.	**Action:** No similar action.	**Action:** Apply a CSU stipulation for fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed aquatic and semi-aquatic species.	**Action:** Apply a NSO stipulation for fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed and BLM sensitive aquatic and semi-aquatic species with no exceptions, modification or waivers.	**Action:** Same as Alternative B.	**Action:** Apply a NSO stipulation for fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed and BLM sensitive aquatic and semi-aquatic species with exceptions, modification, and waivers.
131.	**Action:** No similar action.	**Action:** Manage fish and wildlife priority habitat (Figure 2-5): • Manage as a ROW avoidance area, including a 100-foot buffer for aquatic habitats.	**Action:** Manage fish and wildlife priority habitat (Figure 2-5): • Manage as a ROW exclusion area, including a 500-foot buffer for aquatic habitats. • Close to mineral material disposal, and nonenergy mineral leasing.	**Action:** Same as Alternative B.	
132.	**Action:** No similar action.		**Action:** Support the reintroduction or augmentation of native wildlife to areas where these actions would not result in a decline of habitat quality and quantity for existing native wildlife species.	**Action:** No similar action.	**Action:** Support the introduction, reintroduction, or augmentation of native and nonnative wildlife to areas where these actions would not result in a decline of habitat quality and quantity for existing native wildlife species.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
133.	**Big Game Species (Includes Special Status Species)**				
134.	**Objective**: Manage wildlife habitat for a long-term goal of providing forage for reasonable numbers of big game.	**Objective**: Provide sufficient forage, cover, and protection from disturbance for large ungulates (deer, elk, bighorn sheep, and pronghorn) to maintain healthy viable populations across the landscape consistent with the NDOW's big game herd unit objectives.			
135.	**Action:** No similar action.	**Action:** Mitigate disturbance from land use authorization activities in the following areas (dependent on seasonal and site-specific conditions): • Pronghorn kidding areas: May 15 to June 15 • Mule deer fawning areas: June 1 to June 30 • Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 • Bighorn sheep lambing areas: February 1 to May 15 • Elk calving areas (should elk expand their range further): May to June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: January 1 to April 15	**Action:** Prohibit disturbance from land use authorizations and implement timing limitation stipulations for fluid mineral leasing in the following areas (dependent on seasonal and site-specific conditions): • Pronghorn kidding areas: May 15 to June 15 • Mule deer fawning areas: June 1 to June 30 • Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 • Bighorn sheep lambing areas: February 1 to May 15 • Elk calving areas (should elk expand their range further): May 15 to June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: November 1 to May 1	**Action:** Within the urban interface zone, prohibit disturbance from land use authorizations and implement timing limitation stipulations for fluid mineral leasing in the following areas (dependent on seasonal and site-specific conditions). Outside of the urban interface zone, mitigate disturbance from land use authorization activities in the following areas (dependent on seasonal and site-specific conditions): • Pronghorn kidding areas: May 15 to June 15 • Mule deer fawning areas: June 1 to June 30 • Mule deer migration and movement corridors: March 1 to	**Action:** Prohibit disturbance from land use authorizations and implement timing limitation stipulations for fluid mineral leasing in the following areas (dependent on seasonal and site-specific conditions) unless appropriate mitigation is deemed sufficient by the BLM Authorized Officer: • Pronghorn kidding areas: May 15 to June 15 • Mule deer fawning areas: June 1 to June 30 • Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 • Bighorn sheep lambing areas: February 1 to May 15 • Elk calving areas: (May 15 to June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: December 1 to

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Big game migration/ movement corridors • Crucial habitat areas	May 15 and October 1 to November 30 • Bighorn sheep lambing areas: February 1 to May 15 • Elk calving areas (should elk expand their range further): May 15 to June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: November 1 to May 1	May 1 • Big game migration/ movement corridors • Crucial habitat areas
136.	**Action:** No similar action.	**Action:** Evaluate impacts of fences or other structures that may inhibit big game movement on a case by case basis.	**Action:** Do not construct fences and other structures that could obstruct big game migration corridors or connectivity between seasonal ranges and movement within big game migration corridors unless the fence is to prevent vehicle collisions.	**Action:** Construct fences and other structures that would help prevent vehicle collisions within the urban interface zone where deemed necessary.	**Action:** Construct fences and other structures that would not obstruct big game migration corridors or connectivity between seasonal ranges and movement within big game migration corridors.
137.	**Action:** No similar action.	**Action:** Prohibit translocations of bighorn sheep into areas with no reasonable likelihood of effective separation from domestic sheep or goats unless the NDOW agrees that effective separation is not possible and the sheep or goat permittee is held harmless if disease transmission should occur.			
138.	**Action:** No similar action.		**Action:** Restrict domestic sheep and goat grazing to areas greater than 9 miles (or other distance that provides effective separation as updated based on BLM-approved scientific	**Action:** No similar action.	**Action:** Restrict domestic sheep and goat grazing to areas greater than 9 miles (or other distance that provides effective separation as updated based on BLM-approved scientific

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			recommendations) from potential and occupied bighorn sheep habitat.		recommendations) from occupied bighorn sheep habitat.
139.	**Migratory Birds (Includes Waterfowl, Shorebirds, and Special Status Species)**				
140.	**Objective:** No similar objective.	**Objective:** Protect, restore, or conserve populations and habitats of migratory birds pursuant to current laws and guidance.			
141.	**Action:** No similar action.	**Action:** Avoid disturbance to nesting migratory birds, with an emphasis on special status species and birds of conservation concern (generally May 15 to July 15, but time periods may vary by species and seasonal conditions). If active nests are observed, adhere to USFWS and BLM recommendations and mandates in determining appropriate buffer distances for species protected under the MBTA.	**Action:** Same as Alternative B.	**Action:** Same as Alternative B.	**Action:** Same as Alternative B.
142.	**Action:** No similar action.	**Action:** Minimize collisions with fences, towers, and other structures through marking to increase visibility through the use of *Reducing Avian Collisions with Power Lines, the State of the Art* (APLIC 2012) or best available science.			
143.	**Action:** No similar action.	**Action**: Protect migratory pathways of waterfowl and shorebirds. For Important Bird Areas (Figure 2-5): • Manage as a ROW avoidance area. • Apply a CSU stipulation for fluid mineral leasing.	**Action**: Protect migratory pathways of waterfowl and shorebirds. For Important Bird Areas (Figure 2-5): • Manage as a ROW exclusion area. • Apply a NSO stipulation for fluid mineral leasing. • Close to mineral material disposal.	**Action**: Same as Alternative B, except in the urban interface zone seek acquisitions of land to protect migratory pathways of waterfowl and shorebirds.	**Action**: Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
144.	**Objective:** Manage and/or enhance functioning habitats capable of sustaining a diverse variety of wildlife species and maintaining populations of priority species within Swan Lake.				
145.	**Action:** Manage the Swan Lake Nature Study Area as follows: • Withdrawn from locatable mineral entry. • Motorized vehicle use restricted to "Designated" roads. • Nonfederal lands within the Swan Lake Nature Area will be considered for acquisition.	**Action:** Manage Swan Lake as follows: • Continue to be withdrawn from locatable mineral entry (see *Geology and Minerals, Locatable Minerals* [as part of the Washoe County withdrawal). • Close to fluid mineral leasing (see *Geology and Minerals, Fluid Mineral - Oil, Gas and Geothermal* [as part of Washoe County]). • Close to nonenergy mineral leasing (see *Geology and Minerals, Nonenergy Leasable Minerals* [as part of Washoe County]). • Limited to existing roads, primitive roads, and trails for motorized travel (see *Comprehensive Travel and Transportation Management*). • Nonfederal lands within the Swan Lake area will be considered for acquisition (see *Lands and Realty, Land Tenure Adjustments – Acquisitions).* • Collaboratively plan and manage Swan Lake with Swan Lake Nature Study Area Advisory Board. • Work with the Swan Lake Nature Study Area Advisory Board to increase educational outreach activities/opportunities while minimizing impacts on vegetation and wildlife communities.			
146.	**Bats (Includes Special Status Species)**				
147.	**Objective:** No similar objective.	**Objective:** Maintain, protect, and improve bat (sensitive and nonsensitive) habitat.			
148.	**Action:** No similar action.	**Action:** • Inventory for bats and habitat usage before surface occupancy or disturbance proposed within 0.25 mile of caves not known to be occupied. • Close access to caves in the event of a white-nose syndrome outbreak or other transmittable disease.	**Action:** • Inventory for bats and habitat usage before surface disturbance proposed within 0.5 mile of caves not known to be occupied. • Prohibit large-scale surface-disturbing discretionary actions within 500 feet of bat occupied caves. • Prohibit access to caves with bat resources to prevent the spread of	**Action:** • Inventory for bats and habitat usage before surface occupancy or disturbance proposed within 0.25 mile of caves not known to be occupied. • Prohibit large-scale surface-disturbing discretionary actions within 200 feet of bat occupied caves. • Prohibit access to	**Action:** • Inventory for bats and habitat usage before surface occupancy or disturbance proposed within 0.25 mile of caves not known to be occupied. • Prohibit large-scale surface-disturbing discretionary actions within 0.5 miles of bat occupied caves. • Prohibit access to caves with bat resources to

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			white-nose syndrome. • Close access to caves in the event of a white-nose syndrome outbreak or other transmittable disease. • Protect bat habitat by implementing mitigation measures such as seasonal restrictions, off-site mitigation, and rehabilitation on a case-by-case basis to reduce adverse impacts. • Install bat gates at the entrance of all caves to protect important bat habitats, minimize potential impacts on roosting bats, and protect human health and safety.	caves with bat resources to prevent the spread of white-nose syndrome. • Close access to caves in the event of a white-nose syndrome outbreak or other transmittable disease. • Protect bat habitat by implementing such as mitigation measures seasonal restrictions, off-site mitigation, and rehabilitation on a case-by-case basis to reduce adverse impacts.	prevent the spread of white-nose syndrome. • Close access to caves in the event of a white-nose syndrome outbreak or other transmittable disease. • Protect bat habitat by implementing mitigation measures such as seasonal restrictions, off-site mitigation and rehabilitation on a case-by-case basis to reduce adverse impacts. • Evaluate the potential of installing bat gates at the entrance of caves on a case by case basis to protect important bat habitats, minimize potential impacts on roosting bats, and protect human health and safety.
149.	**Action:** No similar action.	**Action**: Where caverniculous bat roosting, maternity sites, and winter hibernacula occur, bat gates would be required for closing abandoned mine land underground entryways.			
150.	**Action:** No similar action.	**Action:** Restrict BLM-authorized activities that could adversely affect federally listed or BLM sensitive bat species during critical hibernation and maternity periods (time periods vary by species and seasonal	**Action:** Prohibit BLM-authorized activities that could adversely affect federally listed or BLM sensitive bat species during critical hibernation and maternity periods (generally May 1 to August 31 for the maternity period and	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		conditions).	November 1 to March 31 for the hibernation period, but time periods may vary by species and seasonal conditions).		
151.	**Raptors (Includes Special Status Species)**				
152.	**Objective:** No similar objective.	**Objective:** Maintain, protect, improve, and restore raptor habitat.			
153.	**Action:** No similar action.	**Action:** Within 0.25 mile of active nest sites, the following would apply to protect nests from disturbance: • Apply a CSU stipulation for fluid mineral leasing. • Manage as a ROW avoidance area. • Apply seasonal restrictions to all authorized activities (generally March 1 to August 31, but time periods vary by species and seasonal conditions).	**Action:** Within 0.5-mile of active nest sites, the following would apply to protect nests from disturbance: • Apply a NSO stipulation for fluid mineral leasing. • Manage as a ROW exclusion area. • Close to mineral material disposal. • Close to nonenergy leasing. • Apply seasonal restriction to all authorized activities (generally March 1 to August 31, but time periods vary by species and seasonal conditions).	**Action:** Same as Alternative B.	**Action:** Same as Alternative C.
154.	**Action:** No similar action.	**Action:** Restrict BLM-authorized activities that could adversely affect active golden eagle nests sites by providing a buffer around nest sites based on current guidance and consultation with the USFWS.			
155.	**Action:** No similar action.	**Action:** Apply raptor protection stipulations to power line ROWs to minimize electrocution. Protect raptors through the use of *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) or best available science.			
156.	**Action:** No similar action.	**Action:** Restrict wind energy development within 1 mile of active nest sites (except golden eagles, for which restrictions would be based on current guidance and consultation with the USFWS).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
157.	**Special Status Species**				
158.	**Overall Goal for Plants, Fish, and Wildlife**: Manage special status species and their habitats to provide for their protection, conservation, and restoration/enhancement as part of an ecologically diverse healthy system.				
159.	**Objective:** No similar objective.	**Objective:** To conserve plants and animals (and their habitats) listed as threatened, endangered, or proposed by the USFWS or sensitive by the BLM with the overall objective of improving their populations to facilitate delisting and to prevent listing of BLM sensitive species under the ESA as amended.			
160.	**Action:** No similar action.	**Action:** Adhere to BLM-approved plant, soil, and wildlife survey protocols (to accurately establish baseline conditions) and guidelines for all surface disturbance projects.			
161.	**Plants**				
162.	**GOAL**: Manage special status plants and their habitats to provide for their conservation and restoration.				
163.	**Objective:** No similar objective.	**Objective:** Promote maintenance and recovery of federally listed, proposed, and candidate plant species by protecting all special status plant species and their habitat needs.	**Objective:** Same as Alternative B.	**Objective:** Same as Alternative B.	**Objective:** Same as Alternative B.
164.	**Action:** Manage the following designated ACECs for the protection of special status plant species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): • Virginia Range Williams Combleaf Habitat Area ACEC	**Action**: Establish the following ACECs for the protection of special status plant species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): Existing: • Virginia Range Williams Combleaf Botanical ACEC Proposed: • Churchill Narrows	**Action:** Establish the following ACECs for the protection of special status plant species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): Existing: • Virginia Range Williams Combleaf Botanical ACEC Proposed: • Churchill Narrows Buckwheat Botanical	**Action:** Establish the following ACECs for the protection of special status plant species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): Existing: • Virginia Range Williams Combleaf Botanical ACEC Proposed: • Churchill Narrows	**Action:** Establish the following ACECs for the protection of special status plant species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): Existing: • Virginia Range Williams Combleaf Botanical ACEC Proposed: • Churchill Narrows Buckwheat Botanical

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Buckwheat Botanical ACEC • Greater Sand Mountain ACEC	ACEC • Greater Sand Mountain ACEC. • Pine Nut Mountains Williams Combleaf Botanical ACEC • Steamboat Buckwheat Botanical ACEC	Buckwheat Botanical ACEC • Pine Nut Mountains Williams Combleaf Botanical ACEC	ACEC
165.	**Action:** Use fencing, emergency OHV closure, and no disposal of BLM-administered lands, minerals' coordination, or any other legal means necessary to protect identified threatened and endangered plant populations. Work with applicants who present mining plans to avoid destruction of threatened and endangered plant populations, following guidance in the 43 CFR 3802 and 3809 regulations.	**Action:** No similar action (see *Comprehensive Travel and Transportation Management*).			
166.	**Action:** Eliminate OHV use where threatened and endangered plants are located.	**Action:** No similar action (see *Comprehensive Travel and Transportation Management*).			
167.	**Fish and Wildlife**				
168.	**GOAL**: Manage special status species and their habitats in a manner that facilitates the protection, conservation, and restoration/enhancement of federally listed species and does not contribute to the federal listing of sensitive species.				
169.	**Objective:** No similar objective.	**Objective:** Promote restoration and enhancement of federally	**Objective:** Promote restoration and enhancement of federally listed, proposed,	**Objective:** Same as Alternative B.	**Objective:** Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		listed and proposed species by conserving and protecting their habitats.	and candidate species by conserving and protecting their habitats.		
170.	**Action**: Support reintroduction of Lahontan cutthroat trout, bighorn sheep, and other endemic species into suitable, potential and historic habit. Specifically, the Stillwater, Clan Alpine, and Desatoya mountains for desert bighorn sheep and streams and springs identified by NDOW as potential habitat for Lahontan cutthroat trout and other threatened and endangered fish.	**Action:** No similar action.	**Action:** Support the reintroduction or augmentation of special status species to areas where these actions would not result in a decline of habitat quality and quantity for existing native wildlife species.	**Action:** No similar action.	**Action:** Support the introduction, reintroduction, or augmentation of special status species to areas where these actions would not result in a decline of habitat quality and quantity for existing native wildlife species.
171.	**Action:** Manage the following designated ACECs for the protection of special status wildlife species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): • Carson wandering skipper ACEC	**Action:** Retain or establish the following ACECs for the protection of special status wildlife species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Proposed:</u> • Greater Sand Mountain ACEC	**Action:** Retain or establish the following ACECs for the protection of special status wildlife species (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Carson wandering skipper ACEC <u>Proposed:</u> • Clan Alpine Greater Sage-Grouse ACEC	**Action:** No similar action.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Desatoya Greater Sage-Grouse ACEC • Dixie Valley Toad ACEC • Greater Sand Mountain ACEC • Pine Nut Bi-State Sage-Grouse ACEC • Virginia Mountains Greater Sage-Grouse ACEC		
172.	**Action:** No similar action (see *Special Designations, Areas of Critical Environmental Concern - Carson wandering skipper ACEC*).	**Action:** Manage the Carson wandering skipper habitat near Winnemucca Ranch Road to protect this endangered species. • Coordinate with USFWS to identify primary habitat. • Close to motorized travel. • Not available for livestock grazing. • Continue existing mineral entry withdrawal.	**Action:** No similar action (see *Special Designations, Areas of Critical Environmental Concerns – Carson wandering skipper ACEC*).	**Action:** Same as Alternative B.	**Action:** Manage the Carson wandering skipper habitat near Winnemucca Ranch Road to protect this endangered species. • Coordinate with USFWS to identify primary habitat. • Not available for livestock grazing. • Continue existing mineral entry withdrawal. Any nonfederal lands in the area, identified as habitat for the Carson wandering skipper, would be considered for acquisition.
173.	**Greater Sage-Grouse (Bi-State distinct population segment and range wide population)** *Note: The Bi-State distinct population segment habitat is considered to be priority habitat. Therefore, actions that refer to general habitat or Preliminary General Management Area (PGMA) apply only to the range-wide Greater Sage-Grouse population and not the Bi-State distinct population segment. All references to Greater Sage-Grouse PPMA apply to both the range-wide populations and the Bi-State distinct population segment priority habitat.*				
174.	**GOAL:** Maintain and/or increase abundance and distribution of Greater Sage-Grouse on BLM-administered lands by conserving, enhancing, or restoring the sagebrush ecosystem upon which populations depend, in cooperation with other conservation partners (Figure 2-6).				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
175.	**Objective:** No similar objective.	**Objective:** Protect, restore, enhance, and expand habitat for the Greater Sage-Grouse (Figure 2-7).			
176.	**Action:** No similar action.		**Action:** Within PPMA, water developments should be drained when not in use so they do not create a breeding ground for mosquitos that carry West Nile Virus. If it is determined, in coordination with NDOW, that the risk of West Nile Virus is minimal and other wildlife species could be negatively affected by draining a water development, a water development may be left in operation.		
177.	**Action:** No similar action.	**Action:** After soil disturbance or seeding associated with habitat rehabilitation in Greater Sage-Grouse PPMA, the land shall not be returned to soil-disturbing authorized uses for a minimum of two full growing seasons or until desired vegetation or habitat objectives are met. In general habitat, clearly define treatment objectives and allow a minimum of 2 growing seasons rest. If objectives are not met, consider deeming the treatment a failure and resuming uses at a modified (appropriate for the new site conditions) level.	**Action:** After soil disturbance or seeding associated with habitat rehabilitation in Greater Sage-Grouse PPMA and PGMA, the land shall not be returned to soil-disturbing authorized uses for a minimum of two full growing seasons or until vegetation or habitat objectives are met.	**Action:** Same as Alternative C.	
178.	**Action:** No similar action.	**Action:** Only use pesticides outside of the critical disturbance period (breeding and nesting/early brood rearing, generally	**Action:** No similar action.	**Action:** Treat sites within PPMAs and PGMAs that are dominated by invasive species through an integrated vegetation management approach using fire, chemical, mechanical, and biological methods based on site potential.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		March 1 to June 30). Only use chemicals with the lowest toxicity to birds that still provide control in coordination with USDA or Animal and Plant Health Inspection Service, depending on the target pest.			
179.	**Action:** No similar action.	**Action:** In PPMA, coordinate, plan, design, and implement vegetation treatments (e.g., juniper removal, fuels treatments, and green stripping) and associated effectiveness monitoring between Resources, Vegetation Management, Emergency Stabilization, and Burned Area Rehabilitation programs to: • Promote the maintenance of large intact sagebrush communities • Limit the expansion or dominance of invasive species and noxious weeds, including conifers, cheatgrass, and medusa head • Maintain or improve soil site stability, hydrologic function,	**Action:** In PPMA and PGMA, coordinate, plan, design, and implement vegetation treatments (e.g., juniper removal, fuels treatments, and green stripping) and associated effectiveness monitoring between Resources, Vegetation Management, Emergency Stabilization, and Burned Area Rehabilitation programs to: • Promote the maintenance of large intact sagebrush communities • Limit the expansion or dominance of invasive species and noxious weeds, including conifers, cheatgrass, and medusa head • Maintain or improve soil site stability, hydrologic function, and biological integrity	**Action:** Same as Alternative B.	**Action:** Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and biological integrity • Enhance the native plant community with appropriate shrub, grass, and forb composition identified in the applicable Ecological Site Description (ESD) where available.	• Enhance the native plant community with appropriate shrub, grass, and forb composition identified in the applicable Ecological Site Description (ESD) where available.		
180.	**Action:** No similar action.	**Action:** Limit use of prescribed fire within greater sage grouse PPMA to sagebrush habitats that have annual precipitation levels above 12 inches and are not vulnerable to the establishment of invasive annual species. Prescribed fire may be permitted in Greater Sage-Grouse PPMA with less than 12 inches of precipitation if prescribed fire has been identified as the most appropriate tool to meet fuels management objectives.	**Action:** Prohibit use of prescribed fire within Greater Sage-Grouse PPMA and PGMA.	**Action:** Same as Alternative B.	**Action:** Identify opportunities for prescribed fire, including where prescribed fire has been identified as the most appropriate tool to meet fuels management objectives and Greater Sage-Grouse conservation objectives, and the potential expansion or dominance of invasive species has been determined to be minimal through an invasive species risk determination for the treatment project (see BLM Manual Section 9015).
181.	**Action:** No similar action.	**Action:** Improve habitat for Greater Sage-Grouse and other special status species by removing pinyon and/or juniper expansion within Greater Sage-Grouse PPMA.	**Action:** Improve habitat for Greater Sage-Grouse and other special status species by removing pinyon and/or juniper expansion within Greater Sage-Grouse PPMA and PGMA. In Phase II and III pinyon and/or juniper stands in PPMAs and PGMAs: • Remove or reduce biomass to meet fuel and GRSG habitat objectives (see Table 2-5, Proposed Habitat Objectives for Greater Sage-Grouse).		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Prioritize for treatment habitats that are being invaded by pinyon and/or juniper in Phase I or early Phase II condition. Habitats in late Phase II or Phase III condition would only be targeted for treatment under certain circumstances, such as to create movement corridors, connect habitats, or reduce the potential for catastrophic fire.	• Take appropriate action to establish desired understory species composition, including seeding and invasive species treatments. • In areas with a sagebrush component, select a treatment method that maintains or improves sagebrush and shrub cover and composition.		
182.	**Action:** No similar action.	**Action:** Apply timing limitation stipulations to fluid mineral leasing within 0.6 mile of springs, meadows, and riparian corridors (late brood-rearing habitat) within Greater Sage-Grouse PPMA and PGMA from May 15 to August 15 (dates can be extended to September 15 for the Bi-State distinct population segment). Prohibit surface use during the identified timeframe. This stipulation does not apply to operations and maintenance of production facilities.	**Action:** No similar action. *Note: Greater Sage-Grouse PPMA and PGMA would be closed to fluid mineral leasing under Alternative C (Row 186).*	**Action:** No similar action. *Note: Greater Sage-Grouse PPMA and PGMA would have a NSO stipulation for fluid mineral leasing (Row 186).*	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
183.	**Action:** No similar action.	**Action:** For leases within PPMA, restrict disturbance activities within 4-mile buffer area from active Greater Sage-Grouse leks during the breeding season (Approximately March 1 to June 30). The distance could be reduced or increased based on information from the best available science that would incorporate variables such as topography, vegetation, and potential impacts from disturbance activities.	**Action:** For leases entirely within PPMA, prohibit disturbance activities within a 4-mile buffer area of active Greater Sage-Grouse leks during the breeding season (Approximately March 1 to June 30).		
184.	**Action**: Negotiate off-site mitigation for discretionary permitted activities when an irretrievable loss of critical or crucial habitat is unavoidable, or a significant long-term adverse impact would occur. *Note: Applies to all critical or crucial habitat not just sage-grouse habitat.*	**Action:** Within Greater Sage-Grouse PPMA, offset habitat loss through mitigation to ensure GRSG habitat goals are met. When providing guidance to applicants, ensure project proponents that may be contributing to potential mitigation are aware of such areas.	**Action:** Identify off-site mitigation areas within PGMAs with reasonable potential to achieve vegetation objectives and meet the seasonal habitat needs of GRSG. These are areas where mitigation would occur for application of off-site mitigation actions.	**Action:** Same as Alternative B.	
185.	**Action:** Negotiate off-site mitigation during the plan of operations review for locatable mineral actions	**Action:** Authorize locatable mineral development activity per the 43 CFR 3809	**Action:** Negotiate off-site mitigation within the WAFWA management zone, with coordination from	**Action:** Negotiate off-site mitigation within the WAFWA management zone, with coordination from NDOW, to improve habitat during the permitting process review for locatable mineral actions that would	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	when an irretrievable loss of critical or crucial habitat is unavoidable, or a significant long-term adverse impact would occur.	regulations through Plan of Operation Approvals and apply mitigation and Greater Sage-Grouse BMPs that minimizes the loss of greater sage grouse PPMA or provides for enhancement of Greater Sage-Grouse PPMA through off-site mitigation within the WAFWA management zone.	NDOW, to improve habitat during the permitting process review for locatable mineral actions that would in the loss of Greater Sage-Grouse PPMA or other areas essential to survival of Greater Sage-Grouse. The desired outcome for compensatory mitigation is improving a minimum of 4 acres of habitat with similar potential for every acre of lost habitat.	result in the loss of Greater Sage-Grouse PPMA or other areas essential to survival of Greater Sage-Grouse. The desired outcome for compensatory mitigation is improving a minimum of 3 acres of habitat with similar potential for every acre of lost habitat.	
186.	**Action:** No similar action.	**Action:** Apply a CSU stipulation for fluid mineral leasing within Greater Sage-Grouse PPMA (275,600 acres; Figure 2-7). This may include restrictions on construction during certain hours of the day.	**Action:** Close Greater Sage-Grouse PPMA and PGMA to fluid mineral leasing (414,200 acres; Figure 2-7).	**Action:** Apply a NSO stipulation for fluid mineral leasing within Greater Sage-Grouse PPMA (275,600 acres; Figure 2-7) with no exceptions, modifications, and waivers.	
187.	**Action:** No similar action.			**Action:** Apply a NSO stipulation for fluid mineral leasing within Greater Sage-Grouse PGMA (138,600 acres; Figure 2-7). Exceptions. modifications, and waivers would be applied as outlined in **Appendix C**.	
188.	**Action:** No similar action.		**Action:** Allow geophysical exploration within Greater Sage-Grouse PPMA and PGMA that does not result in crushing of sagebrush vegetation or create new or additional surface disturbance. Allow heli-	**Action:** No similar action.	**Action:** Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			portable drilling methods, articulated rubber-tired vehicles that "leave no trace," and vibro-seis geophysical operations conducted on existing roads and bladed shoulders. Geophysical operations would be subject to timing and CSU limitations established for Greater Sage-Grouse PPMA and PGMA.		
189.	**Action:** No similar action.		**Action:** Close Greater Sage-Grouse PPMA and PGMA (414,200 acres; Figure 2-7) to nonenergy mineral leasing and new mineral material disposal.	**Action:** No similar action.	**Action:** Same as Alternative C.
190.	**Action:** No similar action.	**Action:** Manage Greater Sage-Grouse PPMA as ROW avoidance areas (275,600 acres).	**Action:** Manage Greater Sage-Grouse PPMA and PGMA as ROW exclusion areas (414,200 acres).	**Action:** Manage Greater Sage-Grouse PPMA and PGMA as ROW avoidance areas (414,200 acres).	
191.	**Action:** No similar action.	**Action:** No similar action.	**Action:** Manage PPMAs and PGMAs as ROW exclusion for utility-scale commercial solar and wind energy facilities (i.e., facilities that generate 20 megawatts MW or more).	**Action:** No similar action.	**Action:** Same as Alternative C.
192.	**Action:** No similar action.	**Action:** No structures or power lines taller than the surrounding vegetation that could serve as predator perches would be installed within 2 miles	**Action:** Prohibit the installation of tall structures and power lines within 3 miles or line-of-sight distance of a nest if such structures would result in an increase in predation on Greater Sage-Grouse by raptors/ Corvids during the lekking period (March 1 to May 15).		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		of a lek, and no structures greater than 8 feet tall that could serve as predator perches shall be installed within any Greater Sage-Grouse habitat unless they are equipped with anti-perching devices.			
193.	**Action:** No similar action.	**Action:** Restrict fence construction or consider fence removal within Greater Sage-Grouse PPMA within 1.25 miles of active leks and in movement corridors between seasonal habitats, unless the objective is to benefit Greater Sage-Grouse habitat, provide resource protection, protect human health and safety, promote successful reclamation, or improve land health. If fence construction is absolutely necessary, according to the guidelines stated above, structures must be constructed and marked to prevent collisions based on BLM policy and guidance.	**Action:** Restrict fence construction or consider fence removal within Greater Sage-Grouse PPMA and PGMA within 2 miles of active leks and in movement corridors between seasonal habitats, unless the objective is to benefit Greater Sage-Grouse habitat, provide resource protection, protect human health and safety, promote successful reclamation, or improve land health. If fence construction is absolutely necessary, according to the guidelines stated above, structures must be constructed and marked to prevent collisions based on BLM policy and guidance.	**Action:** Same as Alternative B.	**Action:** Remove, modify, or mark permanent and temporary fences in areas of high risk for bird strikes within PPMAs and PGMAs. Permanent and/or temporary fences would not be located on or across active leks. Remove and re-locate existing fences that are located on or across active leks.
194.	**Action:** Restrict activities that might be disturbing to	**Action:** Implement time-of-day and time-of-year	**Action:** Implement time-of-day and time-of-year restrictions within 4 miles of active leks in Greater Sage-Grouse PPMA and PGMA from March 1 to May 15 to mitigate		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	sage-grouse between February 15 and May 15.	restrictions within 2 miles of active leks in Greater Sage-Grouse PPMA from March 1 to May 15 to mitigate impacts from authorized project-related activities. Time of year restrictions and distance may be expanded to include Greater Sage-Grouse wintering, nesting, or brood-rearing habitat.	impacts from authorized project-related activities. Time of year restrictions and distance may be expanded to include Greater Sage-Grouse wintering habitat, nesting, or brood-rearing habitat.		
195.	**Action:** No similar action.	**Action:** Implement time-of-year and time-of-day travel restrictions within 2 miles of leks in Greater Sage-Grouse PPMA from March 1 to May 15 to mitigate impacts from authorized project-related activities. Time of year restrictions and distance may be expanded to include Greater Sage-Grouse, nesting, or brood-rearing habitat.	**Action:** Prohibit motorized and mechanized travel on a seasonal basis within 4 miles of leks in sage-grouse PPMA from March 1 to May 15 to mitigate impacts from authorized project-related activities. Time of year restrictions and distance may be expanded to include Greater Sage-Grouse wintering, nesting, or brood-rearing habitat.		**Action:** Implement time-of-year and time-of-day travel restrictions within 4 miles of leks in Greater Sage-Grouse PPMA from March 1 to May 15 to mitigate impacts from authorized project-related activities. Time of year restrictions and distance may be expanded to include Greater Sage-Grouse wintering, nesting, or brood-rearing habitat.
196.	**Action:** No similar action.	**Action:** Retain and acquire lands within Greater Sage-Grouse PGMA. Consider exceptions when: • Disposal and/or acquisitions of public lands would allow for more contiguous	**Action:** Retain and acquire lands within PPMA and PGMA.		**Action:** Retain and acquire public ownership of Greater Sage-Grouse PPMA and PGMA. Consider exceptions when: • Disposal and/or acquisitions of public lands would allow for more contiguous federal

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		federal ownership patterns within the Greater Sage-Grouse habitat area, or where a land tenure adjustment would result in a net gain in amount or quality of Greater Sage-Grouse habitat. • Lands that are acquired (exchange, purchase or easement) for Greater Sage-Grouse habitat, are managed as Greater Sage-Grouse PPMA. Where significant conservation actions could be achieved in Greater Sage-Grouse PPMAs, seek to acquire lands with intact subsurface mineral estate by donation, purchase, or exchange in order to best conserve, enhance or restore sage-grouse habitat.			ownership patterns within Greater Sage-Grouse habitat, or where a land tenure adjustment would result in a net gain in amount or quality of Greater Sage-Grouse habitat. • Lands that are acquired (exchange, purchase or easement) for Greater Sage-Grouse habitat, are managed as Greater Sage-Grouse PPMA. Where significant conservation actions could be achieved in Greater Sage-Grouse PPMAs, seek to acquire lands with intact subsurface mineral estate by donation, purchase, or exchange in order to best conserve, enhance or restore sage-grouse habitat.
197.	**Action:** No similar action.	**Action:** If project-generated acoustical noise is expected to approach scientifically identified thresholds for Greater Sage-Grouse, mitigation measures must be employed to reduce impacts to below threshold levels. • Limit noise to less than 10 decibels above ambient measures (20to 24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010; Blickley et al. In preparation).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
198.	**Action:** No similar action.		**Action:** Make allotments containing Greater Sage-Grouse PPMA and PGMA unavailable to livestock grazing.	**Action:** No similar action. *Note: Allotments are available for grazing but have numerous implementation-level protections for sage-grouse habitat that could be established.*	
199.	**Wild Horses and Burros**				
200.	**GOAL:** Manage healthy animals in balance with other uses and the productive capacity of their habitat within Herd Management Areas (HMAs).				
201.	**Objective:** Maintain or improve the condition of public rangelands to enhance productivity for wild horses and burros within HMAs (1,235,200 acres).	**Objective:** Manage HMAs where habitat conditions (forage, water, cover, space) are adequate to support healthy populations and where a thriving natural ecological balances and multiple-use relationship can be achieved and maintained. Manage and protect wild horses and burros and their habitat on 13 HMAs (996,500 acres) and retain herd areas (Has) where wild horses and burros occurred on December 15, 1971.	**Objective:** Manage HMAs where habitat conditions (forage, water, cover, space) are adequate to support healthy populations and where a thriving natural ecological balances and multiple-use relationship can be achieved and maintained. Manage and protect wild horses and burros and their habitat on 12 HMAs (1,090,000 acres) and retain HAs where wild horses and burros occurred on December 15, 1971.	**Objective:** Same as Alternative B.	**Objective:** Manage HMAs where habitat conditions (forage, water, cover, space) are adequate to support healthy populations and where a thriving natural ecological balances and multiple-use relationship can be achieved and maintained. Manage and protect wild horses and burros and their habitat on 13 HMAs (1,070,200 acres) and retain HAs where wild horses and burros occurred on December 15, 1971.
202.	**Action:** Maintain HMAs and HAs as indicated on Figure 2-8. • Augusta Mountains HA/HMA • Clan Alpine HA/HMA • Desatoya Mountains HA/HMA • Dogskin Mountains HA/HMA	**Action:** Maintain HMAs and HAs as indicated on Figure 2-9. • Augusta Mountain HA/HMA • Clan Alpine HA/HMA • Desatoya Mountains HA/HMA • Dogskin Mountains HA • Flanigan HA/HMA	**Action:** Maintain HMAs and HAs as indicated on Figure 2-10. • Augusta Mountains HA/HMA • Clan Alpine HA/HMA • Desatoya Mountains HA/HMA • Dogskin Mountains HA • Flanigan HA/HMA	**Action:** Same as Alternative B.	**Action:** Maintain HMAs and HAs as indicated on Figure 2-11. • Augusta Mountains HA/HMA • Clan Alpine HA/HMA • Desatoya Mountains HA/HMA • Dogskin Mountains HA • Flanigan HA/HMA

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Flanigan HA/HMA • Garfield Flat HA/HMA • Granite Peak HA/HMA • Fort Sage HA/HMA • Horse Mountain HA/HMA • Horse Springs HA • Lahontan HA/HMA • Marietta HA/HMA • Montgomery Pass HA/HMA • New Pass HA/HMA • North Stillwater HA/HMA • Pilot Mountain HA/HMA • Pine Nut HA/HMA • South Stillwater HA/HMA • Tule Ridge and Mahogany Flat HA/HMA • Pah Rah Mountain HA • Wassuk HA/HMA	• Garfield Flat HA • Granite Peak HA • Fort Sage HA/HMA • Horse Mountain HA • Horse Springs HA • Lahontan HA/HMA • Marietta HA/HMA • Montgomery Pass HA/HMA • New Pass HA/HMA • North Stillwater HA/HMA • Pilot Mountain HA/HMA • Pine Nut HA/HMA • South Stillwater HA • Tule Ridge and Mahogany Flat HA • Pah Rah Mountain HA • Wassuk HA/HMA	• Garfield Flat HA/HMA o Coordinate with the private land owner and change the Garfield Flat HMA into a nonreproductive HMA. • Granite Peak HA • Fort Sage HA/HMA • Horse Mountain HA • Horse Springs HA • Lahontan HA • Marietta HA/HMA • Montgomery Pass HA/HMA • New Pass HA/HMA • North Stillwater HA/HMA • Pilot Mountain HA/HMA • Pine Nut HA/HMA • South Stillwater HA • Tule Ridge and Mahogany Flat HA • Pah Rah Mountain HA • Wassuk HA		• Garfield Flat HA/HMA • Granite Peak HA • Fort Sage HA/HMA • Horse Mountain HA • Horse Springs HA • Lahontan HA/HMA • Marietta HA/HMA • Montgomery Pass HA/HMA • New Pass HA/HMA • North Stillwater HA/HMA • Pilot Mountain HA/HMA • Pine Nut HA/HMA • South Stillwater HA • Tule Ridge and Mahogany Flat HA • Pah Rah Mountain HA • Wassuk HA
203.	**Action:** Maintain appropriate management levels (AMLs) through removals of excess animals and the use of contraceptives.	**Action**: Manage wild horses and burros at identified AML range. When populations exceed the upper AML level and monitoring data supports that excess animals are present and need to be removed, gather wild horses and burros to reduce horse and burro numbers to the lower limit of the AML range or to a level below the AML to allow for 4 to 5 years before the upper range of AML is exceeded.		**Action**: Manage wild horses and burros at identified AML range. When populations approach the upper AML level and monitoring data supports that excess animals are present, or will be present within the next foaling season, and need to be removed, gather wild horses and burros to reduce horse and burro numbers to the lower limit of AML range. The goal is to maintain the wild horses and burros population between the lower	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				and the upper AML range without exceeding the upper level. • Frequency of gathers would be planned to conduct gathers before the high range of AML has been reached. • HMA-specific population control programs would dictate type of gather and frequency of fertility control techniques. Possible control techniques may include contraceptive, sterilization, skewing sex ratios, and removal. • Gathers would be prioritized in Greater Sage-Grouse PPMAs and PGMAs and wildlife priority habitat for other special status species. • Conflicts with home owners, private property owner, general public, and motorists would be minimized by gathering as soon as practical to provide for the safety of the public. • Fencing may be used to protect the public.	
204.	**Action:** No similar action.	**Action:** Continue gathers to remove excess wild horses and burros through approved methods.	**Action:** Conduct gathers to remove excess wild horses and burros and implement population control programs.	**Action:** Conduct gathers to remove excess wild horses and burros and implement population control programs. When feasible and appropriate, gather wild horses or burros that need to be removed from the range in response to drought emergencies.	
205.	**Action:** No similar action.	**Action:** • Through the Rangeland Health Evaluation or HMA Plan process, assess the adequacy of 4 habitat components (forage, water, cover, space) and capability of the HMA or metapopulation to support healthy wild horses and burros and healthy rangeland over the long term. • Identify suitable, acceptable, marginal, and unsuitable habitat within portions of or entire HMAs through a modified habitat evaluation process and application of suitability criteria. Adjustments in AML may be necessary depending on habitat evaluations. Based on habitat evaluations, areas or HMAs maybe determined to be unsuitable for wild horses due to water quantity or distribution, sparse or inaccessible vegetation, or other factors. These areas would be excluded from AML determination. • Adjust the habitat evaluation process as necessary to account for HMA- or population-specific information applicable to capability, suitability, and management of wild horses and burros in that area, and as information				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		becomes available in the future. • Conduct apportionment of forage for wild horses and burros and livestock on a case-by-case basis. • Evaluate HMA designations and removal needs in regards to public safety along highways and urban areas.			
206.	**Action:** No similar action.	**Action:** Manage wild horses and burros in a manner that ensures significant progress is made toward achieving the Standards and Guidelines for Rangeland Health and Wild Horses and Burros, and other site-specific or landscape-level objectives.			
207.	**Action:** During periodic removals remove animals that have established home ranges outside of the HMAs first.	**Action:** No similar action.			
208.	**Action:** No similar action.		**Action:** Seek innovative solutions through a cooperative relationship with local communities and other organizations regarding wild horses and burros.		
209.	**Action:** No similar action.	**Action:** Manage wild horses and burros that are currently administered via MOUs* in accordance with this RMP or applicable implementation plans, unless otherwise specified in the MOU. Develop interagency and interoffice MOUs to manage wild horses and burros as applicable. *MOU is defined in this case as agreements with other district offices and agencies where wild horses and burros are managed across district office and agency administrative boundaries.			
210.	**Action**: Maintain Horse Springs, Pah Rah, and the southern portion of the Pine Nut Mountains HAs as horse-free due to a mix of land ownership.	**Action:** Convert the following HMAs to HAs: • Dogskin Mountains • Garfield Flat • Granite Peak • Horse Mountain • South Stillwater • Tule Ridge and Mahogeny Flat	**Action:** Convert the following HMAs to HAs: • Dogskin Mountains • Granite Peak • Horse Mountain • Lahontan • South Stillwater • Tule Ridge and Mahogeny Flat • Wassuk	**Action:** Same as Alternative B.	**Action:** Convert the following HMAs to HAs: • Dogskin Mountains • Granite Peak • Horse Mountain • South Stillwater • Tule Ridge and Mahogeny Flat • Wassuk
211.	**Action:** No similar action.	**Action:** Work with the Lahontan State Park and Reclamation-Lahontan Basin Area Office to allow wild horses access to water and forage within the park through the	**Action:** All wild horses and burros within the Lahontan HMA would be removed due to the lack of water on BLM-administered land upon coordinating with Lahontan State Park and Reclamation-	**Action:** No similar action.	**Action:** An increase in AML would be contingent upon coordinating with Lahontan State Park and Reclamation-Lahontan Basin Area Office in developing an agreement for legal access to water.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		development of a cooperative agreement while maintaining horse as a non-reproductive herd.	Lahontan Basin Area Office.		
212.	**Action:** Set and maintain AMLs that are in balance with other uses and the productive capacity of the habitat within the HMAs.	**Action**: Complete carrying capacity analysis using Actual Use and Utilization data through Standards and Guidelines Evaluations and Rangeland Health Assessments. When evaluating AML, adjust AML with emphasis on multiple-use needs. Prioritize management of wild horses and burros in HMAs that provide adequate resources for wild horses and burros and result in minimal conflicts with other resource uses and values.	**Action**: Complete carrying capacity analysis using Actual Use and Utilization data through Standards and Guidelines Evaluations and Rangeland Health Assessments. When evaluating AML, emphasize maintaining healthy and genetically diverse wild horses and burros. Prioritize management of wild horses and burros in HMAs that have potential to provide adequate resources for wild horse and burros. Through Rangeland Health Evaluations, wild horse AMLs would be assessed. Through implementation of water sources, removal of livestock, removal of fences, and re-vegetation projects, AMLs would be increased to maximize the number of wild horses or burros that could be supported in HMAs and still maintain thriving natural	**Action**: Complete carrying capacity analysis using Actual Use and Utilization data through Standards and Guidelines Evaluations and Rangeland Health Assessments. When evaluating AML and allocation of forage among rangeland users, assess the suitability of existing HMAs to sustain healthy, genetically diverse populations of wild horses and burros in balance with the thriving natural ecological balance of their habitat and other multiple uses. Balance management of HMAs in areas that provide sufficient resources for wild horse and burros with other resource uses and values.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			ecological balance and avoid deterioration of the range.		
213.	**Wildland Fire Ecology and Management**				
214.	**GOAL:** Manage wildland fire as an integral part of the ecosystem, improve the diversity of vegetation, and reduce fire hazard fuels.				
215.	**Objective:** Carson City Field Office is divided into 4 fire management categories: A, B, C, and D (Figure 2-12). Fire will be managed in these areas according to guidance outlined in the Consolidated RMP.	**Objective:** No similar objective.			
216.	**Action:** Wildfires in Category A areas will be suppressed with the intent of holding them to 10 acres or less 90 percent to the time and continuing aggressive suppression until fires are contained. Category A fire management, with full suppression, was identified for approximately 21,000 acres in the Carson City District administrative boundary.	**Action:** No similar action.			
217.	**Action:** Wildfires in Category B areas will be suppressed with the intent of holding 90 percent to 10 acres or less in forested areas, and to 25 acres or less in brush or grass	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	areas. Category B fire management was identified for approximately 467,000 acres in the Carson City District administrative boundary.				
218.	**Action:** The management for Category C areas will be to contain unplanned ignitions to less than 2,000 acres 90 percent of the time in all vegetative types. Fire suppression tactics will be constrained to protect scenic, natural resource, and wilderness values. Category C fire management was identified for approximately 1,119,100 acres in the Carson City District administrative boundary.	**Action:** No similar action.			
219.	**Action:** Wildfires in Category D will have no specific acreage limitation. Fires will be contained by appropriate means where and when conditions will result in significant damage to natural resources or threaten private developments. Category D fire management was identified for approximately 3,104,900	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	acres within the Carson City District administrative boundary.				
220.	**Objective:** No similar objective.	**Objective:** All fire management actions whether they are related to fire suppression, fuels treatment, community education and assistance, or emergency stabilization and rehabilitation would be conducted in a manner consistent with the primary priority of firefighter and public safety.			
221.	**Action:** No similar action.	**Action:** Wildland fire management response actions taken would be specifically pre-defined in fire management plans and other operating plans that outline specific goals, objectives, and constraints by specific Fire Management Units within the Fire Planning Unit.			
222.	**Action:** No similar action.	**Action:** A full range of fire management activities (as outlined in the fire management plan) and options would be utilized to protect all identified values at risk.	**Action:** Minimum impact suppression tactics would apply, whereby the environmental impacts of emergency fire management methods would be no greater than necessary to meet fire management objectives. The use of dozers would only be authorized when there is a threat to public safety or property damage. Chemical agents would not be allowed for suppression activities.	**Action:** Same as Alternative B.	**Action:** A full range of fire management activities and options would be utilized to protect all values at risk and sustain healthy ecosystems within acceptable risk levels. Local agency administrators and resource advisors would convey protection priorities to incident commanders.
223.	**Objective:** No similar objective.	**Objective:** Protect identified values at risk from catastrophic impacts of wildfire and wildfire suppression activities.	**Objective:** Protect sensitive cultural, paleontological, biological, and other natural resources from catastrophic impacts of wildfire and wildfire suppression activities.	**Objective:** Protect all identified wildland urban interface values at risk from catastrophic impacts of wildfire and wildfire suppression activities.	**Objective:** Protect wildland urban interface, sensitive cultural, paleontological, biological, and other natural resources from catastrophic impacts of wildfire and wildfire suppression activities.
224.	**Action:** No similar action.	**Action:** The assignment of one or more resource advisor would be a	**Action:** At least one resources advisor would be assigned to all wildfires when	**Action:** The assignment of one or more resource advisors would be a standard practice for all wildfires over 100 acres or when there is an identified value at	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		standard practice for all wildfires over 100 acres.	a there is an identified value at risk.	risk.	
225.	**Objective:** No similar objective.	**Objective:** Implement hazardous fuels reduction projects where the negative impacts of wildland fire are greatest to property, infrastructure, and improvements.	**Objective:** Implement hazardous fuels reduction projects where the negative impacts of wildland fire are greatest on sensitive biological, cultural, and other natural resources.	**Objective:** Implement hazardous fuels reduction projects where the negative impacts of wildland fire are greatest to health and safety within the urban interface.	**Objective:** Implement hazardous fuels reduction projects where the negative impacts of wildland fire are greatest to health and safety, sensitive biological, cultural, and other natural resources.
226.	**Action:** No similar action.	**Action:** Utilize wildfire, prescribed fire, and nonfire fuels treatments to modify vegetation communities to achieve condition class, fuels, habitat, watershed, and riparian objectives.	**Action:** Design and implement fuels treatments that would maintain, protect, and expand healthy resilient vegetative ecosystems.	**Action:** Design and implement fuels treatments that would create fire safe communities resistant to catastrophic wildfire events.	**Action:** Utilize wildfire, prescribed fire, and nonfire fuels treatments to create fire safe communities and modify vegetation communities to achieve condition class, fuels, habitat, watershed, and riparian objectives.
227.	**Objective**: Rehabilitation projects will be conducted to achieve the following: stabilize soils; re-establish hydrologic function; maintain and enhance biological integrity; promote plant resiliency; limit expansion or dominance or invasive species; and reestablish native species.	**Objective:** Emergency Stabilization and Burned Area Rehabilitation projects would be prioritized as follows: stabilize soils; re-establish hydrologic function; maintain and enhance biological integrity; promote plant resiliency; limit expansion or dominance or invasive species; and reestablish native species.			
228.	**Action:** No similar action.	**Action:** Prevent cheatgrass and other invasive species from dominating burned areas	**Action:** Design and implement emergency stabilization and burned area rehabilitation treatments for	**Action:** Design and implement emergency stabilization and burned area rehabilitation	**Action:** Design and implement emergency stabilization and burned area rehabilitation treatments to

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and altering the natural fire regime by re-establishing appropriate species/subspecies.	high value wildlife habitat by re-establishing appropriate native species/subspecies and important understory plants relative to site potential.	treatments to protect wildland urban interface areas from subsequent wildfires by using fire resistant species.	protect wildland urban interface areas, improve high value wildlife habitat by re-establishing appropriate species/subspecies and important understory plants relative to site potential and prevent invasive species dominance.
229.	**Action:** No similar action.	**Action:** Plant material would be selected based on availability, adaptation (site potential), and probability of success for restoration work.	**Action:** Based on availability, adaptation (site potential), and probability of success the use of native plant material would be used for restoration work.	**Action:** Based on availability, adaptation (site potential), and probability of success the use of native plant material is preferred for restoration work. Where probability of success or native seed availability is low, nonnative seed may be used.	
230.	**Objective:** No similar objective.	**Objective:** Employ fire prevention and education strategies that reduce human-caused wildfires.		**Objective:** Employ fire prevention and education strategies that reduce human-caused wildfires with special emphasis in the wildland urban interface.	**Objective:** Employ fire prevention and education strategies that reduce human-caused ignitions (e.g., fireworks, recreational shooting etc.)with special emphasis in the urban interface, campgrounds and transportation corridors.
231.	**Action:** No similar action.	**Action**: Develop a wildland prevention education program through direct contact, multimedia and collaboration with fire prevention partners.			
232.	**Cultural Resources**				
233.	**GOAL:** Preserve and protect cultural resources ensuring respectful and appropriate use by present and future generations.				
234.	**Actions common to all:** • Conduct proactive consultation with Native American Nations and its members to identify cultural resources, significant places, non-destructive scientific studies, and respectful public education. • Provide opportunities for scientific study and educational and interpretive uses of cultural resources. • Inventory and document at-risk historic properties in support of monitoring and law enforcement efforts. • Seek to reduce imminent threats and resolve potential conflicts from natural- or human-caused deterioration, or from other resource uses.				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Support partnerships for documentation, stewardship, and protection of cultural resources.				
235.	**Objective:** No similar objective.	**Objective:** Protect archaeological, historical, and cultural resources and manage for information, public values, and conservation in conjunction with other multiple uses.			
236.	**Action:** No similar action.	**Action:** Management of historic roads and trails that are eligible for the National Register of Historic Places (NRHP) but are not Congressionally designated: • Manage as a ROW avoidance (0.25-mile buffer of either side of center line). • Direct and indirect adverse effects on eligible or unevaluated trail segments and associated sites would be mitigated by avoidance, project redesign, data collection, interpretation, public education, or other means.	**Action:** Management of historic roads and trails that are eligible for the NRHP but are not Congressionally designated: • Manage as a ROW avoidance (2.5-mile buffer of either side of center line). • No surface-disturbing activities would be allowed on the trail, except for trail traffic. • Direct and indirect adverse effects on eligible or unevaluated trail segments and associated sites would be mitigated by avoidance, project redesign, data collection, interpretation, public education, or other means.	**Action:** Same as Alternative B.	**Action:** Management of historic roads and trails that are eligible for the NRHP but are not Congressionally designated: • Manage as a ROW avoidance (1-mile buffer of either side of center line). • Direct and indirect adverse effects on eligible or unevaluated trail segments and associated sites would be mitigated by avoidance, project redesign, data collection, interpretation, public education, or other means.
237.	**Action:** No similar action.	**Action:** Protect the cultural and historic values of rock art sites (within 0.125 mile) • Prohibit surface-disturbing activities and visual intrusions within these areas if they adversely affect these	**Action:** Protect the cultural and historic values of rock art sites (within 1 mile) • Prohibit surface-disturbing activities and visual intrusions within these areas if they adversely affect these values as identified through the	**Action:** Protect the cultural and historic values of rock art sites (within 0.125 mile) • Prohibit surface-disturbing activities and visual intrusions within these areas if they adversely affect	**Action:** Protect the cultural and historic values of rock art sites (within 0.5 mile or visual horizon whichever is less) • Prohibit surface-disturbing activities and visual intrusions within these areas if they

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		values through the evaluation of eligibility for the NRHP. • Include interpretive signing, fencing, barriers, and other activities in management of visitor use at rock art sites. • Consider applying site-specific and time-specific use limitations to avoid disturbance of traditional Native American practices at rock art sites. • Accommodate access and ceremonial use if identified as a Native American sacred site, and prohibit or modify surface-disturbing activities and visual intrusions in these areas if such actions would affect the physical integrity of Native American sacred sites, to the extent practical, permitted by law.	evaluation of eligibility for the NRHP. • Include interpretive signing, fencing, barriers, and other activities in management of visitor use at rock art sites. • Consider applying site-specific and time-specific use limitations to avoid disturbance of traditional Native American practices at rock art sites. • Accommodate access and ceremonial use if identified as a Native American sacred site, and prohibit or modify surface-disturbing activities and visual intrusions in these areas if such actions would affect the physical integrity of Native American sacred sites, to the extent practical, permitted by law.	these values through the evaluation of eligibility for the NRHP. • Include interpretive signing, fencing, barriers, and other activities in management of visitor use at rock art sites. • Encourage visitation through interpretation and education. • Consider applying site-specific and time-specific use limitations to avoid disturbance of traditional Native American practices at rock art sites. • Accommodate access and ceremonial use if identified as a Native American sacred site, and prohibit or modify surface-disturbing activities and visual intrusions in these areas if such actions would affect the physical integrity of Native American	adversely affect these values through the evaluation of eligibility for the NRHP. • Include interpretive signing, fencing, barriers, and other activities in management of visitor use at rock art sites. • Consider applying site-specific and time-specific use limitations to avoid disturbance of traditional Native American practices at rock art sites. • Accommodate access and ceremonial use if identified as a Native American sacred site, and prohibit or modify surface-disturbing activities and visual intrusions in these areas if such actions would affect the physical integrity of Native American sacred sites, to the extent practical, permitted by law.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				sacred sites, to the extent practical, permitted by law.	
238.	**Action:** No similar action.	**Action:** To protect NRHP-listed Properties and Districts, National Historic Landmarks, and Traditional Cultural Properties listed, eligible, or known but not yet formally designated for the NRHP: • Manage as a ROW avoidance area. • Apply a CSU stipulation for fluid mineral leasing.	**Action:** To protect National Register-listed Properties and Districts, National Historic Landmarks, and Traditional Cultural Properties listed, eligible, or known but not yet formally designated for the NRHP: • Manage as a ROW exclusion area. • Apply a NSO stipulation for fluid mineral leasing. • Close to mineral material disposal.	**Action:** To protect National Register-listed Properties and Districts, National Historic Landmarks, and Traditional Cultural Properties listed, eligible, or known but not yet formally designated for the NRHP: • Manage as a ROW avoidance area. • Apply a CSU stipulation for fluid mineral leasing.	**Action:** To protect National Register-listed Properties and Districts, National Historic Landmarks, and Traditional Cultural Properties listed, eligible, or known but not yet formally designated for the NRHP: • Manage as a ROW avoidance area. • Apply a NSO stipulation for fluid mineral leasing.
239.	**Action:** No similar action.	**Action:** During project planning, consult with tribes regarding resources in connection with Native American religious values and practices. If visual resources in the project proposal area are important to traditional and religious tribal values, consider modifying or mitigating the project. If the project modification or mitigation cannot be accomplished to the satisfaction of the concerned parties,	**Action:** During project planning, consult with tribes regarding resources in connection with Native American religious values and practices. If visual resources in the project proposal area are important to traditional and religious tribal values, consider modifying or mitigating the project. If the project modification or mitigation cannot be accomplished to the satisfaction of the concerned parties, the project would not be authorized.	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		authorization of the project would be at the discretion of the BLM Authorized Officer.			
240.	**Action:** Manage the following designated ACEC for the protection of cultural resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): • Pah Rah High Basin (Dry Lakes) Petroglyph District ACEC	**Action:** Retain or establish the following ACECs for the protection of cultural resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Pah Rah High Basin Petroglyph ACEC <u>Proposed:</u> • Black Mountain/Pistone Archaeological District ACEC • Fox Peak Cultural ACEC • Greater Sand Mountain ACEC • Grimes Point Archaeological District ACEC • Namazii Wunu Cultural ACEC • Tagłm aša Cultural ACEC • Virginia City National	**Action:** Retain or establish the following ACECs for the protection of cultural resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Pah Rah High Basin Petroglyph ACEC <u>Proposed:</u> • Black Mountain/ Pistone Archaeological District ACEC • Fox Peak Cultural ACEC • Greater Sand Mountain ACEC • Grimes Point Archaeological District ACEC • Namazii Wunu Cultural ACEC • Sand Springs Desert Study Area ACEC • Tagłm aša Cultural ACEC • Virginia City National Landmark Historic	**Action:** Retain or establish the following ACECs for the protection of cultural resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Pah Rah High Basin Petroglyph ACEC <u>Proposed:</u> • Black Mountain/Pistone Archaeological District ACEC • Fox Peak Cultural ACEC • Grimes Point Archaeological District ACEC • Tagłm aša Cultural ACEC • Virginia City National Landmark Historic District ACEC	**Action:** Retain or establish the following ACECs for the protection of cultural resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Pah Rah High Basin Petroglyph ACEC <u>Proposed:</u> • Fox Peak Cultural ACEC • Grimes Point Archaeological District ACEC

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Landmark Historic District ACEC	District ACEC		
241.	**Action:** No similar action.	**Action:** No similar action (see *Special Designations, Areas of Critical Environmental Concern – Virginia City National Landmark Historic District ACEC*).			**Action:** Prohibit BLM-authorized activities within the Virginia City National Historic Landmark District. The following management action would also apply: • Close to nonenergy mineral leasing. • Manage as a ROW avoidance area. • Manage as exclusion area for wind development. • Vegetative permitting would not be authorized. • Manage as VRM Class III. • Apply NSO stipulations to fluid mineral leasing.
242.	**Action:** No similar action.	**Action:** No similar action (see *Special Designations, Areas of Critical Environmental Concern – Grimes Point Archaeological District ACEC*).			**Action:** Designate 15,900 acres as the Wyemaha Archaeological District for the protection of cultural resources (Figure 2-13) (The Grimes Point Archaeological District ACEC is located within the Wyemaha Archaeological District; see *Special Designations, Areas of Critical Environmental Concern – Grimes Point Archaeological District ACEC for ACEC specific management actions*) (Figure 2-13).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
					• Provide for volunteer or staff monitoring of site. • Provide for law enforcement patrols of site. • Recommend for withdrawal from locatable mineral entry. • Close to fluid mineral leasing. • Manage as ROW avoidance area. • Vegetative permits would not be authorized. • Reclamation-administered lands relinquished back to the BLM will be incorporated into the Wyemaha Archaeological District boundary. • Provide for research and educational opportunities. • Establish MOU with Fallon Paiute-Shoshone Tribe for collaborative management of site. • Work with local community and tribal entities to establish interpretive tours of site. • Develop and construct an interpretive center.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
243.	**Action:** No similar action.		**Action:** No similar action (see *Special Designations, Areas of Critical Environmental Concern – Black Mountain/Pistone Archaeological District ACEC*).	**Action:** No similar action.	**Action:** Prohibit BLM-authorized activities within the Pistone site (total 3,100 acres) if they adversely affect rock art resources. The following management action would also apply: • Manage as a ROW avoidance. • Close to mineral material disposal. • Recommend for withdrawal from locatable mineral entry. • Close to fluid mineral leasing. • Prohibit use of fire retardant chemicals.
244.	**Action:** No similar action.		**Action:** Manage areas with high cultural site density such as but not limited to playa lake areas (e.g., Edwards Creek Playa, Teels Marsh, Rhodes Marsh, Gabbs Valley Playa, and Salt Wells Basin) and valleys (e.g., Edwards Creek, Dixie Valley, and Gabbs Valley) on a landscape level: • Promote educational, research and interpretation opportunities. • Pursue funding for data synthesis. • Pursue archaeological district National Register and traditional cultural property nominations.		
245.	**Objective:** No similar objective.	**Objective:** Protect all known human burials regardless of their ethnic affiliation consistent with federal, state and local laws, as appropriate. Honor and respect Native American cultural values on their dead and funerary objects.			
246.	**Action:** No similar action.	**Action:** • Implement Native American Graves Protection and Repatriation Act and consult with	**Action:** • Implement Native American Graves Protection and Repatriation Act and consult with appropriate	**Action:** • Implement Native American Graves Protection and Repatriation Act and consult with	**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		appropriate tribes when intentional excavation of Native American human remains is necessary or when inadvertent discovery occurs of Native American human remains. • Close areas known to contain human burials to surface disturbance activities when feasible. Follow appropriate federal, state, and/or local laws when disturbance is necessary. • Avoidance of known or discovered human remains is the preferred option, subject to management requirements and results of any tribal consultation per Native American Graves Protection and Repatriation Act, as appropriate. Where avoidance is not feasible, archaeological data recovery may be implemented in accordance with	tribes when intentional excavation of Native American human remains is necessary or when inadvertent discovery occurs of Native American human remains. • Close areas known to contain human burials to surface disturbance activities when feasible. Follow appropriate federal, state, and/or local laws when disturbance is necessary. • Preservation in place is the preferred option, but archaeological excavation (including data recovery) may be allowed to provide for appropriate research questions and/or management requirements, subject to compliance with federal, state and local laws, as appropriate. Prohibit SRPs within 500 feet of known burial location.	appropriate tribes when intentional excavation of Native American human remains is necessary or when inadvertent discovery occurs of Native American human remains. • Close areas known to contain human burials to surface disturbance activities when feasible. Follow appropriate federal, state, and/or local laws when disturbance is necessary. • Avoidance of known or discovered human remains is the preferred option, subject to management requirements and results of any tribal consultation per Native American Graves Protection and Repatriation Act, as appropriate. Where avoidance is not feasible, archaeological data	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		appropriate laws. SRPs would be authorized within 100 feet of a known burial locations on a case-by-case basis.		recovery may be implemented in accordance with appropriate laws. SRPs would be authorized within 200 feet of known burial location on a case-by-case basis.	
247.	**Action:** The BLM will pursue withdrawal of locatable minerals from operation of the 1872 Mining Law at Grimes Point Archaeological District, Sand Mountain Recreation Area and the Cold Springs Historical Site.	**Action:** No similar action (see *Geology and Minerals, Locatable Minerals*).			
248.	**Action:** Develop public outreach and education efforts within the planning area to instill a conservation ethic within the public regarding cultural resources.	**Action:** No similar action.			
249.	**Action:** Promote visitation and interpretation of the following resource: • Grimes Point Archaeological District • Hidden Cave • PX Stations at Sand Springs and Cold	**Action:** No similar action (see *Cultural Resources, Special Designations, Areas of Critical Environmental Concern – Grimes Point Archaeological District ACEC and National Historic Trails*).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Springs • Cold Springs Telegraph and Stage Stations • New Pass Overland Stage Station				
250.	**Paleontological Resources**				
251.	**GOAL:** Promote stewardship, conservation, and appreciation of paleontological resources.				
252.	**Actions common to all**: • Allow for casual collection (noncommercial hand tools only) of nonrenewable resources such as rock, mineral specimens, common invertebrate fossils except where it conflicts with resource protection objectives and human safety concerns. • Pursue collaborative management opportunities with local agencies and communities for cooperative stewardship of resources.				
253.	**Objective:** No similar objective.	**Objective:** Manage paleontological resource to prioritize research needs facilitate educational needs, and protect significant sites.			
254.	**Action:** Manage the following designated ACEC for the protection of paleontological resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): • Stewart Valley Paleontological ACEC	**Action:** Retain or establish the following ACECs for the protection of paleontological resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Stewart Valley Paleontological ACEC <u>Proposed:</u> • Ruhenstroth Paleontological ACEC	**Action:** Retain or establish the following ACECs for the protection of paleontological resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Stewart Valley Paleontological ACEC <u>Proposed:</u> • Ruhenstroth Paleontological ACEC	**Action:** Retain or establish the following ACECs for the protection of paleontological resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Proposed:</u> • Ruhenstroth Paleontological ACEC	**Action:** Retain or establish the following ACECs for the protection of paleontological resources (see *Special Designations, Areas of Critical Environmental Concern* for further management actions for each ACEC): <u>Existing:</u> • Stewart Valley Paleontological ACEC <u>Proposed:</u> • Ruhenstroth Paleontological ACEC
255.	**Action:** No similar action.	**Action:** Allow for the development of currently known paleontological resources for uses in public education.			
256.	**Action:** No similar action.	**Action:** Identify areas that are likely to contain	**Action:** Identify areas that are likely to contain	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		paleontological resources. Classify all lands by potential fossil yield classification (PFYC) Class. 1) Very Low 2) Low 3) Moderate 4) High 5) Very High An on-the-ground survey prior to approval of surface-disturbing activities and/or monitoring by a qualified paleontologist during surface-disturbing activities would be required for all activities authorized within PFYC Class 4 and 5 formations.	paleontological resources. Classify all lands by potential fossil yield classification (PFYC) Class. 1) Very Low 2) Low 3) Moderate 4) High 5) Very High An on-the-ground survey prior to approval of surface-disturbing activities and/or monitoring by a qualified paleontologist during surface-disturbing activities would be required for all activities authorized within PFYC Class 4 and 5 formations. If potential paleontological resources are identified, surface-disturbing activities would be avoided.		
257.	**Action:** Manage paleontological resources for preservation, protection, scientific use, recreational use, and educational use. The BLM must insure that authorized land uses do not inadvertently damage or destroy important paleontological resources	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	on BLM-administered land.				
258.	**Action:** Provide recreational opportunities to the public for hobby and scientific collection without reducing the significance or interest of the resource.	**Action:** No similar action.			
259.	**Visual Resources**				
260.	**GOAL:** Manage BLM-administered land actions and activities to provide protection of the visual values and scenic quality of existing landscapes consistent with the Visual Resource Management (VRM) class objectives.				
261.	**Objective**: Protect the visual resource values of Bureau managed BLM-administered lands against unnecessary and undue degradation.	**Objective:** Identify and manage areas in the VRM class listed, according to the visual guidelines for each class.			
262.	**Summary:** Manage visual resources according to the following VRM class objectives (Figure 2-14): • Class I: 564,100 acres • Class II: 38,300 acres • Class III: 320,600 acres • Class IV: 385,700 acres	**Summary:** Manage visual resources according to the following VRM class objectives (Figure 2-15): • Class I: 564,100 acres • Class II: 56,800 acres • Class III: 1,379,400 acres • Class IV: 2,803,000 acres	**Summary:** Manage visual resources according to the following VRM class objectives (Figure 2-16): • Class I: 981,900 acres • Class II: 733,900 acres • Class III: 213,400 acres • Class IV: 2,874,100 acres	**Summary:** Manage visual resources according to the following VRM class objectives (Figure 2-17): • Class I: 564,100 acres • Class II: 66,400 acres • Class III: 185,900 acres • Class IV: 3,986,900 acres	**Summary:** Manage visual resources according to the following VRM class objectives (Figure 2-18): • Class I: 564,100 acres • Class II: 513,600acres • Class III: 1,383,900acres • Class IV: 2,341,700acres
263.	**Action:** Manage 564,100 acres according to VRM Class I objectives, including the following areas: • WSAs (see *Wilderness Study Areas*)		**Action:** Manage 981,900 acres according to VRM Class I objectives, including the following areas: • WSAs (see *Wilderness Study Areas*)	**Action:** Manage 564,100 acres according to VRM Class I objectives, including the following areas: • WSAs (see *Wilderness Study Areas*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*)	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Alpine SRMA, East Fork Carson River Recreation Management Zone (RMZ; see *Recreation and Visitor Services, Special Recreation Management Areas*) • Lands proposed for protection of wilderness characteristics		
264.	**Action:** Manage 38,300 acres according to VRM Class II objectives, including the following areas: • Incandescent Rocks Scenic Area • Red Rocks • Mount Siegel • Burbank Canyons • East Fork of the Carson River • Indian Creek • Walker Lake	**Action:** Manage 56,800 acres according to VRM Class II objectives, including the following areas: • Alpine SRMA, Dispersed Use RMZ (see *Recreation and Visitor Services, Special Recreation Management Areas*). • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Incandescent Rocks Scenic o Stewart Valley Paleontological • National Historic Trails (0.25-mile buffer on	**Action:** Manage 733,900 acres according to VRM Class II objectives, including the following areas: • SRMAs (see *Recreation and Visitor Services, Special Recreation Management Areas*): o Alpine, Dispersed Use RMZ o Sand Mountain o Walker Lake • West side of Virginia Range • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o Bagley Valley o Faye-Luther o Pine Nut, Pine Nut	**Action:** Manage 66,400 acres according to VRM Class II objectives, including the following areas: • Alpine SRMA, Dispersed Use RMZ (*Recreation and Visitor Services, Special Recreation Management Areas)* • West side of Virginia Range. • Incandescent Rocks Scenic ACEC (see *Special Designations, Areas of Critical Environmental Concern*) • National Historic	**Action:** Manage 513,600 acres according to VRM Class II objectives, including the following areas: • Alpine SRMA, Dispersed Use RMZ (*Recreation and Visitor Services, Special Recreation Management Areas)* • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o Bagley Valley o Petersen, Lassen Red Rock RM. • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Fox Peak Cultural

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		either side of centerline; see *National Historic Trails*)	Crest RMZ o Salt Wells • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Black Mountain/Pistone Archaeological District o Dixie Valley Toad o Fox Peak Cultural o Incandescent Rocks Scenic o Lassen Red Rock Scenic o Namazii Wunu Cultural o Stewart Valley Paleontological o Tagɨm aša Cultural o Virginia City National Landmark Historic District • National Historic Trails (2.5-mile buffer on either side of centerline; see *National Historic Trails*) • Suitable Wild and Scenic River (WSR) segments (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*): o East Fork Carson	Trails (0.25-mile buffer on either side of centerline; see *National Historic Trails*) • East Fork Carson River Segment 3 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*)	o Incandescent Rocks Scenic o Stewart Valley Paleontological • National Historic Trails (1-mile buffer on either side of centerline; see *National Historic Trails*) • Suitable WSR segments (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*): o East Fork Carson River Segment 2 o East Fork Carson River Segment 3 • Lands proposed for protection of wilderness characteristics

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			River Segment 2 o East Fork Carson River Segment 3		
265.	**Action:** Manage 320,600 acres according to VRM Class III objectives, including the following areas: • Bagley Valley • Carson City • Flowery Ridge • Fort Sage • Highway 395 South • Huffaker Hills • Long Valley • Lower Carson River • Markleeville • Orlean Hills • Pah Rah North • Palomino Valley • Pine Nut Mountains Crest • Prison Hill • Rawe Peak • Red Rock Road • Spanish Springs Valley • Truckee River • Winnemucca Ranch Valley • Virginia City • Virginia Mountains	**Action:** Manage 1,379,400 acres according to VRM Class III objectives, including the following areas: • SRMAs (*Recreation and Visitor Services, Special Recreation Management Areas*): o Alpine ▪ East Fork Carson River RMZ ▪ Indian Creek Campground RMZ o Walker Lake • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o 102 Ranch o Mustang o Portion of Middlegate o Portion of Mina Pah Rah o Pine Nut ▪ Front Country RMZ ▪ Pine Nut Crest RMZ	**Action:** Manage 213,400 acres according to VRM Class III objectives, including the following areas: • Alpine SRMA, Indian Creek Campground RMZ (*Recreation and Visitor Services, Special Recreation Management Areas*) • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o Dry Valley o Mustang o Portion of Middlegate o Pah Rah o Pine Nut, Front Country RMZ o Singatse o Virginia Mountains o Virginia Range • Ruhenstroth Paleontological ACEC (see *Special Designations, Areas of Critical Environmental Concern*)	**Action:** Manage 185,900 acres according to VRM Class III objectives, including the following areas: • SRMAs (*Recreation and Visitor Services, Special Recreation Management Areas*): o Alpine, Portion of Indian Creek Campground RMZ o Dead Camel Mountains • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o 102 Ranch o Faye-Luther o Mustang o Pah Rah o Pine Nut ▪ Front Country RMZ ▪ Pine Nut Crest RMZ • ACECs (see *Special Designations, Areas of*	**Action:** Manage 1,383,900 acres according to VRM Class III objectives, including the following areas: • Virginia City National Historic Landmark District (see *Cultural Resources*). • SRMAs (*Recreation and Visitor Services, Special Recreation Management Areas*): o Alpine, Portion of Indian Creek Campground RMZ o Sand Mountain o Walker Lake • West Side of Virginia Range ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o 102 Ranch o Dry Valley o Faye-Luther o Mustang o Middlegate o Mina o Pah Rah o Portion of Petersen (200 acres)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Black Mountain/Pistone Archaeological District o Namazii Wunu Cultural o Ruhenstroth Paleontological o Tagim aša Cultural		*Critical Environmental Concern*): o Black Mountain/Pistone Archaeological District o Ruhenstroth Paleontological o Tagim aša Cultural o Virginia City National Landmark Historic District • East Fork Carson River Segment 2 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*)	o Pine Nut ▪ Front Country RMZ ▪ Pine Nut Crest RMZ o Salt Wells o Virginia Mountains • Ruhenstroth Paleontological ACEC (see *Special Designations, Areas of Critical Environmental Concern*)
266.	**Action:** Manage 385,700 acres according to VRM Class IV objectives, including the following areas: • Common hills and valleys north of Reno • Urban and congested lands around Reno • Pah Rah South.	**Action:** Manage 2,803,000 acres according to VRM Class IV objectives, including the following areas: • SRMAs (*Recreation and Visitor Services, Special Recreation Management Areas*): o Dead Camel Mountains o Hungry Valley o Sand Mountain • West side of Virginia	**Action:** Manage 2,874,100 acres according to VRM Class IV objectives, including the following areas: • ERMAs (*Recreation and Visitor Services, Extensive Recreation Management Areas*): o Pine Nut, Rural RMZ	**Action:** Manage 3,986,900 acres according to VRM Class IV objectives, including the following areas: • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o Pine Nut, Rural RMZ o Reno Urban Interface	**Action:** Manage 2,341,700 acres according to VRM Class IV objectives, including the following areas: • SRMAs (*Recreation and Visitor Services, Special Recreation Management Areas*): o Dead Camel South RMZ • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*):

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Range • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o Portion of Mina (824,670 acres) o Pine Nut, Rural RMZ o Reno Urban Interface o Salt Wells • Virginia City National Landmark Historic District ACEC (see *Special Designations, Areas of Critical Environmental Concern*)			o Pine Nut, Rural RMZ o Reno Urban Interface o Singatse
267.	**Action:** Prohibit commercial sales in the VRM Class II area (Indian Creek Recreation Lands) that is highly visible from recreation developments unless needed for disease or hazard reduction.	**Action:** No similar action.			
268.	**Action:** Limit logging in the East Fork of the Carson River Canyon to VRM Class II recommendations. Allow logging if the visual quality of the canyon will be maintained. Allow salvage logging if the Watashema	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Dam is constructed.				
269.	**Action:** The Field Office Manager may allow temporary projects to exceed VRM standards if the project will terminate within 2 years of initiation and be in compliance with VRM objectives immediately upon removal and initial rehabilitation efforts.	**Action:** No similar action.			
270.	**Objective:** Protect and enhance the visual qualities of areas with outstanding scenic values.	**Objective:** No similar objective.			
271.	**Action:** Manage the Burbank Canyons as a Scenic Area as with motor vehicles to limited to designated roads.	**Action:** No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas – Pine Nut ERMA*).			
272.	**Action:** Manage the East Fork of the Carson River as a Scenic Area and develop specific management directives.	**Action:** No similar action (see *Recreation and Visitor Services, Special Recreation Management Areas – Alpine SRMA*).			
273.	**Action:** Manage the Red Rocks Area as a Scenic Area. • Manage the area under an agreement with mining claimants to protect the geologic features. • Develop a day use	**Action:** No similar action.	**Action:** No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas – Petersen ERMA*).	**Action:** No similar action.	**Action:** No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas – Petersen ERMA*).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	picnic area, with 2-wheel vehicle access and interpretation of geologic features in the Red Rocks Scenic Area. • Restrict OHV use to designated roads and trails. • Ensure Mining Plans of Operations within the Red Rocks Scenic Area would protect the area's scenic quality and not impair recreation use.				
274.	**Lands with Wilderness Characteristics**				
275.	**GOAL:** Areas to be managed to protect wilderness characteristics should retain a high degree of naturalness where the imprint of humans on lands and resources is substantially unnoticeable. Furthermore, outstanding opportunities for solitude and primitive or unconfined types of recreation should be maintained or enhanced.				
276.	**Objective:** No similar objective.		**Objective:** Manage lands to protect wilderness characteristics to maintain a high degree of naturalness and offer outstanding opportunities for solitude or primitive, unconfined recreation by reducing impacts to these values while considering manageability and competing resource demands.	**Objective:** No similar objective.	**Objective:** Same as Alternative C.
277.	**Action:** No similar action.		**Action:** Manage 416,500 acres to protect wilderness characteristics (Figure 2-19): • Agai Pah Hills (27,200	**Action:** No similar action.	**Action:** Manage 332,600 acres to protect wilderness characteristics (Figure 2-20): • Agai Pah Hills (27,200

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			acres) • Chukar Ridge (29,100 acres) • Excelsior North (54,400 acres) • Excelsior South (49,200 acres) • Finger Rock (41,500 acres) • Job South (77,400 acres) • Lyon Peak (16,300 acres) • Monte Cristo North (9,800 acres) • Peterson Mountain (16,300 acres) • Rawe Peak (39,800 acres) • Stillwater Additions (19,100 acres) • Tule Peak (36,400 acres) Management actions include: • Manage as VRM Class I. • Close to mineral material disposal. • Close to nonenergy mineral leasing. • Close to fluid mineral leasing. • Vegetative permitting would not be authorized. • Prohibit new or expanded range improvements. • Vegetative treatments would be allowed if		acres) • Chukar Ridge (29,100 acres) • Excelsior North (54,400 acres) • Excelsior South (49,200 acres) • Job South (77,400 acres) • Rawe Peak (39,800 acres) • Stillwater Additions (19,100 acres) • Tule Peak (36,400 acres) Management actions include: • Manage as VRM Class II. • Close to nonenergy mineral leasing. • Apply NSO stipulation to fluid mineral leasing. • Vegetative permitting would not be authorized. • Vegetative treatments would be allowed if project objectives maintained or enhanced wilderness characteristics. • Manage as ROW avoidance area: o Any potential new ROWs, and maintenance of existing facilities, will be evaluated and

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			project objectives maintained or enhanced wilderness characteristics and could meet VRM Class I objectives within 5 years. • Manage as ROW avoidance area: o Any potential new ROWs, and maintenance of existing facilities, will be evaluated and allowed under the following circumstances. All evaluations will analyze alternatives outside the unit: ▪ When needed to protect, manage, or improve natural or heritage resource conditions and when compatible with maintaining or enhancing wilderness characteristics ▪ When meeting law enforcement, agency, or public safety needs		allowed under the following circumstances: ▪ When compatible with maintaining or enhancing wilderness characteristics or when needed to protect, manage, or improve natural or heritage resource conditions ▪ When meeting law enforcement, agency, or public safety needs • Sites and locales with human-caused disturbances will be rehabilitated if such actions maintain or enhance wilderness characteristics and natural/heritage resources, if they are practicable, if they meet management prescriptions and standard operating procedures, and if they

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Manage as ROW exclusion for wind energy projects (see *Renewable Energy (Wind, Solar, Biomass) section*). • Sites and locales with human-caused disturbances will be rehabilitated if such actions maintain or enhance wilderness characteristics and natural/heritage resources, if they are practicable, if they meet management prescriptions and standard operating procedures, and if they are addressed in a restoration plan. • Prohibit competitive motorized events.		are addressed in a restoration plan. • Special recreation permits will be allowed when consistent with protecting wilderness characteristics and VRM classes. • Decrease the visual effect of existing facilities during reconstruction, replacement, or major maintenance.
278.	**Caves and Cave Resources**				
279.	**GOAL**: Protect significant cave and cave-related resources, including unique geological features, biological resources, and cultural properties, for educational, scientific, and recreational values.				
280.	**Actions common to all:** • Identify caves meeting one or more criteria in accordance with 43 CFR Part 37 and designate them as significant. Maintain a current list of designated significant caves. o Culturally significant caves will be managed according to all federal and state laws and regulations. o The location of significant caves will be kept confidential unless otherwise identified in management plans for research or educational purposes. o Law enforcement personnel will patrol specific cave sites identified as high potential for or known to have significant cultural values to prevent or deter vandalism or theft. o Mitigation measures such as increased patrols, monitoring, fencing, gating and signing will be implemented upon occurrences of vandalism, looting or destruction of significant cave resources.				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Caves with no previous bat inventories will be evaluated for their potential value as bat habitat in coordination with federal and state wildlife agencies. o Caves with identified bat resources will be assessed and prioritized for public closure to protect bat habitat, minimize potential impacts on roosting bats, and to prevent the spread of disease (such as White-nose syndrome). o Protect bats and habitat by implementing mitigation measures (see *Wildlife and Fish, Bats*). • Closure orders for caves with bat or cultural resources will provide exemptions for persons conducting surveys and research or for tribal interests. • Pursue partnership and volunteer site steward involvement for site monitoring and protection. • Promote visitor awareness of the potential risks in cave environments. • Designate the following caves as having cultural, biological, educational, or scientific significance: Hidden Cave, Burnt Cave, Cowboy Cave, Fish Cave, Eastgate Shelter, Picnic Cave, Salt Cave, Spirit Cave, Dynamite Cave, Topia Cave, and other caves as identified.				
281.	**Objective**: Continue present management actions as based on current LUP decisions, policy, and regulations.	**Objective**: Provide for special management attention to protect and prevent irreparable damage to significant cave resources in a manner that emphasizes resource use and economic development.	**Objective**: Provide for special management attention to protect and prevent irreparable damage to significant cave resources in a manner that preserves and protects the identified resources above other management considerations.	**Objective:** Provide for special management attention to protect and prevent irreparable damage to significant cave resources in a manner that provides for management of multiple resource use and user conflicts in areas of higher population density near the urban interface.	**Objective**: Provide for special management attention to protect and prevent irreparable damage to significant cave resources in a manner that balances resource protection with multiple use management decisions.
282.	**Action:** No similar action.	**Action:** • Provide for BLM staff or site steward monitoring of caves identified as culturally significant that are heavily utilized by the public such as Grimes Point Archeological District.	**Action:** • Include culturally significant caves in the fuels-treatment programs to protect sensitive attributes that may be impacted by a high-fuels load. • Provide for BLM staff, law enforcement, or	**Action**: • Install gates, security fencing, and signage at the entrance of caves near urban or developed areas to protect human health and safety. • Include culturally significant caves in	**Action:** • Include culturally significant caves in the fuels-treatment programs to protect sensitive attributes that may be impacted by a high-fuels load. • Provide for BLM staff, law enforcement, or

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Develop public education and outreach programs develop an appreciation and understanding of caves, as well as cultural and biological cave resources. • Seek cooperative agreements for formal biological, archeological, and historical field schools.	volunteer site stewards to monitor caves identified as culturally significant that are heavily utilized by the public. • Develop public education and outreach programs develop an appreciation and understanding of caves, as well as cultural and biological cave resources.	the fuels-treatment programs to protect sensitive attributes that may be impacted by a high-fuels load. • Provide for BLM staff, law enforcement, or volunteer site stewards to monitor caves identified as culturally significant that are heavily utilized by the public. • Develop public education and outreach programs develop an appreciation and understanding of caves, as well as cultural and biological cave resources.	volunteer site stewards to monitor caves identified as culturally significant that are heavily utilized by the public. • Develop public education and outreach programs designed to increase public appreciation and understanding of caves, as well as cultural and biological cave resources through public interpretation, such as signs, brochures, online interpretations or virtual tours, and links via smart phone QR code trail markers, and site stewardship. • Seek cooperative agreements for formal biological, archeological, and historical field schools, while not identifying sensitive sites or promoting increased visitation.
283.	**Dynamite Cave** (see *Special Designations, Areas of Critical Environmental Concern - Fox Peak Cultural ACEC*)				
284.	**Objective:** No similar objective.	**Objective**: Manage Dynamite Cave as having cultural significance resources to protect and prevent irreparable damage to significant cave	**Objective**: Manage Dynamite Cave as having biological significance for bat habitat and cultural resources over other resource uses in a manner	**Objective**: Manage Dynamite Cave as having cultural significance in a manner that provides for consideration of multiple resource use	**Objective**: Manage Dynamite Cave as having bat and cultural significance resources in a manner that balances resource protection with multiple use

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		resources in a manner that emphasizes resource use and economic development.	that preserves and protects the identified resources above other management considerations.	and user conflicts in areas of higher population density near the urban interface.	management decisions.
285.	**Action:** No similar action.	**Action:** • Manage as a ROW avoidance area within 0.25 mile of the cave. • Close to mineral materials disposals. • Apply a CSU stipulation for fluid mineral leasing within 500 feet of the cave.	**Action:** • Manage as a ROW exclusion area within 0.5 mile of the cave. • Close to mineral materials disposals. • Close to fluid mineral leasing. • Recommend for withdrawal from locatable mineral entry. • Close to motorized travel within 500 feet of cave.	**Action:** Same as Alternative B.	**Action:** Same as Alternative C.
286.	**Hidden Cave** (see *Special Designations, Areas of Critical Environmental Concern – Grimes Point Archaeological District ACEC*)				
287.	**Objective:** No similar objective.	**Objective**: Manage Hidden Cave as having culturally significant resources to protect and prevent irreparable damage to significant cave resources in a manner that emphasizes resource use and economic development.	**Objective**: Manage Hidden Cave as having cultural significance over other resource uses in a manner that preserves and protects the identified resources above other management considerations.	**Objective**: Same as Alternative B.	**Objective**: Manage Hidden Cave as having culturally significant resources in a manner that balances resource protection with multiple use management decisions.
288.	**Action:** No similar action.	**Action:** • Manage as a ROW avoidance area within 500 feet of the cave. • Close to mineral materials disposals.	**Action:** • Manage as a ROW exclusion area within 500 feet of the cave. • Close to mineral materials disposals.	**Action:** Same as Alternative B.	**Action:** • Increase public education and interpretation, archaeological investigation, and reinvestigation.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Apply a CSU stipulation for fluid mineral leasing within 500 feet of the cave.	• Close to fluid mineral leasing. • Recommend for withdrawal from locatable mineral entry. • Close to motorized travel within 500 feet of cave.		• Manage as a ROW exclusion area within 500 feet of the cave. • Close to mineral materials disposals. • Close to fluid mineral leasing. • Recommend for withdrawal from locatable mineral entry. • Close to motorized travel within 500 feet of cave.
289.	***RESOURCE USES***				
290.	**Forest and Woodland Products (includes all vegetative products)**				
291.	**GOAL:** Provide opportunities for traditional and nontraditional uses of forest and woodland products on a sustainable and multiple use basis.				
292.	**Objective:** Base forest and woodland management on the principles of multiple use, sustained yield, and ecosystem management.				
293.	**Action:** Sell green pinyon and juniper for fuel wood and fence posts, for personal use, at the rate of up to 5,000 cords and 1,000 posts annually. These sales would take place only in areas where there would be no conflicts, or in areas where the conflicts could be mitigated.	**Action:** Issue vegetative product permits for personal use commensurate with public demands and resource management objectives. Any collection intended for resale would require a commercial permit.			
294.	**Action:** The sale of dead standing and down fuelwoods, for personal use, with the exception of standing cottonwood or	**Action:** Prohibit the harvest of live or dead/down cottonwood or aspen trees on personal-use firewood permits.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	aspen will continue in the Reno area outside of deer migration corridors and identified critical watersheds. Any sales within identified high erosion areas must not reduce ground cover more than 50 percent.				
295.	**Action:** Allow pinyon pine nuts harvest throughout the Field Office area of jurisdiction. The first 25 pounds are free and do not require a permit. After the initial 25 pounds the harvester is considered a commercial user and will be required to get a permit and pay fair market value. Commercial use is subject to Field Office Manager approval. Pinyon pine nuts after the initial 25 pounds the harvester is considered a commercial user and will be required to get a permit and pay fair market value. Commercial use is subject to Field Office Manager approval.	**Action:** • Allow up to 25 pounds of pinyon pine nuts per individual per year without obtaining a permit. • Require a commercial permit if pinyon pine nuts are collected for resale.	**Action:** • Allow up to 10 pounds of pinyon pine nuts per individual per year without obtaining a permit. • No commercial collection would be permitted within the planning area.	**Action:** • Allow up to 10 pounds of pinyon pine nuts per individual per year without obtaining a permit. • Prohibit commercial collection within the Pine Nut, Virginia, and Stillwater Mountain Ranges and in Alpine County. • Require a commercial permit for any amount collected for resale in the rest of the district.	**Action:** Same as Alternative C.
296.	**Action:** Commercial sales will not be allowed in the VRM Class II area (Indian Creek Recreation Lands)	**Action:** No similar action (see *Recreation and Visitor Services, Special Recreation Management Areas -Alpine SRMA*).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	that is highly visible from recreation developments unless needed to reduce disease or hazard.				
297.	**Action:** No similar action.	**Action:** Allow extraction and utilization of vegetative products in order to supply material for biomass facilities.	**Action**: No similar action.	**Action:** Develop a utilization plan that specifies levels for the wood/vegetation by-products produced by treatments.	**Action:** Allow extraction of wood products for small scale biomass facilities (less than 3 megawatts per facility).
298.	**Livestock Grazing**				
299.	**GOAL:** Provide for economically sustainable and ecologically sound livestock grazing.				
300.	**Objective:** Provide adequate, high-quality forage for livestock by improving rangeland condition on 111 allotments (4,796,600 acres Figure 2-21).	**Objective**: Manage adequate high-quality forage for livestock by improving the rangeland condition and focusing on the introduction and addition of palatable species.	**Objective:** Improve rangeland condition so that functioning ecosystems would be the priority, regardless of the forage base they provide.	**Objective**: Improve rangeland condition to ensure properly functioning ecosystems and to provide a high quality sustainable forage base.	**Objective:** Maintain or improve the condition of the public rangelands so ecological functions that sustainably provide for forage and other uses are met.
301.	**Actions common to all:** • Comply with the Approved Standards and Guidelines for livestock grazing, and manage all allotments toward meeting Rangeland Health Standards. • Include terms, conditions, and direction to move toward or maintain Greater Sage-Grouse desired habitat conditions on grazing permits and other appropriate mechanisms for livestock management. • Rest areas burned by wild or prescribed fire from livestock grazing for a minimum of 2 growing seasons (with the exception of prescriptive grazing being outlined in the recovery plan and used only in the prescribed manner). • Livestock salting would not be allowed within 0.25 mile of springs, meadows, cultural properties eligible for the NRHP, streams, or aspen areas. • Construct all new fences to comply with applicable wildlife standards. • Promote removal of all retired grazing allotment infrastructure consistent with management objectives for other resource programs. • Manage livestock grazing on the open withdrawn lands at B19 and the Shoal Site in a manner consistent with adjacent BLM-administered lands. • Grazing management as stated would not preclude voluntary retirement of any grazing allotments.				
302.	**Action:** No similar action.	**Action**: Livestock grazing would not be available	**Action:** Livestock grazing would not be available	**Action:** Livestock grazing would not be	**Action:** Livestock grazing would not be available

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		where management changes have been implemented and the allotments are still decreasing in ecological function due to livestock. Vacant allotments could be offered for application to a new permittee.	whenever they become vacant.	available where management changes have been implemented and the allotment is still decreasing in ecological function due to livestock or is incompatible with urban uses. Vacant allotments will be assessed for suitability as forage banks with an emphasis in the urban interface.	where management changes have been implemented and the allotment is still decreasing in ecological function or failing to reach other defined objectives due to livestock. Modify allotment boundaries to address incompatible urban uses. When allotments are vacant, they will be assessed for suitability as forage banks.
303.	**Action:** No similar action.	**Action:** Restore areas disturbed by range improvements that have been removed using methods such as seeding if needed.			
304.	**Action:** No similar action.	**Action:** All allotments that overlap the Pine Nut HMA would be available for grazing. Vacant allotments should be considered for forage banks.	**Action:** Allotments in the Pine Nut HMA that become vacant would not be available for grazing.		**Action:** Same as Alternative B.
305.	**Action:** The Black Canyon Road will not be used for public access.	**Action:** No similar action.			
306.	**Action:** No similar action.	**Action:** Utilize prescriptive grazing for vegetative management purposes as necessary for vegetative manipulation by authorizing livestock grazing through management agreements, temporary nonrenewable grazing permits or leases, or special-use permits.	**Action:** Prohibit prescriptive grazing for vegetative management purposes.	**Action:** Utilize prescriptive grazing for vegetative management purposes only within the urban interface area.	**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Allow use of protein supplements only when the use has been analyzed and is appropriate for assisting in the attainment of clearly defined vegetative goals/ objectives. Protein supplementation would not be allowed under a grazing permit authorized under Sections 3 or 15 of the Taylor Grazing Act.			
307.	**Action:** The Faye Canyon, Spratt Creek, and Hangman allotments are areas set aside for wildlife use.	**Action:** The Hangman allotment would be available for grazing and offer for application to a new permittee (470 acres; Figure 2-22).	**Action:** The Hangman allotment would not be available for grazing (470 acres; Figure 2-23).	**Action:** Hangman allotment would be available for grazing but closed for preference-based grazing permits while authorizing nonrenewable grazing use (forage bank).	
308.	**Action:** No similar action.	**Action:** Winter's Ranch would be established as an allotment available for grazing (1,000 acres; Figure 2-22).	**Action:** Winter's Ranch would be established as an allotment and would not be available for grazing (1,000 acres; Figure 2-23).	**Action:** Winter's Ranch would be established as an allotment and would be available for grazing but closed for preference-based grazing permits while authorizing nonrenewable grazing use when needed to meet overall resource goal.	
309.	**Action:** No similar action.	**Action:** Livestock grazing on Reclamation relinquished lands would be managed under BLM grazing regulations.	**Action:** Livestock grazing on Reclamation relinquished lands would not be available for livestock grazing.	**Action:** Same as Alternative B.	
310.	**Action:** Manage livestock use at existing levels.		**Action:** Reduce allowable utilization levels to no more than 40 percent of the key species at a periodic review of the grazing permit for allotments not meeting	**Action**: Manage at existing levels, with utilization on key species not to exceed 60 percent if not otherwise specified, and re-examine and adjust use levels to appropriate AUM amount every 10 years or on a case-by-case basis (whichever is less) during a periodic review of the grazing permit if objectives are not being met.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Rangeland Health Standards due to current livestock grazing. Reduce AUMs to meet that utilization level based on monitoring. If the reduced utilization level does not provide for ecological improvement prior to the next permit renewal, further reductions would be made based on monitoring.		
311.	**Action:** Sheep grazing will continue to be permitted on the Bagley Valley Allotment.	**Action:** No similar action.			
312.	**Action:** No similar action.	**Action:** Consider conversion from sheep to cattle grazing permits even if it is not consistent with bighorn sheep management objectives.	**Action:** Cattle permits could be converted to sheep/goat permits where forage and terrain favors that use as long as it is consistent with bighorn sheep management objectives (see *Fish and Wildlife*).	**Action:** If requested by permittee, examine converting permitted livestock kind. Where urban interface exists, and cattle cannot be kept in the allotment, consider converting the allotment to sheep/goats as long as it is consistent with bighorn sheep management objectives (see *Fish and Wildlife*).	
313.	**Action:** Lahontan Resource Area- Initially, authorize livestock use at the 3-year average use level of 158,720 AUMs. There would be no initial decisions to adjust active preference.	**Action:** No similar action.			
314.	**Action:** Walker Resource Area -Initially authorize livestock use at the 3-year average licensed use level	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	of 36,962 AUMs. There would be no initial change in active preference.				
315.	**Action:** Pine Nut-Markleeville Planning Units-Initially authorize livestock's use at the 3-year average licensed use level of 11,536 AUMs. There would be no initial change in active preference	**Action:** No similar action.			
316.	**Action:** Initiate land exchanges with the Southern Pacific Railroad and the private owners in the Spanish Springs to block up BLM-administered lands in the White Hills and Olinghouse allotments.	**Action:** No similar action.			
317.	**Action:** 4,796,600 acres would continue to be available for livestock grazing (Figure 2-21).	**Action:** 4,797,200 acres would be available for livestock grazing (Figure 2-22).	**Action:** 2,101,300acres would be available for livestock grazing (Figure 2-23).	**Action:** 4,792,600 acres would be available for livestock grazing (Figure 2-24).	**Action:** 4,797,200 acres would be available for livestock grazing (Figure 2-22).
318.	**Action:** 6,700 acres would continue to be unavailable for livestock grazing (; Figure 2-21).	**Action:** The following areas would not be available for livestock grazing (6,100 acres; Figure 2-22): • Carson wandering skipper habitat near Winnemucca Ranch Road (see *Special Status Species, Fish and*	**Action:** The following areas would not be available for livestock grazing (2,702,000 acres; Figure-2-23): • Allotments containing Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • Central	**Action:** The following areas would not be available for livestock grazing (10,700 acres; Figure-2-24): • Harvey Flat. • Indian Creek (portion on BLM-administered land in California)	**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Wildlife) • Milberry Canyon • Harvey Flat	• Churchill Butte • Hangman allotment • Harvey Flat • Horse Spring • Indian Creek (portion on BLM-administered land in Nevada and California) • Koch Ditch • Milberry Canyon • Red Rock • Stockton Flat • Truckee-Virginia • Wade Valley • Wedekind • Winter's Ranch • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Black Mountain/Pistone Archaeological District o Carson wandering skipper o Dixie Valley Toad o Portion of Grimes Point Archaeological District (2,100 acres) o Namazii Wunu Cultural o Pah Rah High Basin Petroglyph o Ruhenstroth	• Carson wandering skipper habitat near Winnemucca Ranch Road (see *Special Status Species, Fish and Wildlife*) • Pah Rah High Basin Petroglyph ACEC (see *Special Designations, Areas of Critical Environmental Concern*)	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Paleontological o Tagim aša Cultural o Virginia City National Landmark Historic District		
319.	**Action:** No similar action	**Action:** No similar action.	**Action:** Temporarily close all allotments to livestock grazing during emergency situations (e.g., drought, insect, or fire) to protect rangeland health.	**Action:** Temporarily close allotments on a case by case basis during emergency situations as is deemed necessary for protection of rangeland health.	
320.	**Action:** No similar action.	**Action:** Year-long grazing would not be allowed in any pasture of an allotment.	**Action:** Year-long grazing would not be allowed in any allotment.	**Action:** Same as Alternative B.	**Action:** Allow year-long grazing only where allotments already have year-long systems and are meeting land health standards.
321.	**Action:** No similar action.	**Action:** Utilization levels in excess of the permitted levels over 10 percent of the allotment would require a 10 percent reduction in the AUMs allowed the following grazing season. The percentages would correspond, with the maximum repercussion being that 100 percent overutilization = 100 percent reduction (or rest). Rest and re-evaluation of the stocking rate would be required if reductions do not create proper utilization.	**Action:** Utilization levels in excess of permitted levels would require rest during the following grazing year.	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
322.	**Geology and Minerals**				
323.	**GOAL:** Provide opportunities for exploration and development of federal mineral resources to meet national, regional and local needs while ensuring the long-term health and diversity of the land.				
324.	**Actions common to all**: • Administer exploration and disposal of mineral materials through exploration permits, free-use permits, and competitive and noncompetitive sales subject to appropriate restrictions and stipulations to protect other resources. • Issue mineral-use authorizations for nonenergy leasables for prospecting permits, exploration licenses, preference-right leases, competitive leases, lease modifications, and use permits subject to appropriate restrictions and stipulations to protect other resources. • Maintain the integrity of important noneconomic geologic resources consistent with other land use objectives.				
325.	**General Minerals**				
326.	**Objective:** No similar objective.	**Objective:** Lands disturbed by mineral operations would remain in a condition that provides for continued economic use at the site.	**Objective:** Restore lands disturbed by mineral operations to approximate preoperational topography (when feasible) and vegetation as allowed under the regulations. If the regulated activity occurred on land impacted by previous human-caused disturbance, restore that land to a stable natural-appearing form and native vegetative community.	**Objective:** Restore lands disturbed by mineral operations to approximate preoperational topography (when feasible) and vegetation as allowed under the regulations. If the regulated activity occurred on land impacted by previous human-caused disturbance, restore that land to a stable natural-appearing form and native vegetative community. An exception, in whole or in part, may be granted if, at the time of closure, a viable plan exists for a productive community-based use of	**Objective:** Restore lands disturbed by mineral operations to approximate preoperational (when feasible) topography and vegetation as allowed under the regulations If the regulated activity occurred on land impacted by previous human-caused disturbance, restore that land to a stable natural-appearing form and native vegetative community. An exception, in whole or in part, may be granted if, at the time of closure, a viable plan exists for continued productive economic or community-based use at the site.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				the site.	
327.	**Action:** No similar action.	**Action:** Rehabilitate or reclaim mineral operations, including recontouring, stabilization, revegetation and removal of facilities before closing the case file. Per BLM and State regulations, locatable mineral pits are not required to be restored to preoperational topography (backfilled). Existing guidance and standards for reclamation and closure could be deferred, if allowed under existing regulations and agreed to by the proponent and the BLM, for up to 5 years from the end of active mining of sites that have a reasonable prospect for economic use.	**Action:** Rehabilitate or reclaim mineral operations, including recontouring, stabilization, revegetation and removal of facilities before closing the case file to restore preoperational topography and establish a historically native vegetation community to the maximum extent possible. Per BLM and State regulations, locatable mineral pits are not required to be restored to preoperational topography (backfilled).	**Action:** Rehabilitate or reclaim mineral operations, including recontouring, stabilization, revegetation and removal of facilities before closing the case file. Address post-operational use and site reclamation configuration in all relevant proposals for mineral operations and site development. Per BLM and State regulations, locatable mineral pits are not required to be restored to preoperational topography (backfilled).	
328.	**Action:** No similar action	**Action:** Revegetation should result in self-sustaining vegetation communities. A variety of seed mixtures (native and nonnative) may be used that are appropriate to the local ecological setting.	**Action:** Revegetate reclaimed areas, using a variety of native seed mixtures appropriate to a local ecological setting. Priority for use would be locally collected native seed.	**Action:** Revegetate reclaimed areas, using a variety of native and nonnative seed mixtures appropriate to a local ecological setting. Priority for use of seeds and plant materials locally collected native seed, followed by nonlocally collected native seed, followed by nonnative.	
329.	**Objective:** Encourage development of energy and mineral resources in a timely manner to meet national, regional and local needs consistent with the objectives		**Objective:** Manage minerals activities to provide maximum protection for	**Objective:** Encourage development of energy and mineral resources in a timely manner to meet national, regional and local needs consistent with the objectives	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	for other BLM-administered land uses.		other resources while allowing sufficient mineral development to occur to meet public demand.	for other resources and uses. Develop mineral resources in the urban interface ahead of planned growth and in coordination with local governmental agencies.	
330.	**Action:** Within the Carson City Urban Interface Plan Amendment Area: • Management of mineral materials in the CCD planning area would be determined through a joint aggregate resource plan to be developed with Carson City.	**Action:** No similar action.			
331.	**Action:** Areas closed to mineral entry and energy development: 1. Lands classified under the Classification and Multiple Use Act (approximately 8,000 acres of Sun Valley, Washoe Valley, Steamboat, and Peavine Mountain). 2. Within the Walker Planning Area about 11,000 acres is either segregated against mineral entry under the Classification and Multiple Use Act or withdrawn from	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	mineral by through formal withdrawal processes. 3. The Carson City Urban Interface Plan Amendment states: • Withdraw 8,000 acres from operation of the locatable mining laws and close these lands to mineral exploration and leasing to protect open space and other BLM-administered land values. These are discretionary actions. Areas where existing withdrawals and segregation from mineral entry will be maintained (approximately 20,000 acres): 1. Key Watershed and Wildlife Areas a. Alkali Lake b. Antelope Valley c. Pine Nut Mountains d. Topaz Lake				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	2. Major Recreation and Scenic Areas a. Wilson Canyon b. Walker Lake 3. Prison Hill				
332.	**Locatable Minerals**				
333.	**Action:** Areas closed to mineral entry (194,900 acres): • Indian Creek Recreation Area 2,100 acres • Carson City Urban Interface 18,000 acres • Southern Washoe (174,800 acres of BLM surface/federal mineral estate and 15,800 acres of split-estate, which is not currently included in the total)	**Action:** Areas closed to mineral entry (194,900 acres). The locations remain the same as Alternative A, but the names have been updated and are outlined as follows: • A portion of Alpine SRMA that overlaps the former Indian Creek Recreation Area (2,100 acres; *See Recreation and Visitor Services, Alpine SRMA*) • Carson City Urban Interface 18,000 acres • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) (174,800 acres of BLM-administered surface/federal mineral estate and 15,800 acres of split-estate, which is not currently included in the total) which	**Action:** Areas closed to mineral entry (194,900 acres). The locations remain the same as Alternative A, but the names have been updated and are outlined as follows: • A portion of Alpine SRMA that overlaps the former Indian Creek Recreation Area (2,100 acres) • Carson City Urban Interface 18,000 acres • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area (174,800 acres of BLM surface/federal mineral estate and 15,800 acres of split-estate, which is not currently included in the total)), including the following existing ACECs (see *Special Designations, Areas of Critical Environmental Concern)*:	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		includes the following existing ACECs (see *Special Designations, Areas of Critical Environmental Concern)*: o Pah Rah High Basin Petroglyph o Virginia Range Williams Combleaf Botanical	o Carson wandering skipper o Pah Rah High Basin Petroglyph o Virginia Range Williams Combleaf Botanical		
334.	**Action:** Pursue withdrawal of locatable minerals from operation of the 1872 Mining Law (3,700 acres; Figure 2-25): • Grimes Point Archaeological District (400 acres) • Cold Springs Historic Area (200 acres) • Sand Mountain Recreation Area (2,800 acres)	**Action:** Recommend the withdrawal of the following areas from locatable mineral entry (439,600 acres; Figure 2-26): • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o A portion of Stewart Valley Paleontological Marine Corps Mountain Warfare Training Center (900 acres) (Figure 2-25) • Department of Defense Coordination Area (see *Public Health and Safety*)	**Action:** Recommend the withdrawal of the following areas from locatable mineral entry (117,500 acres; Figure 2-27): • The Sand Springs Pony Express Station • Cold Springs Pony Express historical site • Rock Creek Stage and Telegraph Site (total of 120 acres) • ACEC (see *Special Designations, Areas of Critical Environmental Concern):* o Fox Peak Cultural o Greater Sand Mountain o Grimes Point Archaeological District ACEC o Pine Nut Mountain Williams Combleaf	**Action:** Recommend the withdrawal of the following areas from locatable mineral entry (440,800 acres; Figure 2-28): • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o A portion of Lassen Red Rock Scenic (5 acres) o Pine Nut Mountains Williams Combleaf • East Fork Carson River WSR Study Segment 1 (see *Wild and Scenic Rivers*) • Incandescent Rocks Scenic ACEC	**Action:** Recommend the withdrawal of the following areas from locatable mineral entry (727,100 acres; Figure 2-29): • The Sand Springs Pony Express Station • Cold Springs Pony Express historical site • Rock Creek Stage and Telegraph Site (total of 120 acres) • Wyemaha Archaeological District (see *Cultural Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern)*: o Churchill Narrows Buckwheat Botanical o Fox Peak Cultural o Grimes Point Archaeological

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Botanical o Sand Springs Desert Study Area o A portion of Stewart Valley Paleontological o Tagłm aša Cultural o Portions of Virginia Mountains Greater Sage-Grouse based on 3.25 miles from active leks (not mapped)	• Blue Link Spring, 11.6 acres • Marine Corps Mountain Warfare Training Center (900 acres) (Figure 2-27) • Department of Defense Coordination Area (see *Public Health and Safety*)	District o Incandescent Rocks Scenic o Ruhenstroth Paleontological o Portion of Stewart Valley Paleontological • East Fork Carson River WSR Study Segment 1 (see *Wild and Scenic Rivers*) • Blue Link Spring (11.6 acres) • Pistone Site (see *Cultural Resources*) • Marine Corps Mountain Warfare Training Center (900 acres; Figure 2-29) • Department of Defense Coordination Area (see *Public Health and Safety*)
335.	**Fluid Minerals (Oil, Gas, and Geothermal)**				
336.	**Action:** Areas closed to oil, gas, and geothermal Leasing (839,100 acres; Figure 2-30): • Key Scenic, Wildlife, Recreation, and Historic Areas • Walker Lake • Indian Creek • Virginia City • Prison Hill	**Action**: Manage the following areas as closed to fluid mineral leasing (768,500 acres; Figure 2-31): • WSAs (see *Wilderness Study Areas*) • Within 300-foot radius of a known human burial (see *Tribal Interests*)	**Action**: Manage the following areas as closed to fluid mineral leasing (2,081,700 acres; Figure 2-32): • Dynamite Caves (see *Caves and Cave Resources*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*)	**Action**: Manage the following areas as closed to fluid mineral leasing (737,000 acres; Figure 2-33): • Virginia Range Williams Combleaf Botanical ACEC (see *Special Designations, Areas of Critical Environmental Concern*)	**Action**: Manage the following areas as closed to fluid mineral leasing (1,007,200 acres; Figure 2-34): • Dynamite Caves (see *Caves and Cave Resources*) • Pistone site (see *Cultural Resources*) • Wyemaha Archaeological District (see *Cultural*

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Alkali Lake • Sand Mountain 1,960 acres • Carson City Urban Interface 17,892 acres • Galena Creek • Jumbo Reservoir • Truckee River • Carson River • Jones Canyon Reservoir • WSAs (see *Wilderness Study Areas section*) • Southern Washoe County Urban Interface Planning area (all Washoe County except 1,933 acres in and adjacent to the Steamboat known Geothermal Resource Area)	• Playas: o Edwards Creek Valley o Bune Jugs o Dixie Valley o Flannigan • Virginia Range Williams Combleaf Botanical ACEC (see *Special Designations, Areas of Critical Environmental Concern* • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) (except 1,933 acres in and adjacent to the Steamboat Known Geothermal Resource Area)	• ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Carson wandering skipper o Churchill Narrows Buckwheat Botanical o Clan Alpine Greater Sage-Grouse o Desatoya Greater Sage-Grouse o Grimes Point Archaeological District o Incandescent Rocks Scenic o Portion of Lassen Red Rock Scenic o Namazii Wunu Cultural o Pine Nut Bi-State Sage-Grouse o Ruhenstroth Paleontological o Stewart Valley Paleontological o Virginia Mountains Greater Sage-Grouse o Virginia Range Williams Combleaf Botanical • National Historic Trail (NHT) corridors within a 2.5-mile buffer from	• WSAs (see *Wilderness Study Areas*) • Within 0.25-mile radius of a known human burial (see *Tribal Interests*) • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) (except 1,933 acres in and adjacent to the Steamboat Known Geothermal Resource Area)	*Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Churchill Narrows Buckwheat Botanical o Fox Peak Cultural o Grimes Point Archaeological District o Incandescent Rocks Scenic o Pah Rah High Basin Petroglyph o Ruhenstroth Paleontological o Stewart Valley Paleontological • High potential historic sites and high potential route segments along NHT corridors within a 1-mile buffer from either side or centerline (see *National Historic Trails*) • Sand Mountain SRMA (see *Special Recreation Management Areas*) • WSAs (see *Wilderness Study Areas*) • Within 300-foot radius of a known human burial (see *Tribal Interests*) • Playas:

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			either side of centerline (see *National Historic Trails*) • WSAs (see *Wilderness Study Areas*). • Within 1-mile radius of a known human burial (see *Tribal Interests*) • Playas: o Edwards Creek Valley o Bune Jugs o Dixie Valley o Flannigan • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) (except 1,933 acres in and adjacent to the Steamboat Known Geothermal Resource Area) • Lands proposed for protection of wilderness characteristics		o Edwards Creek Valley o Bune Jugs o Dixie Valley o Flannigan • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) (except 1,933 acres in and adjacent to the Steamboat Known Geothermal Resource Area)
337.	**Action:** Areas where some restrictions apply to oil and gas leasing : 1. NSO a. Within 500 feet of any water (Lahontan RMP Management Decisions	**Action**: NSO for fluid mineral leasing in the following areas (404,600 acres; Figure 2-35): • ACECs (see *Special Designations, Areas of Critical Environmental Concern)*: o Stewart Valley	**Action**: NSO for fluid mineral leasing in the following areas (1,039,200 acres; Figure 2-36): • Lands with slopes greater than 50 percent (see *Soils and Water Resources*) • Priority watersheds	**Action**: NSO for fluid mineral leasing in the following areas (864,800 acres; Figure 2-37): • Pah Rah High Basin Petroglyph ACEC (see *Special Designations, Areas of Critical Environmental*	**Action**: NSO for fluid mineral leasing in the following areas (1,151,600 acres; Figure 2-38): • Lands with slopes greater than 50 percent (see *Soils and Water Resources*) • Within 1,000-foot radius

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Summary) b. Within 300 feet of any water (Walker RMP Management Decisions Summary) c. Cold Springs Pony Express Station (40 acres) d. Grimes Point Archaeological District (960 acres) 2. Seasonal Restrictions on Activities: a. Spring Restrictions 1. Six Sage Grouse Strutting Grounds 56,320 acres 2. All Occupied Raptor Eyries b. March 1 to July 30 Restrictions 1. Sage Grouse Habitat (85,300 acres) 2. East Walker River Area 3. Pine Nut Mountains c. February 1 to September 1 10,240 acres	Paleontological o Grimes Point Archaeological District • Lands with slopes greater than 50 percent (see *Soils and Water Resources*)	containing municipal water supplies (see *Soils and Water Resources*) • Within 500 feet of riparian/wetlands areas, 100-year flood plains and on or within 500 feet of playas (see *Vegetation-Riparian Wetlands*) • Within 500 feet of lentic and lotic habitats occupied by federally listed and BLM sensitive aquatic and semi-aquatic species (see *Fish and Wildlife*) • Important Bird Areas (see *Fish and Wildlife, Migratory Birds*) • Within 0.5 mile of active raptor nests (including special status species; see *Fish and Wildlife, Raptors*) • NRHP-listed properties and districts, national historic landmarks, and Traditional Cultural Properties listed or eligible for the NRHP (see *Cultural Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Black	*Concern*) • Lands with slopes greater than 50 percent (see *Soils and Water Resources*) • Within 1,000-foot radius of municipal well heads in priority watersheds (see *Soils and Water Resources*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*)	of municipal well heads in priority watersheds (see *Soils and Water Resources*) • Within 500 feet of riparian/wetlands areas, 100-year flood plains and on or within 500 feet of playas (see *Vegetation-Riparian Wetlands*) • Within 500 feet of lentic and lotic habitats occupied by federally listed and BLM sensitive aquatic and semi-aquatic species (see *Fish and Wildlife)* • Within 0.5 mile of active raptor nests (including special status species; see *Fish and Wildlife, Raptors*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • National Register-listed properties and districts, National Historic Landmarks, and Traditional Cultural Properties listed or eligible for the NRHP (see *Cultural Resources*) • Virginia City National Historic Landmark District (see *Cultural*

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	1. Prairie Falcon Habitat 2. Excelsior Mountains		Mountain/Pistone Archaeological District o Grimes Point Archeological District o Dixie Valley Toad o Pah Rah High Basin Petroglyph o Tagim aša Cultural o Virginia City National Landmark Historic District • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Backcountry Wildlife Conservation Areas (see *Backcountry Wildlife Conservation Areas*)		*Resources*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Lands proposed for protection of wilderness characteristics
338.	**Action:** No similar action.	**Action**: CSU for fluid mineral leasing in the following areas (2,120,200 acres; Figure 2-39): • Within 500 feet of caves (see *Caves and Cave Resources*): o Dynamite Cave o Hidden Cave • Within 500 feet of lentic and lotic habitats occupied by federally listed aquatic and semi-	**Action**: CSU for fluid mineral leasing in the following areas (1,242,800 acres; Figure 2-40): • Lands with slopes greater than 15 percent and less than 50 percent (see *Soils and Water Resources*) • Lands with a severe soil, wind or water erosion hazard rating (see *Soils and Water Resources*)	**Action**: CSU for fluid mineral leasing in the following areas (2,071,400 acres; Figure 2-41): • Within 200 feet of riparian/wetland areas, 100-year flood plains and on or within 500 feet of playas (see *Fish and Wildlife*) • Within 500 feet of	**Action**: CSU for fluid mineral leasing in the following areas (1,844,900 acres; Figure 2-42): • Lands with slopes greater than 15 percent and less than 50 percent (see *Soils and Water Resources*) • Lands with a severe soil, wind or water erosion hazard rating (see *Soils and Water Resources*) • Important Bird Areas

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		aquatic species (see *Fish and Wildlife*) • Lands with slopes greater than 15 percent and less than 50 percent (see *Soils and Water Resources*) • Lands with a severe soil, wind or water erosion hazard rating (see *Soils and Water Resources*) • Important Bird Areas (see *Fish and Wildlife, Migratory Birds*) • Within 0.25 mile of active raptor nests (including special status species; see *Fish and Wildlife, Raptors*) • Greater Sage-Grouse PPMA (see *Special Status Species, Greater Sage-Grouse*) • NRHP-listed properties and districts, national historic landmarks, and Traditional Cultural Properties listed or eligible for the NRHP (see *Cultural Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*):		lentic and lotic habitats occupied by federally listed aquatic and semi-aquatic species (see *Fish and Wildlife*) • Lands with slopes greater than 15 percent and less than 50 percent (see *Soils and Water Resources*) • Lands with a severe soil, wind or water erosion hazard rating (see *Soils and Water Resources*) • Important Bird Areas (see *Fish and Wildlife, Migratory Birds*) • Within 0.25 mile of active raptor nests (including special status species; see *Fish and Wildlife, Raptors*) • NRHP-listed properties and districts, national historic landmarks, and Traditional Cultural Properties listed or eligible for the NRHP (see *Cultural Resources*) • ACECs (see *Special*	(see *Fish and Wildlife, Migratory Birds*)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		o Black Mountain/Pistone Archaeological District o Namazii Wunu Cultural o Tagim aša Cultural		*Designations, Areas of Critical Environmental Concern*): o Black Mountain/Piston e Archaeological District o Tagim aša Cultural	
339.	**Action:** No similar action.	**Action**: Timing limitations for fluid mineral leasing in the following areas: • Within 0.6 mile of springs, meadows, and riparian corridors late brood-rearing habitat within Greater Sage-Grouse PPMA and PGMA from May 15 to August 15 (see *Special Status Species, Greater Sage-Grouse*)	**Action**: Timing limitations for fluid mineral leasing in the following areas: • Prohibit disturbance from land use authorizations and implement TL stipulations for fluid mineral leasing in the following areas (dependent on seasonal and site-specific conditions; see *Wildlife, Big Game Species*): o Pronghorn kidding areas: May 15 – June 15 o Mule deer fawning areas: June 1 – June 30 o Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 o Bighorn sheep	**Action**: Timing limitations for fluid mineral leasing in the following areas: • Within the urban interface zone, prohibit disturbance from land use authorizations and implement TL stipulations for fluid mineral leasing in the following areas (dependent on seasonal and site-specific conditions). Outside of the urban interface zone, apply appropriate Standard Operating Procedures and BMPs to mitigate disturbance from land use authorization activities in the	**Action**: Timing limitations for fluid mineral leasing in the following areas: • Prohibit disturbance from land use authorizations and implement TL stipulations for fluid mineral leasing in the following areas (dependent on seasonal and site-specific conditions) unless appropriate Standard Operating Procedures and BMPs are deemed sufficient by the BLM Authorized Officer (See *Wildlife, Big Game Species*): o Pronghorn kidding areas: May 15 – June 15 o Mule deer fawning areas: June 1 – June 30 o Mule deer migration

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			lambing areas: February 1 – May 15 o Elk calving areas (should elk expand their range further): May 15 – June 15 o Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: January 1 – April 15 o Big game migration/ movement corridors o Crucial habitat areas • Fluid mineral leases within 0.6 mile of springs, meadows, and riparian corridors (late brood-rearing habitat) within Greater Sage-Grouse PGMA from May 15 to August 15 (dates can be extended to September 15 for the Bi-State distinct population segment)	following areas (dependent on seasonal and site-specific conditions; See *Wildlife, Big Game Species*): o Pronghorn kidding areas: May 15 – June 15 o Mule deer fawning areas: June 1 – June 30 o Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 o Bighorn sheep lambing areas: February 1 – May 15 o Elk calving areas (should elk expand their range further): May 15 – June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: November 1 – May	and movement corridors: March 1 to May 15 and October 1 to November 30 o Bighorn sheep lambing areas: February 1 – May 15 o Elk calving areas: May 15 – June 15 o Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: December 1 – May 1 o Big game migration/ movement corridors o Crucial habitat areas • Fluid mineral leases within 0.6 mile of springs, meadows, and riparian corridors (late brood-rearing habitat) within Greater Sage-Grouse PGMA from May 15 to August 15 (dates can be extended to September 15 for the Bi-State distinct population segment)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				1Fluid mineral leases within 0.6 mile of springs, meadows, and riparian corridors (late brood-rearing habitat) within Greater Sage-Grouse PGMA from May 15 to August 15 (dates can be extended to September 15 for the Bi-State distinct population segment)	
340.	**Mineral Materials (Salable)**				
341.	**Objective:** No similar objective.	**Objective:** Make available and encourage development of mineral material resources to meet national, regional and local needs consistent with national objectives to ensure an adequate supply of minerals.	**Objective:** Manage mineral material resources to develop deposits of known moderate to high mineral material resource potential to provide for the needs of individuals, municipalities, and business, while assuring compatibility with and protection of other resources and uses. Emphasis should be placed on developing the fewest number of material sites necessary.	**Objective:** Manage mineral material resources to develop deposits of known moderate to high mineral material resource potential to provide for the needs of individuals, municipalities, and business, while assuring compatibility with and protection of other resources and uses. Material sites in the urban interface would be reclaimed to meet the needs of adjacent communities.	**Objective:** Manage mineral material resources to develop deposits of known moderate to high mineral material resource potential to provide for the needs of individuals, municipalities, and business, while assuring compatibility with and protection of other resources and uses. Material sites in the urban interface would be reclaimed to meet the needs of adjacent communities. Emphasis should be placed on developing the fewest number of material sites

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
					necessary.
342.	**Action:** Manage the following areas as closed to mineral material disposal (564,200 acres; Figure 2-43): • WSAs (see *Wilderness Study Areas*) • Jumbo Postpile area (40 acres)	**Action**: Manage the following areas as closed to mineral material disposal (807,200 acres; Figure 2-44): • Caves (see *Caves and Cave Resources*): o Dynamite Cave o Hidden Cave • WSAs (see *Wilderness Study Areas*) • Within 300-foot radius of known human burial (see Tribal Interests) • US DOD Coordination Area (see *Public Health and Safety*)	**Action**: Manage the following areas as closed to mineral material disposal (3,004,800 acres; Figure 2-45): • Caves (see *Caves and Cave Resources*): o Dynamite Cave o Hidden Cave • Priority watersheds containing municipal water supplies (see *Soils and Water Resources*) • Riparian/wetland areas with 200-foot buffer (see *Vegetation, Riparian Wetlands*) • Fish and wildlife priority habitats (see *Fish and Wildlife*) • Within 0.5 mile of active raptor nests, including special status raptors (see *Fish and Wildlife, Raptors*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Churchill Narrows	**Action**: Manage the following areas as closed to mineral material disposal (807,700 acres; Figure 2-46): • Caves (see *Caves and Cave Resources*): o Dynamite Cave o Hidden Cave • Within 1,000-foot radius of municipal well heads in priority watersheds (see *Soils and Water Resources*) • Virginia Range Williams Combleaf Botanical ACEC (see *Special Designations, Areas of Critical Environmental Concern*) • WSAs (see *Wilderness Study Areas*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Within 0.25-mile radius of known human burial (see	**Action**: Manage the following areas as closed to mineral material disposal (1,955,400 acres; Figure 2-47): • Caves (see *Caves and Cave Resources*): o Dynamite Cave o Hidden Cave • Within 1,000-foot radius of municipal well heads in priority watersheds (see *Soils and Water Resources*) • Fish and wildlife priority habitats (see *Fish and Wildlife*) • Within 0.5 mile of active raptor nests, including special status raptors (see *Fish and Wildlife, Raptors*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • Pistone site (see *Cultural Resources*) • Ruhenstroth Paleontological ACEC (see *Special Designations, Areas of Critical Environmental Concern*) • High potential historic

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Buckwheat Botanical o Clan Alpine Greater Sage-Grouse o Desatoya Greater Sage-Grouse o Incandescent Rocks Scenic o Portion of Lassen Red Rock Scenic o Namazii Wunu Cultural o Pine Nut Bi-State Sage-Grouse o Ruhenstroth Paleontological o Steamboat Buckwheat Botanical o Virginia City National Landmark Historic District o Virginia Mountains Greater Sage-Grouse o Virginia Range Williams Combleaf Botanical • NHT corridors within 2.5-mile buffer from either side of centerline (see *National Historic Trails*) • WSAs (see *Wilderness Study Areas*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the	*Tribal Interests*) • Department of Defense Coordination Area (see *Public Health and Safety*)	sites and high potential route segments along NHT corridors within 1-mile buffer from either side of centerline (see *National Historic Trails*) • WSAs (see *Wilderness Study Areas*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Within 300-foot radius of known human burial (see *Tribal Interests*) • Virginia Range ERMA (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Virginia Range ERMA*) • Department of Defense Coordination Area (see *Public Health and Safety*)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			ordinary high water mark; see *Wild and Scenic Rivers*) • Within 1-mile radius of known human burial (see *Tribal Interests*) • Virginia Range ERMA (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Virginia Range ERMA*) • Backcountry Wildlife Conservation Areas (see *Backcountry Wildlife Conservation Areas*) • Lands proposed for protection of wilderness characteristics		
343.	**Action:** No mineral material sales or disposal will be authorized within the 40-acre Jumbo Postpile area.	**Action:** No similar action.	**Action:** Same as Alternative A (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Virginia Range ERMA*).	**Action:** No similar action.	**Action:** Same as Alternative A (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Virginia Range ERMA*).
344.	**Action:** In the Reno area, keep 46 mineral material sites open for sales and free use, restructure use of the sites to accommodate VRM and monitor to insure compliance.	**Action:** No similar action.			
345.	**Action:** Continue to operate existing aggregate facilities on BLM-administered land. Expansion of existing	**Action:** Continue to operate existing aggregate facilities. Expansion of existing operations would require standard approval	**Action:** Close existing aggregate facilities or do not renew when the permit expires if incompatible with: • Wildlife management	**Action:** Same as Alternative B, with the following exception: • Close facilities or do not renew if	**Action:** Same as Alternative B, with the following exception: • Close facilities or do not renew if incompatible

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	operations will require standard approval through a joint permitting process with the BLM (Mineral Materials Sale Contract) and Washoe County (Special Use Permit; Figure 2-43).	through a joint permitting process with the BLM (Mineral Materials Sale Contract) and the appropriate County (Figure 2-44).	objectives • Cultural management objectives • Special designation objectives (Figure 2-45)	incompatible with adjacent land uses within the urban interface. Expansion of existing operations would require standard approval through a joint permitting process with the BLM (Mineral Materials Sale Contract) and the appropriate County (Figure 2-46).	with adjacent land uses or other resource management objectives. Expansion of existing operations would require standard approval through a joint permitting process with the BLM (Mineral Materials Sale Contract) and the appropriate County (Figure 2-47).
346.	**Action:** Restrict new permanent aggregate facilities to locations that are topographically screened or concealed from sight of existing or planned residential areas and major transportation corridors (Washoe County Plan).	**Action:** No similar action.	**Action:** Restrict new permanent aggregate facilities to locations that do not result in negative impacts on wildlife, vegetation, cultural or special designation management objectives.	**Action:** Restrict new permanent aggregate facilities to locations that are topographically screened or concealed from sight of existing or planned residential areas and major transportation corridors within the urban interface.	**Action:** Restrict new permanent aggregate facilities to locations that are topographically screened or concealed from sight of existing or planned residential areas and major transportation corridors within the urban interface. Special consideration would be given to meet wildlife, vegetation, cultural or special designation management objectives.
347.	**Action:** New temporary aggregate facilities will be available to government entities only. Restrict proposed sites to locations that are topographically screened or concealed	**Action:** No similar action.	**Action:** New temporary aggregate facilities would be available to government entities only. Restrict proposed sites to locations that do not result in negative impacts on wildlife,	**Action:** New temporary aggregate facilities would be available to government entities only. Restrict proposed sites to locations that are	**Action:** New temporary aggregate facilities would be available to government entities only. Restrict proposed sites to locations that are topographically screened or concealed from

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	from sight or visually unobtrusive to existing or planned residential areas and major transportation corridors (Washoe County Plan).		vegetation, cultural or special designation management objectives	topographically screened or concealed from sight of existing or planned residential areas and major transportation corridors within the urban interface.	sight of existing or planned residential areas and major transportation corridors within the urban interface. Special consideration would be given to meet wildlife, vegetation, cultural or special designation management objectives.
348.	**Action:** No similar action.	**Action:** Establish community pits and common use areas of various sizes to serve both urban and rural communities as well as industry.	**Action:** Consider community pits and common use areas where deposits of moderate to high mineral material resource potential exist to meet reasonably foreseeable demand for commodities that does not conflict with other resource objectives. Community pits and common use areas should be established at appropriate locations with sufficient capacity, avoiding a proliferation of sites for similar materials in a given area.	**Action:** Consider community pits and common use areas where deposits of moderate to high mineral material resource potential exist to meet the existing and reasonably foreseeable demand for commodities that does not conflict with other resource objectives. Community pits and common use areas should be established at appropriate locations with sufficient capacity, avoiding a proliferation of sites for similar materials in a given area. Community pits and common use areas should be managed so that deposits of moderate to high	**Action:** Consider community pits and common use areas where deposits of moderate to high mineral material resource potential exist to meet the existing and reasonably foreseeable demand for commodities that does not conflict with other resource objectives. Community pits and common use areas should be established at appropriate locations with sufficient capacity, avoiding a proliferation of sites for similar materials in a given area. Preference would be given to sales from currently existing community pits or common use areas.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				mineral material resource potential would be developed for community-based expansion.	
349.	**Nonenergy Leasable Minerals**				
350.	**Objective:** No similar objective.	**Objective:** Provide opportunity for exploration and development of solid minerals such as sodium, potassium, phosphate except where incompatible with other resource values.			
351.	**Action:** No similar action.	**Action:** Open 3,821,300 acres to nonenergy mineral leasing, with only standard lease terms and stipulations (Figure 2-49).	**Action:** Open 1,842,400 acres to nonenergy mineral leasing, with only standard lease terms and stipulations (Figure 2-50).	**Action:** Open 3,821,300 acres to nonenergy mineral leasing, with only standard lease terms and stipulations (Figure 2-51).	**Action:** Open 3,017,400 acres to nonenergy mineral leasing, with only standard lease terms and stipulations (Figure 2-52).
352.	**Action:** No similar action.	**Action:** Restrict nonenergy mineral leasing and mineral material disposal within Greater Sage-Grouse PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat.	**Action:** Close Greater Sage-Grouse PPMA and PGMA (414,200 acres) to nonenergy mineral leasing.	**Action:** Same as Alternative B.	**Action:** Same as Alternative C.
353.	**Action**: Close the following areas (738,800 acres) to nonenergy mineral leasing (Figure 2-48): • WSAs (see *Wilderness Study Areas*) Close key areas in the planning area to sodium and potassium leasing-:	**Action**: Close the following areas (981,900 acres) to nonenergy mineral leasing (Figure 2-49): • WSAs (see *Wilderness Study Areas*) • Within 300-foot radius of known human burial (see *Tribal Interests*).	**Action**: Close the following areas (2,960,800 acres) to nonenergy mineral leasing (Figure 2-50): • Priority watersheds containing municipal water supplies (see *Soils and Water Resources*) • Fish and wildlife priority habitats (see *Fish and*	**Action**: Close the following areas (981,900 acres) to nonenergy mineral leasing (Figure 2-51): • Within 1,000-foot radius of municipal well heads in priority watersheds (see *Soils and Water Resources*)	**Action**: Close the following areas (1,785,900 acres) to nonenergy mineral leasing (Figure 2-52): • Within 1,000-foot radius of municipal well heads in priority watersheds (see *Soils and Water Resources*) • Within 0.5 mile of active raptor nests, including

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Galena Creek • Jumbo Reservoir • Truckee River • Carson River • Jones Canyon Reservoir • Southern Washoe Urban Interface plan area	• A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) • Department of Defense Coordination Area (see *Public Health and Safety*)	*Wildlife*). • Within 0.5 mile of active raptor nests, including special status raptors (see *Fish and Wildlife, Raptors*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Carson wandering skipper o Churchill Narrows Buckwheat Botanical o Incandescent Rocks Scenic o Portion of Lassen Red Rock Scenic o Namazii Wunu Cultural o Ruhenstroth Paleontological o Virginia City National Landmark Historic District o Virginia Range Williams Combleaf Botanical • NHT corridors within 2.5-mile buffer from either side of the centerline (see *National Historic Trails)*	• Virginia Range Williams Combleaf Botanical ACEC (see *Special Designations, Areas of Critical Environmental Concern*) • WSAs (see *Wilderness Study Areas*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Within 0.25-mile radius of known human burial (see *Tribal Interests*) • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) • Department of Defense Coordination Area (see *Public Health and Safety*)	special status raptors (see *Fish and Wildlife, Raptors*) • Sand Mountain SRMA (see *Recreation and Visitor Services, Special Recreation Management Areas*) • Ruhenstroth Paleontological ACEC (see *Special Designations, Areas of Critical Environmental Concern*) • High potential historic sites and high potential route segments along NHT corridors within 1-mile buffer from either side of centerline (see *National Historic Trails*) • Virginia City National Historic Landmark District (see *Cultural Resources*) • WSAs (see *Wilderness Study Areas*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Within 300-foot radius of known human burial (see *Tribal Interests*)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• WSAs (see *Wilderness Study Areas*) • East Fork Carson River Segment 1 (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*) • Within 1-mile radius of known human burial (see *Tribal Interests*) • A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) • Backcountry Wildlife Conservation Areas (see *Backcountry Wildlife Conservation Areas*) • Lands proposed for protection of wilderness characteristics		• A portion of Washoe County (formerly known as Southern Washoe County Urban Interface Planning Area) • Greater Sage-Grouse PPMA and PGMA • Lands proposed for protection of wilderness characteristics • Department of Defense Coordination Area (see *Public Health and Safety*)
354.	**Recreation and Visitor Services**				
355.	**GOAL:** Provide a diversity of recreation settings and opportunities for dispersed and organized users while protecting natural and cultural resources.				
356.	**Actions common to all**: • Provide a wide range of developed and dispersed recreation opportunities that meet projected recreation demand within the planning area. • Manage recreation use on BLM-administered land to protect natural resources, provide for public health and safety, and minimize conflicts among various uses. • Increase public awareness of recreation opportunities and experiences through interpretation, education, and stewardship principles. • Collaboration will occur for all permitted recreation activities adjacent to Navy-administered lands or on Navy withdrawn lands. • Acquire easements to provide access to BLM-administered lands where needed to meet recreation objectives. • Support the planning and implementation of recreational trails in cooperation with city and county governments (e.g., Sun Valley Rim Trail, Carson Valley Trails, Canoe Hill Trail, Tahoe-Pyramid Bikeway).				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Work in cooperation with State and local governments to develop recreational facilities and activities that are mutually beneficial. • Support partnerships for cooperative funding, stewardship, monitoring, operations and maintenance to maximize resources and protect public lands for future generations. • Create and update supplemental rules to address public safety, health, and manageability concerns. • Unless otherwise authorized, the possession, discharge, or use of all fireworks is prohibited. • Prohibit burning of wood or other material containing nails or any other metal components on BLM-administered land. • Personal property may not be left unattended in a campground, designated recreation area, or on any other BLM-administered lands for more than 48 hours. Vehicles left parked for the purpose of overnight camping, hiking, river rafting, or other authorized recreation activities are exempt. • Establishing occupancy, taking possession of, or otherwise using BLM-administered lands for residential purposes is prohibited, except as allowed under 43 CFR 3715.2, 3715.2-1, 3715.5, 3715.6, or with prior written authorization from the BLM.				
357.	**Objective:** No similar objective.	**Objective:** Encourage cooperation in the development and public use of recreation sites on or near Navy-administered lands.			
358.	**Action:** The Navy and the BLM will assess improving recreation facilities at Horse Creek and establishing a trailhead to the Clan Alpine Wilderness Study Area.	**Action**: Coordinate with NDOW and the Navy for the development of recreation facilities and trailhead parking on Navy-administered land in Horse Creek Canyon for Clan Alpine WSA access. Assess the feasibility of improving recreation facilities on Navy-administered land in partnership with the Navy. Assess the feasibility of establishing an equestrian staging area on Navy-administered land separate from the hiking/camping staging area on Navy-administered lands for Clan Alpine WSA access.			
359.	**Recreational Shooting**				
360.	**Actions common to all**: • Allow recreational shooting on BLM-administered lands except where prohibited by statute or county ordinance. • Prohibit shooting at exploding targets (e.g,, tannerite or pressurized containers) and/or explosives. • Prohibit shooting at glass targets (e.g., televisions or bottles), targets on trees, or at trees. • Prohibit shooting across or towards roads, trails, and military ranges.				
361.	**Objective:** No similar objective.	**Objective:** Provide opportunities for recreational shooting while ensuring public health and safety, resource protection and multiple uses.	**Objective:** Protect resources and provide for public health and safety by emphasizing use of target shooting ranges and limiting ecological damaging shooting equipment.	**Objective:** Provide opportunities for recreational shooting while emphasizing public health and safety, education, and other uses of the lands within the urban interface.	**Objective:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
362.	**Action:** No similar action.	**Action:** • Support the development and onsite management of target shooting ranges through conveyance of the land. • No commercial SRPs would be issued for target shooting in WSAs, ACECs, or as identified in the management plan or supplemental rules.		**Action:** Same as Alternative B, plus: • Restrict shooting during high fire danger.	
363.	**Action:** Per Federal Register Notice, the discharge of firearms is prohibited in the following areas (see *Public Health and Safety*): • American Flat Mill 10 acres (Notice # NV-030-97001; December 20,1996) • Pine Nut Road No. 2 (Notice # NV030-97-1330-00; October 15, 1997) • Moonrocks (Notice # NV-030-92-04; July 27, 1992)				
364.	**Special Recreation Permits**				
365.	**Objective:** No similar action.	**Objective:** Provide for commercial activities, competitive events, and organized groups while minimizing adverse environmental impacts.	**Objective:** Same as Alternative B, plus: • Focus on casual use demands in the urban interface to address user and residential conflicts associated with this demand.		
366.	**Action:** No similar action.	**Action:** For motorized recreation events and activities: • Maintain a minimum setback of 0.25 mile, as appropriate, between populated areas (nearest occupied residence) unless an exception is issued by the Authorized Officer. • Designate available courses and allowable travel modes for SRPs through the travel management planning process.	**Action:** For motorized and nonmotorized recreation events and activities: • Maintain a minimum setback of 0.5 mile, as appropriate, between populated areas (nearest occupied residence) unless an exception is issued by the Authorized Officer.		**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
367.	**Other Designations**				
368.	**Action:** Identify the Jumbo Postpile on maps and construct an interpretive trail. Authorize no mineral material disposal in the 40-acre area.	**Action**: No similar action.	**Action**: No similar action (see *Recreation and Visitor Service, Extensive Recreation Management Areas - Virginia Range ERMA*).	**Action**: No similar action.	**Action**: No similar action (see *Recreation and Visitor Service, Extensive Recreation Management Areas - Virginia Range ERMA*).
369.	**Action:** Maintain the roaded natural, general recreation opportunities in Bedell Flat and Dry Valley areas by keeping the existing 2-wheel-drive dirt road system, and limiting developments to those which do not alter the present undeveloped character of the landscape.	**Action:** No similar action.	**Action**: No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Dry Valley ERMA*).	**Action**: No similar action.	**Action**: No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Dry Valley ERMA*).
370.	**Action:** Pine Nuts Recreation Lands: Manage the Pine Nut "recreation lands" to preserve both vehicle and nonvehicle recreation opportunities in a natural environment.	**Action**: No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Pine Nut ERMA*).			
371.	**Action:** Allow development of a facility at Granite Mountain for use by hang-glider recreationists. Designate a safety zone to discourage new above-ground structures on BLM-administered lands.	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
372.	**Action:** Indian Creek Recreation Lands: Manage the Indian Creek Recreation Lands to preserve passive recreation opportunities in a natural environment.	**Action**: No similar action (see *Recreation and Visitor Services, Special Recreation Management Areas - Alpine SRMA*).			
373.	**Action:** Virginia Mountains Recreation Lands: Manage the Virginia Mountains "recreation lands" to maintain, provide and protect semi-primitive recreation opportunities for both motorized and nonmotorized users. Encourage the use of activities that do not require substantial development.	**Action**: No similar action.	**Action:** No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Virginia Mountain ERMA*).	**Action:** No similar action.	**Action:** No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Virginia Mountain ERMA*).
374.	**Action:** Red Rocks Scenic Area: Manage the Red Rocks Scenic Area to protect geologic features. Develop a day use picnic area with interpretation kiosk. Ensure mining plans of operation would protect areas scenic quality and not impair recreational use.	**Action**: No similar action.	**Action:** No similar action (see *Special Designations, Areas of Critical Environmental Concern – Lassen Red Rock Scenic ACEC and Recreation and Visitor Services, Extensive Recreation Management Area - Petersen ERMA*).	**Action:** No similar action.	**Action:** No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Area - Petersen ERMA*).
375.	**Action:** Within the Washoe County Plan Amendment area, maintain a buffer of 0.25 mile or	**Action:** No similar action (see *Recreation and Visitor Services - Special Recreation Permits*).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	more, as appropriate, between populated areas and BLM-permitted recreation events, if it is determined through environmental review that the proposed event may have negative impacts on nearby residents.				
376.	**Motocross Tracks and Facilities**				
377.	**Objective:** No similar objective.	**Objective:** Provide opportunity for motocross use but do not pursue the development or management of motocross facilities unless through an Recreation & Public Purpose lease.			
378.	**Action:** No similar action.	**Action:** Prohibit the construction of and eliminate all user created motocross tracks within the planning area that conflict with management goals or resource objectives, do not meet industry standards, or compromise public health and safety.			
379.	**Action:** Develop a motocross course in Lemmon Valley.	**Action:** • Maintain the Lemmon Valley Motocross Area open OHV designation. • Manage the motocross area for general, commercial, and competitive motocross, BMX, and similar riding opportunities, until leased. • Pursue partnerships to manage use and maintenance of the facility. Seek easement through private land to secure public access to site to include periodic maintenance of access road.	**Action:** • Eliminate the Lemmon Valley Motocross opportunities at Lemmon Valley. • Remove and rehabilitate motocross related features and provide for rehabilitation of area.	**Action:** • Pursue Recreation & Public Purpose lease to County or City entities for management and operation of Lemmon Valley Motocross facility. • Pursue partnerships to manage use and maintenance of the facility. • Seek easement through private land to secure public access to site and include periodic maintenance of access road. (also see *Recreation and Visitor Services, Extensive Recreation Management Areas - Reno Urban Interface ERMA*)	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		(also see *Recreation and Visitor Services, Extensive Recreation Management Areas - Reno Urban Interface ERMA*)			
380.	**Special Recreation Management Areas**				
381.	**Goal:** Manage SRMAs to support and sustain the principal recreation activities identified for the area as the primary resource and to protect recreational opportunities and setting characteristics.				
382.	**Summary of Special Recreation Management Areas**				
383.	**Summary:** Continue to manage the following 2 locations as Special Recreation Management Areas (Figure 2-53): • Indian Creek/East Fork Carson River SRMA (7,600 acres) • Walker Lake SRMA (60,100 acres)	**Summary:** Manage 6 areas as SRMAs in order to protect recreation opportunities, values and experiences while promoting regional economic development (Figure 2-54): • Alpine (5,800 acres): o Indian Creek Campground RMZ (500 acres) o East Fork Carson River RMZ (1,600 acres) o Dispersed RMZ (3,700 acres) • Dead Camel Mountain (16,800 acres) • Hungry Valley (21,600 acres) • Sand Mountain (7,400 acres): o Dune RMZ (1,300 acres) o Desert Habitat	**Summary:** Manage 3 areas as SRMAs in order to protect recreation opportunities, values, and experiences with an emphasis on the protection of cultural, historical and natural resources (Figure 2-55): • Alpine (10,700 acres): o Indian Creek Campground RMZ (500 acres) o East Fork Carson River RMZ (2,500 acres) o Dispersed RMZ (7,700 acres) • Sand Mountain (3,900 acres): o Dune RMZ (1,300 acres) o Desert Habitat RMZ (2,600 acres) • Walker Lake (60,100 acres):	**Summary:** Manage 4 areas as SRMAs in order to protect recreation opportunities, values, and experiences with an emphasis on issues unique to the urban interface (Figure 2-56): • Alpine (7,400 acres): o Indian Creek RMZ (500 acres) o East Fork Carson River RMZ (1,600 acres) o Dispersed RMZ (5,300 acres) • Dead Camel Mountain (37,400 acres) • Hungry Valley (21,800 acres): o Moonrocks RMZ (5,900 acres) • Wilson Canyon (500	**Summary:** Manage 6 areas as SRMAs in order to protect recreation opportunities, values, and experiences (Figure 2-57): • Alpine (7,700 acres): o Indian Creek RMZ (500 acres) o East Fork Carson River RMZ (2,500 acres) o Dispersed RMZ (4,700 acres) • Dead Camel Mountain (37,400 acres): o Dead Camel North RMZ (17,100 acres) o Dead Camel South RMZ (20,600 acres) • Hungry Valley (16,200 acres) • Sand Mountain (19,700 acres): o Dune RMZ (1,300 acres) o Desert Habitat RMZ

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		RMZ (2,600 acres) o Mining District RMZ (3,500 acres) • Walker Lake (24,000 acres): o Sportsman's Beach RMZ (100 acres) o Wassuk RMZ (23,900 acres) • Wilson Canyon (500 acres): o Copper Belt RMZ (200 acres) o West Walker River RMZ (300 acres)	o Sportsman's Beach RMZ (100 acres) o Shoreline RMZ (600 acres) o Wassuk RMZ (23,900 acres) o Gillis Range RMZ (35,500 acres)	acres): o Copper Belt RMZ (200 acres) o West Walker River RMZ (300 acres)	(2,600 acres) o Trail Riders RMZ (12,300 acres) o Mining District RMZ (3,500 acres) • Walker Lake (24,600 acres): o Sportsman's Beach RMZ (100 acres) o Shoreline RMZ (600 acres) o Wassuk RMZ (23,900 acres) • Wilson Canyon (500 acres): o Copper Belt RMZ (200 acres) o West Walker River RMZ (300 acres)
384.	**Alpine SRMA**				
385.	**Objective:** Continue managing Indian Creek Recreation Area as an SRMA for recreational use	**Objective:** Designate the Alpine SRMA emphasizing nonmotorized recreation and managing for camping, interpretation and environmental education, reservoir access, fishing, and hiking through the establishment of RMZs.	**Objective:** Designate the Alpine SRMA emphasizing nonmotorized recreation and managing for camping, interpretation and environmental education, reservoir access, fishing, and hiking through the establishment of RMZs.	**Objective:** Designate the Alpine SRMA emphasizing nonmotorized recreation and managing for camping, interpretation and environmental education, reservoir access, fishing, and hiking through the establishment of RMZs.	**Objective:** Designate the Alpine SRMA emphasizing nonmotorized recreation and managing for camping, interpretation and environmental education, reservoir access, fishing, and hiking through the establishment of RMZs.
386.	**Action:** Continue managing 7,000 acres of Indian Creek/East Fork of	**Action:** Establish the Alpine SRMA with 3 RMZs and manage as follows:	**Action:** Same as Alternative B except: • Manage East Fork Carson	**Action:** Same as Alternative B except: • Manage the East Fork	**Action:** Same as Alternative D except: • Prohibit OHV staging at

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	the Carson River Recreation Area as an SRMA for recreational use.	• Designate and map the regional trail system. • Indian Creek Campground RMZ o Expand recreation campground site boundary to include east side of reservoir. o Prohibit dispersed camping. o Manage as a use area. o Manage as VRM Class III. o Maintain existing withdrawal to protect recreational values. o Continue fee collections necessary to provide for adequate management and law enforcement staffing. o All food and food scraps, empty cans or wrappers, and scented items such as toiletries, sunscreen, or	River RMZ as VRM Class I.	Carson River Corridor within the Dispersed Use RMZ as VRM Class II. • Manage the East Fork Carson River RMZ as VRM Class II.	Hangman's Bridge parking in the East Fork Carson River RMZ.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		insect repellent must be stored in the provided food storage box or placed in designated bear-proof garbage receptacles. • East Fork Carson River RMZ o Manage Hangman's Bridge for day use. o Manage Hangman's Bridge for primary boat launching river access and day use parking. o Allow OHV staging at Hangman's Bridge Parking. o Manage Pebble Beach river ingress / egress to address public health and safety. o Manage as VRM Class III. • Dispersed Use RMZ o Limit Curtz Lake trailhead and trails to day use. o In coordination with Alpine County and Cal Trans, evaluate			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Curtz Lake trail system connectivity with Turtle Rock Park. Construct connecting nonmotorized trail segment(s) if appropriate. o Manage as VRM Class II.			
387.	**Dead Camel Mountains SRMA**				
388.	**Objective:** No similar objective.	**Objective:** Designate the Dead Camel Mountains SRMA for motorized travel multi-use recreational area with the primary objective of providing a location for casual and permitted events that would facilitate regional tourism and activities.	**Objective:** No similar objective. Nondesignated routes within the Dead Camel Mountains would be decommissioned and hillsides would be rehabilitated.	**Objective:** Designate the Dead Camel Mountains SRMA as an off-road motorcycle riding area to meet the demands of the off-road motorcycle riding communities by providing a location for casual motorized use and permitted OHV events while addressing other resource demands and user conflicts.	**Objective:** Designate the Dead Camel Mountains SRMA primarily as an off-road motorcycle riding area to meet the demands of the off-road motorcycle riding communities by providing a location for casual motorized use and permitted OHV events.
389.	**Action**: No similar action.	**Action:** • Manage as open to cross-country travel. • Establish a designated staging and camping area with information kiosks. Allow for motorized and nonmotorized SRP	**Action:** No similar action.	**Action:** • Manage a motorized route system for 4-wheel drive vehicles, motorcycles, all-terrain vehicles (ATVs), and utility vehicles (UTVs), and a nonmotorized	**Action:** Establish 2 RMZs: • Dead Camel North RMZ where motorized travel is open. • Dead Camel South RMZ where travel is limited to existing routes. o Establish a primitive

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		competitive events on a first come basis. • Authorize nonmotorized events and recreational uses on an equal basis with motorized use. • Pursue developing collaborative partnerships. • Provide for a wide range of motorized and nonmotorized recreational opportunities. • Facilitate community-based recreation and tourism events. • Promote recreational OHV-based tourism. • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Manage as VRM Class IV.		route system for mountain bikes and equestrian use. • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Manage as VRM Class III.	staging and camping area for casual and competitive use with signage and information kiosks. o Establish an exclusionary zone for permitted uses in the vicinity of Salt Cave and motorized travel limited to designated routes. o Allow for SRP competitive nonmotorized recreation where appropriate based on public safety. o Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. o Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps on site in Fallon. o Provide for point to point OHV race corridors through the SRMA for Best

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
					in the Desert Vegas to Reno and similar events. o Manage as VRM Class IV.
390.	**Hungry Valley SRMA**				
391.	**Goal:** Manage for a variety of OHV recreational experiences.				
392.	**Objective:** No similar objective.	**Objective:** Designate the Hungry Valley SRMA as a multi-use recreational area promoting OHV-based tourism.	**Objective:** No similar objective.	**Objective:** Same as Alternative B.	
393.	**Action:** Continue managing the Hungry Valley OHV area. Manage as open to cross-country OHV travel (27,402 acres).	**Action:** Establish the Hungry Valley SRMA as follows: • Manage as open to cross-country motorized travel. • Allow for organized events on a case-by-case basis. • Prohibit campfires outside of designated camp sites. • Maintain up to 50 miles of groomed loop trails for motorized use opportunities. • Develop partnerships to share route and area maintenance. • Provide for the development, maintenance and	**Action:** No similar action (see *Recreation and Visitor Services – Reno Urban Interface ERMA*).	**Action**: Establish the Hungry Valley SRMA as follows: • Manage as limited to existing routes. • Allow for organized events on a case-by-case basis. • Prohibit campfires outside of designated sites. • Maintain up to 100 miles of groomed loop trails for motorized use opportunities. • Do not designate camping or staging areas outside of the Moonrocks RMZ. • Provide for the development,	**Action**: Same as Alternative D except: • Prohibit competitive rock-crawling SRPs within the Moonrocks RMZ and at Warm Springs Mountain. • Implement fee collections necessary to provide for adequate management and law enforcement staffing. • Designate and map regional trail system.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		management of facilities and trails through partnerships or land use authorizations. • Prohibit user-defined motocross opportunities in camp areas. • Manage as VRM Class IV. • Allow rockcrawling in 2 areas (e.g., Moonrocks and Warm Springs Mountain). • Establish as a fee area. • Establish designated staging and camping areas with information kiosks. • Implement fee collections necessary to provide for adequate management and law enforcement staffing. • Designate and map regional trail system.		maintenance, and management of facilities and trails through partnerships or land use authorizations. • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Manage as VRM Class IV. • Develop educational and interpretive signage for trail systems. • Establish the Moonrocks RMZ o Open to motorized travel o Manage as a fee area. o Designate and maintain access roads into fee area. o Designate and develop up to three separate camp areas (e.g., Moonrocks, Tot lot, and Big Wash).	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
				o Closed to recreational shooting. • Implement fee collections necessary to provide for adequate management and law enforcement staffing. • Designate and map regional trail system.	
394.	**Sand Mountain SRMA**				
395.	**Goal:** Manage for OHV recreational experiences, nonmotorized activities, unique geological feature, and Native American values.				
396.	**Objective:** No similar objective.	**Objective:** Designate the Sand Mountain SRMA for motorized and nonmotorized recreational activities while protecting sensitive resources.	**Objective:** Designate the Sand Mountain SRMA to protect sensitive species habitat and Native American values as the primary resource management objective.	**Objective:** No similar objective.	**Objective:** Designate the Sand Mountain SRMA for motorized recreational opportunities as the primary resource management objective while protecting sensitive species habitat, Native American values, unique geologic values while providing opportunities for nonmotorized recreation activities.
397.	**Action:** No similar action.	**Action:** • Eliminate fee use designation. • Maintain current facilities. • Manage the camp area for use as a campground for Sand Mountain users and as a staging area for long-	**Action:** • Manage as VRM Class II. • Establish 2 RMZs o Dune RMZ, manage as open to motorized travel. o Desert Habitat RMZ, manage as closed to motorized travel.	**Action:** No similar action.	**Action:** • Update supplemental rules. • Continue fee collections necessary to provide for adequate management and law enforcement staffing. • Designate and map regional trail system.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		distance regional trail users. • Manage as VRM Class IV. • Provide educational materials for abandoned mine lands. • Manage the abandoned mine land hazards. • Establish 3 RMZs o Dune RMZ, manage as open to motorized travel. o Desert Habitat RMZ, manage as closed to motorized travel. o Mining District RMZ, manage as travel limited to existing trails.			• Manage the Sand Springs Pony Express Station and NHT for historical interpretation. • Close to nonenergy mineral leasing. • Close to fluid mineral leasing. • Restrict new ROW authorizations to existing ROW corridors. • Implement seasonal closure up to 2 months per year (generally 2 weeks during each season)to address Native American traditional religious uses and nonmotorized recreational opportunities. • Provide educational materials to recreationists for abandoned mine lands. • Manage the abandoned mine land hazards. • Authorize organized and competitive SRP events that do not create user conflicts. • Establish a day use fee in addition to the annual and weekly fees.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
					• Manage as VRM Class III. • Establish 4 RMZs o Dune RMZ, manage as open to motorized travel. o Desert Habitat RMZ, manage as closed to motorized and mechanized travel. o Trail Riders RMZ, manage as travel limited to designated existing trails for habitat protection. o Mining District RMZ, manage as travel limited to existing trails.
398.	**Walker Lake SRMA**				
399.	**Goal:** Manage for a variety of land and water-based casual use and permitted recreational activities.				
400.	**Objective:** Continue managing Walker Lake Recreation Area as an SRMA for recreational use (87,000 acres).	**Objective:** Designate the Walker Lake SRMA for developed and dispersed camping and recreational activities.	**Objective:** Designate the Walker Lake SRMA for recreational activities while limiting future development of facilities or expansion of developed and primitive camping areas.	**Objective:** No similar objective.	**Objective:** Designate the Walker Lake SRMA for developed and dispersed camping opportunities and general recreation use emphasizing water-based and nonmotorized land-based related activities over OHV use.
401.	**Action**: No similar action.	**Action:** • Pursue collaborative management opportunities with local agencies and	**Action:** • Only permit camping in designated camp areas of Tamarack Beach, Twenty Mile Beach and the Cove,	**Action:** No similar action.	**Action:** • Develop supplemental rules. • Pursue collaborative management

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		communities. • Develop designated hiking, equestrian and motorized trails on the west side of Highway 95. • Manage as VRM Class III. • Establish 2 RMZs o Sportsman's Beach RMZ where camping is restricted to designated sites and motorized travel restricted to designated routes. o Wassuk RMZ where dispersed camping is allowed and is open to motorized travel.	and as dispersed camping on the east side of the lake. • Prohibit development of motorized and nonmotorized trails within the SRMA. • Manage as VRM Class II. • SRPs would not be authorized for organized, commercial and competitive-based recreational activities. • Establish 4 RMZs o Sportsman's Beach RMZ where camping is restricted to designated campsites and motorized travel is limited to designated routes. o Shoreline RMZ where dispersed camping is allowed within 300 feet of roads and motorized travel is limited to designated routes. o Wassuk RMZ where camping is prohibited and motorized travel is limited to designated routes. o Gillis Range RMZ where dispersed		opportunities with local agencies. • Facilitate community-based recreation and tourism events. • Prohibit the collection of nonrenewable resources such as rocks, mineral specimens, common invertebrate fossils, and semi-precious stones. • Develop hiking and equestrian trails on the west side of Highway 95. • Manage as VRM Class III. • Establish 3 RMZs o Sportsman's Beach RMZ for developed fee camping, which is restricted to designated sites. o Shoreline RMZ on the east side of Highway 95 for dispersed fee camping where dispersed camping excluding the Sportsman's Beach RMZ. o Wassuk RMZ on the west side of Highway 95 as closed to dispersed camping for public

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			camping is allowed and travel is limited to designated routes.		safety and wildlife protection.
402.	**Wilson Canyon SRMA**				
403.	**Objectives:** No similar objective.	**Objectives:** Designate the Wilson Canyon SRMA for recreational opportunities such as OHV touring and trail riding, developed site camping, and fishing and provide river access.	**Objectives:** No similar objective.	**Objectives:** Same as Alternative B.	
404.	**Action:** No similar action.	**Action:** Provide visitor services including trail identification and route signage, information kiosks, and visitor use maps. Establish 2 RMZs • Copper Belt RMZ o Provide developed camp opportunities north of Copper Belt Road. Limit camp opportunities on south side of Copper Belt Road to protect riparian corridor. o No commercial target shooting SRPs would be authorized. o Closed to	**Action:** No similar action (see R*ecreation and Visitor Services, Extensive Recreation Management Areas – Singatse ERMA*).	**Action:** Same as Alternative B except: • Allow overnight camping within the West Walker RMZ.	**Action:** Same as Alternative B except: • Prohibit parking and camping on West Walker River bank within the West Walker River RMZ.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		motorized travel (Mechanized is limited to existing). • West Walker River RMZ o Manage for day use only. o Provide nonmotorized, nonmechanized river access. o Establish parking areas. o Partner with Nevada Department of Transportation to provide safe egress and ingress to sites along river off Highway 208. o SRPs would be authorized only for nonmotorized commercial.			
405.	**Extensive Recreation Management Areas (ERMAs)**				
406.	**Goal:** Manage areas identified as ERMAs to support and sustain the principal recreation activities identified for the area commensurate with other resources and resource uses in a manner that maintains and protects the desired quality and conditions of recreational opportunities identified for the ERMA.				
407.	**Summary of Extensive Recreation Management Areas**				
408.	**Summary:** There are no ERMAs currently designated.	**Action:** Manage the following areas as ERMAs with management actions that provide for	**Action:** Manage the following areas as ERMAs with management actions that provide for recreational	**Action:** Manage the following areas as ERMAs with an emphasis on management actions	**Action:** Manage the following areas as ERMAs with a management emphasis that address

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		recreational opportunities and resource protection while promoting regional economic development (Figure 2-58): • Middlegate (268,700 acres) • Mina (824,700 acres) • Mustang (400 acres) • Pah Rah (20,000 acres) • Pine Nut (201,100 acres): o Rural RMZ (138,900 acres) o Front Country RMZ (10,400 acres) o Pine Nut Crest RMZ (51,800 acres) • Reno Urban Interface (70,600 acres) • Salt Wells (292,900 acres) • 102 Ranch (120 acres)	opportunities with an emphasis on the protection of cultural, historical and natural resources (Figure 2-59): • Bagley Valley (2,600 acres) • Dry Valley (84,100 acres) • Faye-Luther (40 acres) • Middlegate (195,300 acres) • Mina (486,400 acres) • Mustang (400 acres) • Pah Rah (20,000 acres) • Petersen (42,200 acres) • Pine Nut (201,100 acres): o Rural RMZ (138,900 acres) o Front Country RMZ (10,400 acres) o Pine Nut Crest RMZ (51,800 acres) • Reno Urban Interface (91,000 acres) • Salt Wells (113,700 acres) • Singatse (174,900 acres) • Virginia Mountains (68,100 acres); • Virginia Range (48,800 acres) • 102 Ranch (120 acres)	that address recreation issues unique to BLM-administered lands and the urban interface (Figure 2-60): • Faye-Luther (600 acres) • Mustang (400 acres); • Pah Rah (20,000 acres) • Pine Nut (201,100 acres): o Rural RMZ (138,900 acres) o Front Country RMZ (10,400 acres) o Pine Nut Crest RMZ (51,800 acres) • Reno Urban Interface (70,400 acres) • 102 Ranch (120 acres)	recreation demands commensurate with resource protection and multiple use (Figure 2-61): • Bagley Valley (2,600 acres) • Dry Valley (83,000 acres) • Faye-Luther (100 acres) • Middlegate (268,700 acres) • Mina (824,700 acres) • Mustang (400 acres) • Pah Rah (20,000 acres) • Petersen (42,200 acres): o Lassen Red Rock RMZ (200 acres) • Pine Nut (201,100 acres): o Rural RMZ (138,900 acres) o Front Country RMZ (10,400 acres) o Pine Nut Crest RMZ (51,800 acres) • Reno Urban Interface (70,600 acres) • Salt Wells (280,400 acres) • Singatse (174,900 acres) • Virginia Mountains (68,100 acres) • Virginia Range (48,800 acres) • 102 Ranch (120 acres)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
409.	**102 Ranch and Mustang ERMAs**				
410.	**Objective:** No similar objective.	**Objective:** Designate the 102 Ranch and Mustang ERMAs for casual use and dispersed recreation opportunities that emphasize dog walking, photography, nature observation, hiking, river access, environmental education and interpretation.	**Objective:** Designate the 102 Ranch and Mustang ERMAs for casual use and dispersed recreation opportunities that emphasizes dog walking, photography, nature observation, hiking, river access, environmental education and interpretation while providing protection for cultural, historical and natural resources.	**Objective:** Same as Alternative B.	**Objective:** Designate the 102 Ranch and Mustang ERMAs for casual use and dispersed recreation opportunities that emphasizes dog walking, photography, nature observation, hiking, river access, environmental education and interpretation while providing for mitigation of user conflicts and resource damage.
411.	**Action:** No similar action.	**Action:** • Prohibit motorized and mechanized SRP events. • Manage and maintain connected trails for casual trail hiking and limited bicycling experiences. • Pursue partnerships to share road and trail maintenance. • Designate parking areas. • Manage as VRM Class III. • Manage 102 Ranch as a day use site. • Develop camping opportunities at	**Action:** Same as Alternative B except: • Manage Mustang as day use only. • No SRPs would be authorized.	**Action:** Same as Alternative B.	**Action:** Same as Alternative B except: • Manage Mustang as day use only.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Mustang. • Develop boat launch site at Mustang Ranch on south side of river. • Maintain access road on south side of river (Mustang) to 2-wheeled drive high ground clearance vehicles.			
412.	**Bagley Valley ERMA**				
413.	**Objectives:** No similar objective.		**Objective:** Designate the Bagley Valley ERMA for passive recreation opportunities including backpacking, dispersed camping, fishing, mountain biking, motorized and nonmotorized recreation while providing protection for cultural, historical, and natural resources.	**Objective:** No similar objective.	**Objective:** Same as Alternative C.
414.	**Action:** No similar action.		**Action:** • Restrict motorized overland snow travel to Company Meadows area. • Manage Bagley Valley as closed to motorized travel (mechanized is limited to existing routes). • Manage as VRM Class II. • SRPs for competitive events would not be authorized.	**Action:** No similar action.	**Action:** Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
415.	**Dry Valley ERMA**				
416.	**Objective**: No similar objective.		**Objective**: Designate the Dry Valley ERMA for dispersed recreation opportunities including hiking, mountain biking, OHV, equestrian and dispersed camping while providing protection for cultural, historical, and natural resources.	**Objective**: No similar objective.	**Objective**: Same as Alternative C.
417.	**Action:** No similar action.		**Action:** • Limit mechanized, equestrian and foot travel to designated roads, primitive roads and trails. • Provide visitor services such as trail identification and route signage information kiosks, and visitor use maps. • Manage as VRM Class III.	**Action:** No similar action.	**Action:** • Provide connectivity for OHVs between Hungry Valley SRMA and Fort Sage SRMA (BLM CA-Eagle Lake Field Office). • Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps. • Manage as VRM Class III.
418.	**Faye-Luther ERMA**				
419.	**Objective:** No similar objective.		**Objective:** Designate the Faye-Luther ERMA for day use recreation opportunities, including nonmotorized activities that emphasize hiking, biking, dog walking, nature observation, photography and interpretation.	**Objective:** Designate the Faye-Luther ERMA for day use recreation opportunities, including nonmotorized activities that emphasize hiking, biking, dog walking, nature observation, photography, interpretation and equestrian use.	
420.	**Action:** No similar action.		**Action**: • Prohibit motorized and	**Action:** Same as Alternative C plus:	**Action:** Same as Alternative C plus:

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			mechanized SRP-based activities and events. • Prohibit overnight camping. • Prohibit camp fires. • Maintain approximately 1 mile of access road to Forest Service Guidelines for Road Maintenance Levels (level 2 road with single lane and native surface) to provide for administrative and emergency access. • Manage and maintain connected trails for hiking experiences. • Formalize and continue the existing partnership with Carson Valley Trails Association to share road and trail maintenance. • Manage as closed to motorized use. • Manage as VRM Class II. • In coordination with the Forest Service, evaluate connectivity of Faye-Luther trail system to Tahoe Rim Trail. • Construct connecting trail segment(s) if appropriate.	• Manage and maintain connected trails for hiking and equestrian use. • Manage as VRM Class III.	• Manage and maintain connected trails for hiking and equestrian use. • Manage as VRM Class III. • Provide for mitigation of user conflicts and resource damage.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
421.	**Middlegate ERMA**				
422.	**Objectives:** No similar objective.	**Objectives:** Designate as the Middlegate ERMA for recreational activities that emphasizes long distance trail riding for ATV, UTV, and motorcycles.	**Objectives:** Designate the Middlegate ERMA for recreational activities that emphasizes long distance trail riding for ATV, UTV, and motorcycles while providing for protection for cultural, historical and natural resources.	**Objectives:** No similar objective.	**Objectives:** Designate the Middlegate ERMA for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for ATV, UTV, and motorcycles while providing for the protection of natural resources and mitigation of user conflicts and resource damage.
423.	**Action:** No similar action.	**Action:** • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Promote recreational OHV-based tourism with an emphasis on ATV/UTV regional trail riding. • Develop educational and interpretive signage for trail systems and historical sites. • Provide interpretive and educational materials for unique or significant historical and cultural features and sites. • Designate staging and camping areas.	**Action:** • No SRPs would be authorized. • Activities that adversely impact cultural or historic resources would not be authorized. • Sensitive cultural or historical features or sites would not be interpreted. • Manage 195,300 acres as VRM Class III.	**Action:** No similar action.	**Action:** • Designate staging and camping areas when needed to protect resources. • Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps in the communities of Middle Gate, Cold Springs, and Gabbs. • Develop ERMA-specific brochures with public safety, travel management, tread lightly, and disbursed camping regulations. • Manage as VRM Class III. • Manage for casual day use and dispersed recreation opportunities.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Manage 268,700 acres as VRM Class III.			• Develop designated loop trail systems with staging areas. • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Manage 268,700 acres as VRM Class III.
424.	**Mina ERMA**				
425.	**Objective:** No similar objectives.	**Objective**: Designate the Mina ERMA for recreational activities that emphasizes long distance trail riding for ATV and UTV from the local communities of Mina, Luning, Gabbs, and Hawthorne while providing for protection of natural resources.	**Objective:** Designate the Mina ERMA for recreational activities that emphasizes long distance trail riding for ATV and UTV while providing protection for cultural, historical, and natural resources.	**Objective:** No similar objective.	**Objective:** Designate the Mina ERMA for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for ATV and UTV from local communities of Mina, Luning, Gabbs, and Hawthorne while providing for protection of natural resources.
426.	**Action:** No similar action.	**Action:** • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Promote recreational OHV-based tourism with an emphasis on ATV/UTV regional trail riding. • Develop educational	**Action:** • SRPs would not be authorized. • Activities that adversely impact cultural or historic resources would not be authorized.	**Action:** No similar action.	**Action:** • Designate staging and camping areas when needed to protect resources. • Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps in the communities of Luning, Mina, and Hawthorne.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and interpretive signage for trail systems and historical sites. • Designate staging and camping areas. • Manage 824,700 acres as VRM Class III.			• Develop ERMA-specific brochures with public safety, travel management, tread lightly, and disbursed camping regulations. • Manage as VRM Class III. • Develop designated loop trail systems with staging areas. • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Provide for point-to-point OHV race corridors and similar race events.
427.	**Pah Rah ERMA**				
428.	**Objective:** No similar objective.	**Objectives:** Designate the Pah Rah ERMA for mountain biking, hiking, and environmental education opportunities while providing for protection of natural resources.	**Objective:** Designate the Pah Rah ERMA for mountain biking, hiking, and environmental education opportunities emphasizing protection of cultural, historical, and natural resources.	**Objective:** Same as Alternative B.	**Objective:** Designate the Pah Rah ERMA for mountain biking, hiking, and environmental education opportunities while providing for protection of natural resources.
429.	**Action:** No similar action.	**Action:** • Prohibit overnight camping associated with SRP activities or events. • Provide visitor services	**Action:** • Manage for casual day use and dispersed recreation opportunities. • Overnight camping associated with an SRP	**Action:** Same as Alternative B.	**Action:** Same as Alternative B plus: • Provide for mitigation of user conflicts and resource damage.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		such as trail identification and route signage, information kiosks, and visitor use maps. • Manage as VRM Class III.	activity or event would not be authorized. • Manage as VRM Class III.		
430.	**Petersen ERMA**				
431.	**Objectives:** Designate Petersen Ridge Area as "Recreation Lands."	**Objectives:** No similar objective.	**Objectives:** Designate the Petersen ERMA for dispersed recreation opportunities emphasizing equestrian-based activities, hiking, mountain biking and backpacking while providing protection for cultural, historical, and natural resources as well as crucial winter range for mule deer. For management actions regarding the Lassen Red Rock Scenic ACEC, located within the Petersen ERMA, see *Special Designations, Areas of Critical Environmental Concern – Lassen Red Rock Scenic ACEC.*	**Objectives:** No similar objective.	**Objectives:** Designate the Petersen ERMA for dispersed recreation opportunities emphasizing equestrian-based activities, hiking, mountain biking, backpacking while providing for mitigation of user conflicts and resource damage, protect crucial winter range for mule deer, and designate Lassen Red Rock RMZ.
432.	**Action:** • Manage for semi-primitive, nonmotorized recreation. • Acquire legal vehicle access to the Petersen Ridge trailhead.	**Action:** No similar action.	**Action:** • Manage Petersen Ridge as closed to motorized and mechanized travel. • No SRPs would be authorized.	**Action:** No similar action.	**Action:** • Manage Petersen Ridge as closed to motorized travel (mechanized is limited to existing routes). • Manage Sand Hills as closed to motorized

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Develop facilities and a hiking trail system.				travel from December 1 - April 30 for winter mule deer (see *Fish and Wildlife, Big Game*). • Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps. • Manage 42,000 acres as VRM Class III. • Prohibit motorized competitive events. • Manage Lassen Red Rock RMZ (200 acres) as follows: o Develop a day use rest stop picnic area with an interpretive kiosk. o Manage as VRM Class II. o Develop a site plan to include site boundary, parking and picnic area, sign plan, and improved main access road. o Develop partnerships to assist with road maintenance and public safety. o Manage for day use and prohibit camping

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
					and campfires. o Recommend a portion of the RMZ for withdrawal from locatable mineral entry (5 acres).
433.	**Pine Nut ERMA**				
434.	**Objectives:** No similar objective**.**	**Objective:** Designate the Pine Nut ERMA to provide recreational opportunities that emphasize motorized and mechanized recreation opportunities (Management of the Burbank Canyon WSA, located within the ERMA, is addressed under *WSA*) while providing for protection and restoration of natural resources.	**Objective:** Designate the Pine Nut ERMA to provide recreational opportunities that emphasize mechanized and nonmotorized recreation opportunities while providing for protection and restoration of natural resources.	**Objective:** Same as Alternative B.	**Objective:** Designate the Pine Nut ERMA to provide recreational opportunities that emphasize motorized, mechanized and nonmotorized recreation opportunities (Management of the Burbank Canyon WSA, located within the ERMA, is addressed under *WSA*) while providing for protection and restoration of natural resources.
435.	**Action:** No similar action.	**Action:** • No motorized staging areas would be authorized within 1,500 feet of occupied residence. • Pursue easements for key access points both motorized and nonmotorized. • Designate staging and developed camp areas when needed to protect resources.	**Action:** Same as Alternative B, with the following exceptions: • No access easements would be pursued. • No SRPs would be authorized. • Develop staging and trails to facilitate nonmotorized use. Establish 2 RMZs • Front Country RMZ (10,400 acres):	**Action:** Same as Alternative B.	**Action:** Same as Alternative B plus: • Maintain up to 100 miles of designated, groomed loop trails for motorized use opportunities. • Maintain up to 50 miles of designated, groomed loop trails for nonmotorized use opportunities. • Develop staging and trails to facilitate nonmotorized use.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps. • Prohibit mass start competitive motorized SRPs. • Promote recreational OHV-based tourism with an emphasis on motorcycle, ATV and UTV trail riding. • Maintain up to 200 miles of designated, groomed loop trails for motorized use opportunities. • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Develop educational and interpretive signage for trail systems. Establish 3 RMZs • Front Country RMZ (10,400 acres): o Designate OHV staging and developed camp areas.	o Emphasize passive, nonmotorized use (hiking, equestrian). • Pine Nut Crest RMZ (51,800 acres): o Manage as VRM Class II.		Establish the Front Country RMZ (10,400 acres): • Emphasize passive, nonmotorized use (hiking, equestrian.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		o Manage as VRM Class III. • Pine Nut Crest RMZ (51,800 acres): o Manage motorized use emphasizing OHV touring and trail riding. o Manage as VRM Class III. • Rural RMZ (138,900 acres): o Prohibit motorized staging areas. o Manage for casual use. o Manage as VRM Class IV.			
436.	**Reno Urban Interface ERMA**				
437.	**Objective:** No similar objective	**Objective:** Designate the Reno Urban Interface ERMA for recreational activities that emphasizes BLM-administered land access and recreation opportunities.	**Objective:** Designate Reno Urban Interface ERMA for BLM-administered land access and recreational activities while providing emphasis on protection for cultural, historical, and natural resources.	**Objective:** Same as Alternative B.	**Objective:** Designate the Reno Urban Interface ERMA for BLM-administered land access and casual use and dispersed recreation.
438.	**Action:** No similar action.	**Action:** • Manage Lemmon Valley Motocross area as per *the Recreation and Visitor Services, Motocross Tracks and Facilities.*	**Action:** • Eliminate the Lemmon Valley Motocross area (see *Recreation and Visitor Services, Motocross Tracks and Facilities).* • Prohibit competitive and	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps. • Establish designated staging and camping areas with information kiosks. • Develop OHV staging areas consistent with county ordinance. • Relocate Chickadee OHV staging area away from residential area. • Manage as VRM Class IV.	commercial motorized-events and activities. • Develop OHV staging areas a minimum of 0.25 miles from any occupied residence.		
439.	**Salt Wells ERMA**				
440.	**Objective:** No similar objective.	**Objective:** Designate the Salt Wells ERMA for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for motorized and nonmotorized uses.	**Objective:** Designate the Salt Wells ERMA for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for motorized and nonmotorized uses while providing protection for cultural, historical and natural resources.	**Objective:** No similar objective.	**Objective:** Designate the Salt Wells ERMA for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for motorized and nonmotorized uses.
441.	**Action:** No similar action.	**Action:** • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or	**Action:** • SRPs for commercial, competitive or organized events would not be authorized.	**Action:** No similar action.	**Action:** • Designate staging and dispersed camp areas when needed to protect resources.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		ambassador programs. • Promote recreational OHV-based tourism with an emphasis on long distance regional trail riding. • Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps at Sand Mountain and major access roads. • Manage as VRM Class IV.	• Activities that adversely impact cultural or historic resources would not be authorized. • Manage as VRM Class II.		• Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps at Sand Mountain and major access roads. • Develop ERMA-specific brochures with public safety education, travel management, tread lightly, and dispersed camping regulations. • Manage as VRM Class III. • Manage for casual day use and dispersed recreation opportunities. • Pursue partnerships with local clubs and organizations for OHV adopt-a-trail or ambassador programs. • Provide for point to point and circuit OHV race corridors around Cocoon and Bunejug Mountains and similar events.
442.	**Singatse ERMA**				
443.	**Objective:** No similar objective.		**Objective:** Designate the Singatse ERMA for dispersed motorized opportunities.	**Objective:** No similar objective.	**Objective:** Designate the Singatse ERMA for motorized opportunities with an emphasis on OHV touring, trail riding, and dispersed camping.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
444.	**Action:** No similar action.		**Action:** • Prohibit motorized SRP events while allowing for commercial motorized activities and organized groups. • Manage as VRM Class III.	**Action:** No similar action.	**Action:** • Establish designated OHV staging areas with information kiosks. • Develop OHV trail head in the northeast section of ERMA off State Highway Alt 95. • Manage as VRM Class IV.
445.	**Virginia Mountains ERMA**				
446.	**Objective:** No similar objective.		**Objective:** Designate the Virginia Mountain ERMA for recreational activities while providing emphasis on protection for cultural, historical, and natural resources.	**Objective:** No similar objective.	**Objective:** Designate the Virginia Mountain ERMA for hiking, back packing equestrian riding, nature observation, photography and camping opportunities.
447.	**Action:** No similar action.		**Action:** • Manage as VRM III. • Prohibit motorized SRP events, activities, and organized groups.	**Action:** No similar action.	**Action:** • Manage as VRM Class III. • Prohibit motorized SRP events and activities.
448.	**Virginia Range ERMA**				
449.	**Objective:** No similar objective	**Objective:** No similar objective.	**Objective:** Designate the Virginia Range ERMA for recreational activities while providing emphasis on protection for cultural, historical, and natural resources.	**Objective:** No similar objective.	**Objective:** Virginia Range ERMA for recreation opportunities that emphasize both motorized and nonmotorized recreation uses. Emphasize equestrian use east of Washoe Lake, mountain biking north of Centennial Park, and OHV touring and trail riding east of Jumbo staging area.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
450.	**Action:** No similar action.	**Action:** No similar action.	**Action:** • Provide visitor services such as route identification and signage. • Prohibit competitive SRPs. • Manage as VRM Class III. • Close to mineral material disposal.	**Action:** No similar action.	**Action:** • Provide visitor services such as trail identification and route signage, information kiosks, and visitor use maps. • No mass start competitive motorized SRPs would be authorized. • Develop a Jumbo Post-pile Interpretive Trail and trailhead. • Develop a Jumbo Post Pile site plan to include site boundary, parking area, interpretive plan, and sign plan and trailhead kiosk. • Manage the Jumbo Post-pile interpretive trail and trailhead as a day use site. • Close to mineral material disposal.
451.	**Public Lands Not Designated as Recreation Management Areas**				
452.	**Objective:** No similar objective.	**Objective:** Lands that are not designated as Recreation Management Areas (SRMAs or EERMAs) will be managed to meet basic recreation and visitor services and resource stewardship needs. Recreation activities may occur but will not be emphasized and will be managed in a manner that does not conflict with the identified primary resource use of the area.			
453.	**Action:** No similar action.	**Action:** • Provide for visitor health and safety, and resource protection as necessary when new or existing recreation activities occur. • Resolve use and/or user conflicts with a higher value being placed on the primary resource use identified for the			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		area over recreation opportunities. • Issue SRPs for commercial, competitive, or organized activities when the action does not conflict with the primary resource use or values for the area.			
454.	**Comprehensive Travel and Transportation Management**				
455.	**Goal:** Develop an interdisciplinary and collaborative approach to comprehensive travel and transportation planning and management that addresses resource uses and associated access to BLM-administered lands and waters, including motorized, nonmotorized, mechanical, and animal-powered modes of travel.				
456.	**Actions common to all:** • Ensure travel and transportation planning and management is an interdisciplinary and collaborative process involving all resource programs. • Develop, implement, and monitor travel and transportation implementation plans for all identified travel management areas. • Coordinate with federal, tribal, state, and local agencies user groups, and the general public concerned with travel and transportation planning and management. • Manage uses on BLM-administered lands to meet the travel and transportation needs of people engaged in administrative, commercial, agricultural, casual, traditional, and recreational programs. • Manage newly acquired lands as limited for OHV use, limiting use to existing routes until completion or inclusion in a TMP.				
457.	**Objective:** Ensure protection of important resource values and to allow for off-highway vehicle use.	**Objective:** Designate motor vehicle use areas to protect resources, promote user safety, and minimize conflicts among various uses of the public lands.			
458.	**Action:** Manage 3,840,300 acres as open to cross-country travel. All BLM-administered lands are open unless specifically restricted or closed (Figure 2-62). • Hungry Valley	**Action:** Manage the following 95,300 acres as open to OHV use (43 CFR 8342) where use of OHVs and other motorized use is unrestricted (Figure 2-63): • Lemmon Valley motocross area (200 acres; see *Recreation and Visitor Services, Motocross Tracks and Facilities*) • SRMAs (see *Recreation*	**Action:** Manage the following 1,300 acres as open to OHV use (43 CFR 8342) where use of OHVs and other motorized use is unrestricted (Figure 2-64): • Sand Mountain SRMA, Dune RMZ (see *Recreation and Visitor Services, Special Recreation Management Areas*)	**Action:** Manage the following 22,700 acres as open to OHV use (43 CFR 8342) where use of OHVs and other motorized use is unrestricted (Figure 2-65): • Dead Camel Mountains SRMA, Dead Camel North RMZ (see *Recreation and Visitor Services, Special Recreation*	**Action:** Manage the following 55,700 acres as open to OHV use (43 CFR 8342) where use of OHVs and other motorized use is unrestricted (Figure 2-66): • Lemmon Valley motocross area (200 acres; see *Recreation and Visitor Services, Motocross Tracks and Facilities*) • SRMAs (see *Recreation and Visitor Services, Special Recreation Management*

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and Visitor Services, Special Recreation Management Areas): o Dead Camel Mountains o Hungry Valley o Sand Mountain, Dune RMZ o Walker Lake, Wassuk RMZ • Playas: o Edwards Creek Valley o Bune Jugs o Dixie Valley o Flannigan		*Management Areas*)	*Areas*): o Dead Camel Mountains, Dead Camel North RMZ o Sand Mountain, Dune RMZ • Playas: o Edwards Creek Valley o Bune Jugs o Dixie Valley o Flannigan
459.	**Action**: Manage the following areas as closed to motorized travel(Figure 2-62): • Bagley Valley (378 acres) • Faye-Luther Canyon (894 acres) • Sand Springs Desert Study Area (50 acres) • Sand Mountain Recreation Area (2,096 acres) • Petersen Mountain (5,120 acres) to protect critical wildlife habitat and enhance nonmotorized recreational	**Action**: Manage the following areas (26,700 acres) as closed to OHV and other motorized travel except for authorized administrative purposes with approval of the Authorized Officer. Management of these areas is temporary until the Travel Management Plan is completed (mechanized travel is limited to existing routes; Figure 2-63): • Carson wandering skipper habitat near Winnemucca Ranch Road (see *Special Status*	**Action**: Manage the following areas (1,190,500 acres) as closed to OHV and other motorized travel except for authorized administrative purposes with approval of the Authorized Officer. Management of these areas is temporary until the Travel Management Plan is completed (mechanized travel is limited to existing routes; Figure 2-64): • Bagley Valley (2,600 acres • Faye-Luther Canyon (40 acres) • Caves (*See Caves and Cave Resources*):	**Action**: Manage the following areas (30,600 acres) as closed to OHV and other except for authorized administrative purposes with approval of the Authorized Officer. Management of these areas is temporary until the Travel Management Plan is completed motorized travel (mechanized travel is limited to existing routes; Figure 2-65): • Faye-Luther Canyon (590 acres) • Carson wandering	**Action**: Manage the following areas (24,100 acres) as closed to OHV and other except for authorized administrative purposes with approval of the Authorized Officer. Management of these areas is temporary until the Travel Management Plan is completed motorized travel (mechanized travel is limited to existing routes; Figure 2-66): • Bagley Valley (2,600 acres) • Faye-Luther Canyon (110 acres). • Within 500 feet of caves (see *Caves and Cave*

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	opportunities • Burbank Canyons Scenic Area (13,395 acres) • Grimes Point Archaeological District (400 acres) to protect significant archaeological resources • Carson-Iceberg (550 acres) • Slinkard (2,375 acres) • Fred's Mountain (3,100 acres) and lands northeast of the Reno-Sparks Indian Colony (1,940 acres) • Through or in the immediate vicinity (near enough to the water source that its water quality or water quantity may be affected) of any surface water source, such as a spring or seep (see *Soil and Water Resources*) • Any riparian area associated with meadows, marshes, springs, seeps, ponds, lakes, reservoirs or streams (see *Soil and Water Resources*)	*Species, Fish and Wildlife*) • Petersen Ridge (5,120 acres) • Fred's Mountain (3,100 acres) and lands northeast of the Reno-Sparks Indian Colony (1,940 acres)	o Dynamite Cave o Hidden Cave • ACECs (see *Areas of Critical Environmental Concern)*: o Black Mountain/Pistone Archaeological District o Carson wandering skipper o Churchill Narrows Buckwheat Botanical o Dixie Valley Toad o Fox Peak Cultural o Lassen Red Rock Scenic o Namazii Wunu Cultural o Pah Rah High Basin Petroglyph o Pine Nut Mountains Williams Combleaf Botanical o Ruhenstroth Paleontological o Tagɨm aša Cultural o Virginia Range Williams Combleaf Botanical • Congressionally designated historic trails and associated historic sites • Within 500 feet of caves (see *Caves and Cave*	skipper habitat near Winnemucca Ranch Road (see *Special Status Species, Fish and Wildlife*) • A portion of the Wilson Canyon SRMA, Copper Belt RMZ (see *Recreation and Visitor Services, Special Recreation Management Areas*) • Faye-Luther ERMA (see *Recreation and Visitor Services, Extensive Recreation Management Areas*) • Petersen Ridge (5,120 acres) • Fred's Mountain (3,100 acres) and lands northeast of the Reno-Sparks Indian Colony (1,940 acres)	*Resources*): o Dynamite Cave o Hidden Cave • A portion of the Wilson Canyon SRMA, Copper Belt RMZ (see *Recreation and Visitor Services, Special Recreation Management Areas*) • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o Faye-Luther o Petersen ERMA, Peterson Ridge (5,120 acres)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Any channel bank, or streambed of a perennial stream (see *Soil and Water Resources*) • Where threatened and endangered plants are located (see *Special Status Species, Plants)*		*Resources*): o Dynamite Cave o Hidden Cave • A portion of wildlife priority habitat (see *Fish and Wildlife*; Figure 2-5) • Sand Mountain SRMA, Desert Habitat RMZ (see *Recreation and Visitor Services, Special Recreation Management Areas*) • ERMAs (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): o Faye-Luther o Petersen (42,200 acres)		
460.	**Action:** Manage 6,900 acres as closed to motorized and mechanized travel (Figure 2-62): • 268 acres known as Harvey's Place within the Indian Creek Recreation withdrawal (this area is closed to all access) • 10 acres known as American Flat Mill (per Federal Register Notice #NV-030-97001, December 20, 1996; this area is closed to all access)	**Action:** Manage 4,300 acres as closed to all motorized and mechanized travel (Figure 2-63): • 268 acres known as Harvey's Place within the Indian Creek Recreation withdrawal (this area is also closed to all access, including foot and equestrian) • 10 acres known as American Flat Mill (per Federal Register Notice #NV-030-97001, December 20,	**Action:** Manage 598,000 acres as closed to all motorized and mechanized travel (Figure 2-64): • ACECs (see *Areas of Critical Environmental Concern* section*)*: o Churchill Narrows Buckwheat Botanical o Grimes Point Archaeological District o Pine Nut Mountains Williams Combleaf o Sand Springs Desert Study Area o Steamboat	**Action:** Manage 1,600 acres as closed to all motorized and mechanized travel (Figure 2-65): • 268 acres known as Harvey's Place within the Indian Creek Recreation withdrawal (this area is closed to all access) • 10 acres known as American Flat Mill (per Federal Register Notice #NV-030-97001, December 20,	**Action:** Manage 6,200 acres as closed to all motorized and mechanized travel (Figure 2-66): • 268 acres known as Harvey's Place within the Indian Creek Recreation withdrawal (this area is closed to all access, including foot and equestrian) • 10 acres known as American Flat Mill (per Federal Register Notice #NV-030-97001, December 20, 1996; this area is closed to all

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Black Canyon Road • Fred's Mountain (3,100 acres) and lands northeast of the Reno-Sparks Indian Colony (1,940 acres)	1996; this area is closed to all access) • Desert Habitat RMZ within Sand Mountain SRMA • Carson wandering skipper Habitat near Winnemucca Ranch Road (see *Fish and Wildlife*)	Buckwheat Botanical o Virginia Range Williams Combleaf • WSAs (see *Wilderness Study Areas*) • Within 500 feet of caves (see *Caves and Cave Resources*): o Dynamite Cave o Hidden Cave • 268 acres known as Harvey's Place within the Indian Creek Recreation withdrawal (this area is closed to all access, including foot and equestrian) • 10 acres known as American Flat Mill (per Federal Register Notice #NV-030-97001, December 20, 1996; this area is closed to all access) • Desert Habitat RMZ within Sand Mountain SRMA (see *Recreation and Visitor Services, Special Recreation Management Areas*) • Petersen ERMA, Peterson Ridge (5,120 acres; see *Recreation and Visitor Services, Extensive Recreation Management*	1996; this area is closed to all access)	access) • Desert Habitat RMZ within Sand Mountain SRMA (see *Recreation and Visitor Services, Special Recreation Management Areas*) • Caves (see *Caves and Cave Resources*): o Within 500 feet of Dynamite Cave o Within 500 feet of Hidden Cave • Lands northeast of the Reno-Sparks Indian Colony (1,940 acres)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Areas) • Fred's Mountain (3,100 acres) and lands northeast of the Reno-Sparks Indian Colony (1,940 acres)		
461.	**Action:** Manage the following areas as restricted or closed to motorized travel per Federal Register Notice unless notice is revised by Authorized Officer: • Jumbo Grade (Notice # NV-030-90-04; January 24, 1990) • Golden Valley (Notice # NV-030-95-03; May 24, 1995) • Stephanie Way and Fuller Avenue in the Johnson Lane area (Notice # NV-030-97-1220-00; November 1, 1996) • Pine Nut Road No. 2 (Notice # NV030-97-1330-00; October 15, 1997) • Petersen Mountain (Notice # NV-030-99-001; April 2, 1999) • South Hungry Ridge/Northwest Spanish Springs (Notice # NV-030-00-001; March 30, 2000) • West end of Wilson Canyon (Notice # NV-030-04-001; November 20, 2003)				
462.	**Action:** Manage 924,300 acres as limited to vehicle use (restrictions limiting use to existing routes, trails, and washes, seasonally or by type of user; Figure 2-62): • 5,521 acres of BLM-administered land identified in the Alpine County RMP Amendment (2007) as limited to designated routes and trails. • Bagley Valley (5,143 or 6,200 acres) to reduce conflicts with wildlife, watershed, and scenic values and minimize conflicts on lands	**Action:** Manage 4,677,000 acres as limited to existing routes, primitive roads, and trails for OHV and other motorized use until subsequent route designation occurs (Figure 2-63).	**Action:** Manage 3,013,500 acres as limited to existing routes, primitive roads, and trails for OHV and other motorized uses until subsequent route designation occurs (Figure 2-64).	**Action:** Manage 4,748,400 acres as limited to existing routes, primitive roads, and trails for OHV and other motorized use until subsequent route designation occurs (Figure 2-65).	**Action:** Manage 4,717,300 acres as limited to existing routes, primitive roads, and trails for OHV and other motorized use until subsequent route designation occurs (Figure 2-66).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	adjacent to Forest Service wilderness area. • 3,985 acres in and adjacent to Sand Mountain Recreation Area. • Red Rocks (700 acres) to protect outstanding scenic features. • Incandescent Rocks and Virginia Mountains (67,500 acres) to protect scenic, wildlife, wild horse, watershed and recreation values. • Steamboat Hot Springs ACEC to protect geysers, hot springs and endangered plants. • Bailey-Jumbo Watershed (8,600 acres) to protect riparian habitat and reduce soil loss and associated flood sediment damage occurring in adjacent urban areas. • Stewart Valley ACEC (16,000 acres) to protect highly significant paleontological resources. • Indian Creek/East Fork				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Carson River SRMA (6,065 acres) to enhance the use of developed recreation facilities and nonvehicle recreation activities. • Pine Nut Mountain Crest (45,000 acres) to protect wildlife, recreation, watershed and scenic values. • West Side of Walker Lake (2,640 acres).				
463.	**Action:** OHV use is limited to existing roads and ways, except in emergency situations consistent with policy established in BLM Manual 6330 in the following areas. • Augusta Mountains WSA (51,000 acres • Burbank Canyons WSA (13,395 acres) • Carson Iceberg WSA (550 acres) • Clan Alpine WSA (196,128 acres) • Desatoya WSA (51,262 acres) • Gabbs Valley Range WSA (79,600 acres) • Job Peak WSA (90,209	**Action:** Motorized and mechanized travel is limited to primitive routes existing on October 21, 1976 in the following Wilderness Study Areas consistent with policy established in BLM Manual 6330 until such time they are designated as wilderness areas or released from wilderness consideration by Congress. If released by Congress, motorized travel would be limited to designated routes (Figure 2-63): • Augusta Mountains (46,434 acres) • Burbank Canyons- (13,395 acres)	**Action:** No similar action (WSAs are closed to motorized and mechanized travel under this alternative).	**Action:** Same as Alternative B (Figure 2-65).	**Action:** Same as Alternative B (Figure 2-66).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	acres) • Slinkard WSA (6,350 acres) • Stillwater WSA (94,607 acres)	• Clan Alpine Mountains (196,128 acres) • Desatoya Mountains (51,402 acres) • Gabbs Valley Range (79,600 acres) • Job Peak (90,209 acres) • Stillwater Range (94,607 acres)			
464.	**Action:** Implement seasonal closures for motorized travel in the following areas (Figure 2-62): • Sand Hill critical deer range: December 1 – April 30 • Bedell Flat strutting ground: March 1 – May 30 • Surrounding all occupied raptor eyries: March 1 – June 15	**Action:** Implement seasonal restrictions for all motorized travel in the following areas (limit motorized travel to existing routes the remainder of the year; Figure 2-63): • Sand Hill critical deer range: Generally December 1 - April 30 (dependent on seasonal and site-specific conditions) • Within 0.5 miles of active raptor nests (generally March 1 – August 31, but time periods may vary by species and seasonal conditions)	**Action:** Implement seasonal restrictions for all motorized travel (limit mechanized travel to existing routes) in the following areas (limit motorized travel to existing routes the remainder of the year; Figure 2-64): • Sand Hill critical deer range: Generally December 1 and April 30 (dependent on seasonal and site-specific conditions) • Within 0.5 miles of active raptor nests (generally March 1 – August 31, but time periods may vary by species and seasonal conditions) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Clan Alpine Greater	**Action:** Implement seasonal restrictions for all motorized travel in the following areas (limit motorized travel to existing routes the remainder of the year; Figure 2-65): • Sand Hill critical deer range: Generally December 1 - April 30 (dependent on seasonal and site-specific conditions) • Within 0.5 miles of active raptor nests (generally March 1 – August 31, but time periods may vary by species and seasonal conditions)	**Action:** Implement seasonal restrictions for all motorized travel in the following areas (limit mechanized travel to existing routes) in the following areas (limit motorized travel to existing routes the remainder of the year; Figure 2-66): • Petersen ERMA (see *Recreation and Visitor Services, Extensive Recreation Management Areas*): • Sand Hill critical deer range: Generally December 1– April 30 (dependent on seasonal and site-specific conditions) • Sand Mountain SRMA: up to 2 months per year for Native American cultural/religious use (generally 2 weeks during

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Sage-Grouse during brood rearing season o Greater Sand Mountain: up to 2 months per year for Native American cultural/religious use (generally 2 weeks during each season) o Pine Nut Bi-State Sage-Grouse within 3.25 miles of active leks from March 1 through May 15 o Virginia Mountains Greater Sage-Grouse within 3.25 miles of active leks from March 1 through May 15		each season) • Within 0.5 miles of active raptor nests (generally March 1 – August 31, but time periods may vary by species and seasonal conditions)
465.	**Travel Management Areas**				
466.	**Goal:** Develop Travel Management Areas (TMAs) to adequately support specific resource management decisions or address motorized and nonmotorized trails, access or public needs unique to the defined area.				
467.	**Objective:** No similar objective.	**Objective:** Delineate TMAs that provide classification of all routes. For areas where route designations were not completed concurrently with the RMP, an interim designation would be defined where travel would be limited to existing routes except when cross-country travel is needed for safety or administrative needs until travel management plans are completed.			
468.	**Action:** No similar action.	**Action:** Establish the following 16 TMAs (Figure 2-67): • Alpine County (18,600 acres) • Carson City (41,300 acres) • Central Churchill County (749,400 acres) • Dead Camel Mountains (37,400 acres) • Douglas County (162,500 acres) • Eastern Churchill County (1,011,400 acres)		**Action:** Establish the following 9 TMAs (Figure 2-68): • Alpine County (18,600 acres) • Carson City (41,300 acres) • Dead Camel	**Action:** Establish the following 10 TMAs (Figure 2-69): • Alpine/Douglas County (21,900 acres) • Churchill County (1,761,200 acres) • Dead Camel Mountain

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Eastern Mineral County (338,400 acres) • Lyon County East (275,800 acres) • Lyon County West (284,700 acres) • Northern Mineral County (571,400 acres) • Nye County (189,000 acres) • Sand Mountain (19,600 acres) • Southern Mineral County (486,500 acres) • Washoe North (390,800 acres) • Washoe South (40,300 acres) • Western Mineral County (185,600 acres)		Mountains (37,400 acres) • Douglas County (162,500 acres) • Lassen County (26,800 acres) • Lyon County (560,500 acres) • Plumas County (800 acres) • Storey County (15,100 acres) • Washoe County (388,400 acres)	(37,400 acres) • Lassen/Plumas County (27,600 acres) • Lyon County (519,500 acres) • Mineral County (1,581,800 acres) • Nye County (189,000 acres) • Pine Nut Mountains (226,200 acres); • Sand Mountain (19,600 acres) • Virginia City (53,100 acres) • Washoe County (365,600 acres)
469.	**Action:** No similar action.	**Ation**: During subsequent travel management planning, the interdisciplinary review team would analyze each route and recommend designations based on the criteria in 43 CFR 8342.1 as well as the criteria listed below: • Route redundancy • VRM class objectives • Recreation opportunities • Administrative needs • Public access and safety needs • Special management areas • Cultural resources • Riparian and wetland resources • Other appropriate resource management concerns Other travel management planning actions include: • Minimize damage to resources and prevent impairment of wilderness suitability. • Minimize conflicts between off-road vehicle use and other existing or proposed uses. • Locate new construction or re-alignment of existing routes to avoid creating fragment resource tracts by issuance of ROWs.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Preserve open space. • Roads designated within the 2007 Alpine County Resource Management Plan Amendment will continue. • Attempt to acquire public access easements with willing landowners for administrative and public use.			
470.	**Action:** Manage the following areas, which have motorized travel restrictions per Federal Register Notice, unless notice is revised by Authorized Officer. The specific routes will be reassessed within the travel management plan: • Road leading N-NW from fenceline (JDR #4306) near Summit Spring to the existing public land closure on Peterson Mountain (Notice # NV-030-91-04; August 23, 1991) • Road leading south along the east side of the main ridgeline, due west of August Spring and up to the existing public land closure on Peterson Mountain (Notice # NV-030-92-01; November 8, 1991) • Bailey-Jumbo watershed closure of secondary roads, not primary access routes (Notice # NV-030-96-002; April 9, 1996)				
471.	**Lands and Realty**				
472.	**Land Tenure Adjustments**				
473.	**GOAL:** Make land tenure adjustments for public benefit, in order to consolidate land patterns, ensure effective administration, improve resource management, maintain public values, and access to BLM-administered lands, and support community development.				
474.	**Land Tenure Adjustments – Acquisitions**				
475.	**GOAL:** Make land tenure adjustments for public benefit, in order to consolidate land patterns, ensure effective administration, improve resource management, maintain public values, access to BLM-administered lands, and promote community development.				
476.	**Objective:** No similar objective.	**Objective:** Acquire lands based on the principle of no net gain of BLM-administered land and that have the support of local communities.	**Objective:** Acquire lands or land rights that enhance resource values, provide for conservation easements, preservation of corridors, habitat for wildlife, and cultural resources.	**Objective:** Acquire lands or land rights that enhance resource values, and provide for conservation easements, preservation of corridors or habitat for wildlife, cultural resources, public access for recreation use or other uses, or to consolidate lands for more effective management.	
477.	**Action:** No similar action.	**Action:** Acquire lands based on the principle of no net gain of BLM-administered land and that have the support of local communities.	**Action:** Acquire lands utilizing the following criteria (these criteria are not considered all-inclusive but represents the major factors to be evaluated when considering acquisition actions): • Private lands or interests in private lands to be acquired by BLM would be subject to consultation and coordination procedures with state, local city, and county officials before completion of the acquisition. • Private lands or interests in private lands to be acquired by BLM would provide access to BLM-administered lands, consolidate federal lands ownership patterns or otherwise serve to improve management of the BLM-administered lands, which contain important natural resources, cultural resources, or habitat, or serve other		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			public purposes. • Public resource values or concerns, including threatened, endangered, or BLM sensitive species habitat (including connectivity); riparian areas; floodplains and wetlands; fisheries; nesting or breeding habitat for game and nongame birds or animals; key big game seasonal habitat; wild horse and burro habitat; developed recreation and recreation access sites; municipal watersheds; energy and mineral potential; visual resources; cultural resources; paleontology; Native American Traditional Cultural Properties; cultural resource sites eligible for inclusion on the NRHP; wilderness and areas being studied for wilderness; and other statutory-authorized designations. • Accessibility of land for public uses. • Clear management opportunities (difficulty or cost of administration). • Suitability and need for change in land ownership, for management, and use by other state and federal agencies. • Lands acquired would be in fee simple title. Acquisition of split estate lands would be made on a case-by-case basis. • The availability of funding to properly manage the acquired lands. • The likelihood for establishing partnerships. Acquisition of land and interest using funds authorized under the SNPLMA, or similar authorized funding sources, are completed for special purposes and require special management considerations to protect the resource values on these lands. The management issues for such acquisitions would be addressed throughout the acquisition process, beginning with its nomination to the administration of the acquisition. Following acquisition, before land use changes, a parcel–specific, activity level management plan and associated NEPA document would be prepared to address project management.		
478.	**Action:** No similar action.	**Action:** Retain and acquire lands within Greater Sage-Grouse PGMAs. Consider exceptions when: • Disposal and/or acquisitions of public	**Action:** Retain and acquire lands within Greater Sage-Grouse PPMAs and PGMAs.		**Action:** Retain and acquire public ownership of Greater Sage-Grouse PPMAs and PGMAs. Consider exceptions when: • Disposal and/or acquisitions of public

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		lands would allow for more contiguous federal ownership patterns within the Greater Sage-Grouse habitat area, or where a land tenure adjustment would result in a net gain in amount or quality of Greater Sage-Grouse habitat. • Lands that are acquired (exchange, purchase or easement) for Greater Sage-Grouse habitat are managed as Greater Sage-Grouse PPMA. Where significant conservation actions could be achieved in Greater Sage-Grouse PPMAs, seek to acquire lands with intact subsurface mineral estate by donation, purchase, or exchange in order to best conserve, enhance, or restore Greater Sage-Grouse habitat.			lands would allow for more contiguous federal ownership patterns within the Greater Sage-Grouse habitat area, or where a land tenure adjustment would result in a net gain in amount or quality of Greater Sage-Grouse habitat. • Lands that are acquired (exchange, purchase or easement) for Greater Sage-Grouse habitat are managed as PPMA. Where significant conservation actions could be achieved in Greater Sage-Grouse PPMAs, seek to acquire lands with intact subsurface mineral estate by donation, purchase, or exchange in order to best conserve, enhance, or restore Greater Sage-Grouse habitat.
479.	**Action:** No similar action.	**Action:** Consider for future acquisition from Washoe County the following parcels (also see Table 2-3): • Pah Rah Range/Northern Washoe Open Space [APN 076-251-08, 076-430-02, 076-440-03, 076-500-01,076-530-11, 076-530-07, 076-510-02, 076-590-02, 076-570-05, 076-590-03, 061-060-54, 061-110-09]. • Swan Lake [APN 080-671-08]			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Air Race Buffer [APN 079-332-36 and 079-332-37] • Hungry Valley-Eagle Canyon Open Space [APN 080-710-01]			
480.	**Action:** No similar action.	**Action:** Manage lands acquired in a manner consistent with adjacent or nearby lands, or managed for the goals, objectives, and standards for which they were acquired.			
481.	**Action:** Retain BLM-administered lands within 100-year flood plain boundaries. Authorize development within 100-year flood plain only if consistent with existing federal, state, and local government restrictions.	**Action:** No similar action (addressed within acquisition criteria).			
482.	**Action**: Consolidate, by acquisition, land for crucial Lassen-Washoe deer winter range and migration corridors by acquiring private lands in this area.	**Action:** No similar action.			
483.	**Action**: Consolidate, by acquisition, land that is important as wildlife habitat in the Pine Nut Mountains.	**Action:** No similar action.			
484.	**Action**: Land exchanges will be done to block in the higher country in the Pine Nut Range and Jumbo allotment and to release land next to residential zones.	**Action:** No similar action.			
485.	**Action**: Acquire legal access to Faye Canyon, Bagley Valley, and the Hangman's Bridge area	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	near Markleeville in coordination with Forest Service. Leave primary roads open.				
486.	**Action**: Acquire or provide legal access through or around Big Canyon, Black Canyon, and Hardscrabble canyon to provide vehicular access for the administration of BLM-administered lands in the Virginia Mountains.	**Action:** No similar action.			
487.	**Action**: The BLM will work in support of Douglas County's and other organization's efforts to acquire conservation easements in the Carson Valley. The intent of this coordinated effort is to cooperatively acquire conservation easements on a sufficient number of acres in Carson Valley to protect existing agriculture operations and the important social and natural resource values associated with these lands. To this end, the BLM will acquire conservation easements on private properties in the Carson Valley from	**Action:** No similar action.	**Action:** Acquire conservation easements on private properties from willing sellers in accordance with the identified acquisition criteria.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	willing sellers in accordance with the identified Acquisition Criteria for Conservation Easements. • The land is an active agricultural operation. • The land is subject to imminent threat from development, and protection is in conformance with the Douglas County Master Plan. • The land is within the 100-year floodplain. • The land contains important wetlands or riparian wildlife habitat. • The agricultural character of the land enhances scenic values. • The landowner is willing to sell a recreational access easement on the property. • The land is of sufficient parcel size to be considered farmland. • The land contains important cultural or historic values that would be protected by				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	the acquisition. • The landowner is willing to discount the sale of the conservation easement to BLM. • The land has other unique values and acquisition would be in the public interest.				
488.	**Action**: Acquire environmentally sensitive lands or interests in environmentally sensitive lands elsewhere in Douglas County from willing sellers after consultation and coordination with County government and local organizations and individuals. The Acquisition Criteria for Conservation Easements: • Lands or interests in lands will be acquired by the BLM on a willing buyer/willing seller basis only. • Private lands or interests in private lands to be acquired by the BLM will be subject to consultation and coordination procedures with Douglas County	**Action:** No similar action (addressed within acquisition criteria).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	officials prior to completion of the acquisition. • Private lands or interests in private lands to be considered for acquisition by the BLM will serve purposes consistent with provisions in the Douglas County Master Plan. • Private lands or interests in private lands to be acquired by the BLM will a) provide access to BLM-administered lands, b) block up federal lands ownership patterns or otherwise serve to improve management of the BLM-administered lands, c) contain important natural resources, cultural resources, or habitat, or d) serve other public purposes.				
489.	**Action**: Private lands in the Southern Washoe County urban interface that are designated as desired open space in the Reno, Sparks, and Washoe	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	County Master Plans and the Washoe County Regional Open Space Plan will be considered for acquisition opportunities by the BLM. This includes the corridor of land on both sides of the Truckee River, east of Sparks. Acquisition opportunities may include acquisition of conservation easements or other interest in private lands.				
490.	**Action**: Acquisitions in the Southern Washoe County urban interface must meet one or more of the following criteria: • Facilitate access to BLM-administered lands and resources • Provide resource protection • Facilitate implementation of the RMP • Provide for a more manageable land ownership pattern • Maintain or enhance public recreational uses and open space values In addition, the BLM will	**Action:** No similar action (addressed within acquisition criteria).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	focus acquisition efforts in this area on lands: • with few or no man-made improvements; • not requiring substantial restoration efforts, except in certain circumstances when other entities can be involved as partners in the effort • with no known hazardous materials or contamination problems • with no noxious weed infestations that would present a long-term liability to the BLM				
491.	**Action**: Provide for legal public access to BLM-administered lands by retaining significant existing access and acquiring additional public access. Access acquisition opportunities to the Pah Rah Range, Petersen Mountain area, and the Jumbo area are given priority.	**Action:** No similar action.			
492.	**Land Tenure Adjustments – Disposals**				
493.	**Objective:** Make available for disposal those lands that have little or no resource value, that consolidate land patterns to ensure effective administration, that improve resource management, and that promote community and/or agricultural development. Access through disposals to other BLM-administered lands would be retained if warranted for administrative and/or public purposes.				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
494.	**Action common to all:** • All land not specifically identified for disposal is classified for retention. • Retain legal public access to BLM-administered lands across lands that are transferred to private or other ownership.				
495.	**Action:** The following BLM-administered lands have been identified for disposal (179,700 acres; Figure 2-70): • Alpine County (900 acres) • Carson City (160 acres) • Churchill County (76,700 acres) • Douglas County (4,400 acres) • Lyon County (49,500 acres) • Mineral County (5,700 acres) • Nye County (11,300 acres) • Storey County (13,000 acres) • Washoe County (18,000 acres)	**Action:** The following BLM-administered lands have been identified for disposal (273,500 acres; Figure 2-71): • Alpine County (30 acres) • Carson City (200 acres) • Churchill County (77,400 acres) • Douglas County (5,700 acres) • Lassen County (1,000 acres) • Lyon County (143,100 acres) • Mineral County (5,800 acres) • Nye County (11,300 acres) • Storey County (15,100 acres) • Washoe County (13,700 acres)	**Action:** No similar action.	**Action:** The following BLM-administered lands have been identified for disposal (332,500 acres; Figure 2-72): • Alpine County (1,000 acres) • Carson City (210 acres) • Churchill County (77,400 acres) • Douglas County (5,800 acres) • Lassen County (1,000 acres) • Lyon County (142,600 acres) • Mineral County (11,600 acres) • Nye County (11,300 acres) • Storey County (21,900 acres) • Washoe County (59,700 acres)	**Action:** The following BLM-administered lands have been identified for disposal (267,200 acres; Figure 2-73): • Alpine County (1,000 acres) • Carson City (200 acres) • Churchill County (76,900 acres) • Douglas County (7,000 acres) • Lassen County (1,000 acres) • Lyon County (83,500 acres) • Mineral County (5,800 acres) • Nye County (11,300 acres) • Storey County (20,800 acres) • Washoe County (59,700 acres)
496.	**Action:** No similar action.	**Action:** Any land disposal must meet all of the following land disposal criteria, unless otherwise noted: • All lands considered potentially suitable for sale must meet one or more of the criteria outlined in Section 203(a) of FLPMA and is identified by legal description in this document. An interest in land reserved to the US may be conveyed to the patent holder, pursuant to Section 203 (a) of FLPMA, if it is determined to be in the public interest. • The land is designated as suitable for disposal in this Resource Management Plan.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• The land does not contain important wetlands or riparian wildlife habitat, other water resources, significant cultural resources or recreational values. • Disposal of the land would not adversely impact the manageability of remaining BLM-administered lands. • Disposal of the land would not adversely impact the public's access to remaining BLM-administered lands. • The lands are not essential to candidate, listed or proposed threatened or endangered species or identified as priority fish and wildlife habitat. • No BLM-administered lands that contain water improvements, such as guzzlers, would be disposed of, unless the buyer is willing to relocate the water improvement, at the buyer's sole and complete cost, to a location deemed suitable by BLM and NDOW. • No lands that are classified as VRM Class II due the proximity of the National Historic Trails would be disposed of. • Disposal of the land is deemed to be in the public's interest.			
497.	**Action:** No similar action.	**Action:** Identify 400 acres of land available for disposal adjacent to Naval Air Station Fallon through modified competitive sale The patent would have to have special stipulations in connection with low level development due to safety and other concerns with the proximity of the parcel to a Naval Air Station. Retain acres adjacent to Naval Air Station Fallon to protect federal investment in military housing facilities and to retain a public safety arc.	**Action:** Identify 0 acres of land for disposal adjacent to Naval Air Station Fallon until special legislation enacts the transfer to the jurisdiction of the Department of the Navy.	**Action:** Identify 400 acres of land available for disposal adjacent to Naval Air Station Fallon directly to the Department of the Navy for a safety arc, military housing facilities, and agricultural leasing. Ensure the disposal is in connection with acquiring Navy-controlled lands near the Greater Sand Mountain SRMA if possible.	**Action:** Same as Alternative D except: Pursue withdrawal if disposal or special legislation cannot be achieved.
498.	**Action:** No similar action.	**Action:** Reclamation-administered lands that are relinquished back to the BLM will be available for disposal (Figure 2-71).	**Action:** Reclamation-administered lands that are relinquished back to the BLM will be retained.	**Action:** No similar action.	**Action:** Reclamation-administered lands that are relinquished back to the BLM will be available for disposal (Figure 2-73).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
499.	**Action:** Designate approximately 70 acres to the Washoe Tribe or another federal agency for management on behalf of the Tribe (Figure 2-69).	**Action:** No similar action.		**Action:** Based on Congressional approval, the following lands would be eligible for transfer to the BIA (Figure 2-72): • Pyramid Lake Paiute Tribe (24,100 acres) • Reno-Sparks Indian Colony (14,700 acres) • Washoe Tribe of Nevada and California (70 acres)	**Action:** Based on Congressional approval, the following lands would be eligible for transfer to the BIA (Figure 2-73): • Pyramid Lake Paiute Tribe (26,900 acres) • Reno-Sparks Indian Colony (14,700 acres) • Washoe Tribe of Nevada and California (70 acres)
500.	**Action:** Retain legal public access to BLM-administered lands across lands that are transferred from the BLM to private or other ownership.	**Action:** Same as Alternative A except: • Acquire on a case-by-case basis when legal access is desirable for resource use/development.	**Action:** Same as Alternative A except: • Acquire on a case-by-case basis when legal access is desirable for resource protection.	**Action:** Same as Alternative A except: • Acquire on a case-by-case basis when legal access is desirable to manage the impact of proximity to dense population.	**Action:** Same as Alternative A except: • Acquire on a case-by-case basis, balancing the needs of the public and resource protection in consideration for retention of legal access.
501.	**Action:** Guarantee public access to the following fishable waters in case of BLM-administered land disposal: • Jumbo Reservoir (Reservoir Breached) • Truckee River • East Fork Carson River • Carson River	**Action**: As a condition of land transfer or disposal, retain public access through an easement to fishable waters in the following areas: • Truckee River • East Fork Carson River • Carson River • West Walker River • East Walker River			
502.	**Action:** No similar action.	**Action:** Recreation & Public Purpose leases	**Action:** No similar action (no lands are identified for	**Action:** Same as Alternative B.	**Action:** Recreation & Public Purpose leases would only

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		would be issued on any lands determined suitable under the Act.	disposal).		be issued on lands that have been identified as suitable for disposal (Figure 2-73).
503.	**Action:** Designate lands for use by state and local governments for recreational purposes through the Recreational & Public Purpose Act (Figure 2-70). • Washoe County (6,400 acres) • Alpine County (900 acres) • Douglas County (70 acres)	**Action:** Do not designate any land for disposal to only state and local government through the Recreation and Public Purposes Act.	**Action:** No similar action (no lands are identified for disposal).	**Action:** Designate 7,370 acres for disposal to state and local government through the Recreation and Public Purposes Act as outlined in Alternative A. Classify the same acres under Section 7 of the Taylor Grazing Act for Recreation & Public Purpose sales and leases (Figures 2-72 and 2-73).	
504.	**Land Tenure Adjustments – Trespasses**				
505.	**Objective:** No similar objective.	**Objective:** Use appropriate procedures to resolve unauthorized use or occupancy to protect sensitive resources where required.	**Objective:** Eliminate or remove unauthorized uses or occupancies to protect all resources.	**Objective:** Use appropriate procedures to resolve unauthorized use or occupancy on a case-by-case basis.	
506.	**Action**: Sell small parcels of BLM-administered lands in Douglas County on which portions of structures or facilities have been constructed in trespass. The Sale Criteria for Small Parcel Sales presented below will be used to determine whether or not the parcel should be sold to the	**Action:** Resolve unauthorized uses or occupancies through land disposal, leases, ROWs, cleanup crews, or law enforcement on a case-by-case basis. Give higher priority to those trespasses causing significant resource damage.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	landowner whose property has been found to be in trespass. The Sale Criteria for Small Parcel Sales: • The trespass situation has been created in a clearly unintentional manner. • Portions of residential dwellings, commercial buildings, or other significant structures must have existed on the BLM-administered lands to be sold prior to approval of this proposed RMP. • The BLM has made the determination that unauthorized structures cannot be practically removed from BLM-administered lands. • BLM-administered lands to be sold to resolve trespass violations with an individual landowner are very small and generally less than 1 acre in size. This action does not meet current policy as written,				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	as disposal parcels must be specifically identified in a LUP (not generally, as above) by legal land description or a map. Thus, the decision was determined unsuitable after the plan amendment was enacted.				
507.	**Land Tenure Adjustments – Withdrawals**				
508.	**Action common to all:** • Existing and proposed withdrawals are outlined in **Appendix F**, Existing and Proposed Land Withdrawals. Existing withdrawals would continue to be reviewed on a periodic basis and may be recommended for revocation according to the FLPMA. • Revoked, relinquished, or expired withdrawal lands would be in a manner consistent with adjacent or nearby lands.				
509.	**Objective:** Review new withdrawal proposals on a case-by-case basis, where resource values or agency investments are best protected by withdrawals. Lands proposed to be withdrawn will be the minimum area required for the intended use and where applicable alternative prescriptions (i.e., the use of ROWs, leases, permits, or cooperative agreements) are inadequate to protect the resource values.	**Objective:** Withdraw BLM-administered lands from the appropriate land laws only after consideration of the resources to be protected and the subsequent impacts on public use.			
510.	**Action**: Termination of Reclamation withdrawals along the Truckee River in the Southern Washoe	**Action:** Pursue withdrawal revocation of Reclamation-administered withdrawn land no longer needed for the Newlands or other Reclamation projects.			**Action:** Same as Alternative B, except the decision to open or close lands to some or all of the general land and

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	County urban interface that are no longer needed for Newlands Project purposes will be pursued. Unless specifically identified for disposal, lands no longer under reclamation withdrawal will be managed by the BLM for access, recreation, and riparian restoration opportunities.				mining laws would be determined on a case-by-case basis.
511.	**Action:** No similar action.	**Action:** Based on Congressional approval, lands identified would be considered for withdrawal to the US DOD (Marine Corps Mountain Warfare Training Center) for housing and recreational facilities (Figure 2-26).	**Action:** No similar action.	**Action:** Based on Congressional approval, lands identified would be considered for withdrawal to the US DOD (Marine Corps Mountain Warfare Training Center) for housing and recreational facilities. (Figures 2-28 and 2-29).	
512.	**Action**: Pursue revocation and restoration to the operation of the BLM-administered land laws and general mining laws, Reclamation and BLM-administered land withdrawals located along the Snowshoe Thompson Ditch encumbering 80 acres located in the SE¼NE¼, NE¼SE¼, T. 11 N., R. 19 E. of Section 25, T. 11 N., R. 19 E. Upon	**Action:** No similar action (addressed within previous action).			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	completion of the revocation and restoration process, the land will be managed by the BLM in a manner consistent with adjacent lands located within the Indian Creek Recreation Lands boundary.				
513.	**Land Use Authorizations**				
514.	**Goal:** Meet public needs for use authorizations such as ROWs, leases, and permits, while minimizing adverse impacts on other resources.				
515.	**Actions common to all:** • Future utility corridor and facility proposals on BLM-administered lands will be consistent with Regional/County Master Plans, Nevada State statutes, and the West-wide Energy Corridor Programmatic EIS and settlement agreement. • Continue to manage authorized ROWs, including 440,000 acres within utility corridors (Figure 2-74). • Encourage new transmission corridors and facilities (60 kilovolts or larger) proposed on BLM-administered lands to utilize existing corridors and underground components in visually sensitive areas. Local government-designated natural, visual, and cultural resources, and wildlife habitat important to the community will be major considerations in analyzing utility proposals. • Corridors would be 2 miles wide to provide opportunities for multiple transmission facilities and selection of optimal routes within. Corridor widths would be adjusted to encompass existing linear ROW and the West-wide Energy Corridor where appropriate. • WSAs are managed as ROW exclusion. • Religious monuments (e.g., crosses) will not be authorized. • BLM will encourage ROW grants for public trails with local governments to encourage regional trail connectivity for non-motorized uses.				
516.	**Objective:** No similar objective.	**Objective**: Issue land use authorizations to facilitate post-operation reuse and encourage sustainable development.			
517.	**Action:** No similar action.	**Action:** Issue land use authorizations to facilitate post-operation reuse and encourage sustainable development. Consider the following criteria prior to authorizing reuse proposals: • Percentage of reuse	**Action:** Issue land use authorizations to facilitate post-operation reuse and encourage sustainable development. Consider the following criteria prior to authorizing reuse proposals: • Percentage of reuse contribution to economy	**Action:** Same as Alternative B except the focus of lands for reuse would be within the urban interface.	**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		contribution to economy compared with existing activity or other reasonably foreseeable use of the site. • Type of reuse project. • Evaluation of the value of the land after reuse closure. Following reuse, land should provide higher economic value than if land is closed and reclaimed. • Compatibility of reuse with adjacent and any other on-site land uses. • Reuse doesn't conflict with existing valid rights. • There is a local community group or advisory group established for new reuse proposals and closures. • Lands have existing disturbance and infrastructure in place available for reuse. • Economic viability and stability of reuse proponent.	compared with existing activity or other reasonably foreseeable use of the site. • Type of reuse project. • Evaluation of the value of the land after reuse closure. Following reuse, land should provide higher resource value than if land is closed and reclaimed. • Compatibility of reuse with adjacent and any other on-site land uses. • Reuse does not conflict with existing valid rights. • There is a local community group or advisory group established for new reuse proposals and closures. • Lands have existing disturbance and infrastructure in place available for reuse. • Economic viability and stability of reuse proponent. • Responsibilities for liabilities transfer of liability and indemnification of US. • Reuse should be		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Responsibilities for liabilities, transfer of liability and indemnification of US. • Ability to provide on-going well-being of community. • Reuse should fit with the long-term plan for local communities. • Reuse should be compatible with the available workforce and contribute to retaining a skilled workforce. • Reuse should allow for full access for other uses, as appropriate. • Reuse should be compatible with other management objectives and actions.	compatible with other management objectives and actions.		
518.	**Action:** No similar action (Figure 2-75). Manage 564,100 acres as ROW exclusion areas.	**Action:** Manage the following areas as ROW exclusion (580,000 acres; Figure 2-76): • Stewart Valley Paleontological ACEC (see *Special Designations, Areas of Critical Environmental Concern)*	**Action:** Manage the following areas as ROW exclusion (2,675,800 acres; Figure 2-77): • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Black Mountain/Pistone Archaeological District	**Action:** Manage the following areas as ROW exclusion (564,100 acres; Figure 2-78): • East Fork Carson River WSR Study Segment 1 (see *Wild and Scenic Rivers*) • Priority watersheds containing municipal water supplies (1,000-foot buffer of	**Action:** Manage the following areas as ROW exclusion (1,155,400 acres; Figure 2-79): • Virginia City National Historic Landmark District (for wind energy only) (see *Cultural Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental*

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			o Clan Alpine Greater Sage-Grouse (for linear ROWs) o Desatoya Greater Sage-Grouse o Lassen Red Rock Scenic o Namazii Wunu Cultural o Pah Rah High Basin Petroglyph o Pine Nut Bi-State Sage-Grouse o Ruhenstroth Paleontological o Sand Springs Desert Study Area o Tagłm aša Cultural o Virginia City National Landmark Historic District (for wind energy only) o Virginia Mountains Greater Sage-Grouse • East Fork Carson River WSR Study Segment 1 (see *Wild and Scenic Rivers*) • Active Raptor Nest sites (0.50-mile buffer; see *Fish and Wildlife*) • The Grimes Point rock art site • Hidden Cave (0.5-mile buffer; see *Caves and Cave*	wellhead; see *Soil and Water Resources*)	*Concern)*: o A portion of Fox Peak Cultural, which includes area overlapping with Job Peak WSA (43,300 acres) and Dynamite Cave (300-foot buffer; see *Caves and Cave Resources*) o Pah Rah High Basin Petroglyph o Ruhenstroth Paleontological o Stewart Valley Paleontological • East Fork Carson River WSR Study Segment 1 (see *Wild and Scenic Rivers*) • Active Raptor Nest sites (0.50-mile buffer; see *Fish and Wildlife*) • Hidden Cave (300-foot buffer; see *Caves and Cave Resources*) • Priority watersheds containing municipal water supplies (1,000-foot buffer of wellhead; see *Soil and Water Resources*) • Greater Sage-Grouse PPMA (see *Special Status Species, Greater Sage-*

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Resources) • Dynamite Cave (0.5-mile buffer; see *Caves and Cave Resources*) • Important Bird Areas • Priority watersheds (see *Soil and Water Resources*) • 200 feet of riparian/wetland areas • 500 feet of springs (see *Vegetation, Riparian Wetlands*) • Fish and wildlife priority habitat (500-foot buffer; see *Fish and Wildlife*) • Greater Sage-Grouse PPMA (see *Special Status Species, Greater Sage-Grouse*) • Backcountry Wildlife Conservation Areas (see *Backcountry Widlife Conservation Areas*)		*Grouse*)
519.	**Action:** No similar action.	**Action:** Manage the following areas as ROW avoidance (1,195,800 acres; Figure 2-80): • Caves (see *Caves and Cave Resources*): o Within 0.25 mile of Dynamite Cave o Within 500 feet of Hidden Cave • Fish and wildlife	**Action:** Manage the following areas as ROW avoidance (369,300 acres; Figure 2-81): • Within 2.5 miles of either side of centerline of historic roads and trails that are eligible for the NRHP but are not Congressionally designated (see *Cultural*	**Action:** Manage the following areas as ROW avoidance (1,226,100 acres; Figure 2-82): • Within 200 feet of Riparian and wetland areas (see *Vegetation, Riparian Wetlands*) • Fish and wildlife priority habitats, including a 100-foot	**Action:** Manage the following areas as ROW avoidance (1,448,200 acres; Figure 2-83): • Within 200 feet Riparian and wetland areas (see *Vegetation, Riparian Wetlands*) • Fish and wildlife priority habitats, including a 500-foot buffer for lentic and

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		priority habitats, including a 100-foot buffer for lentic and lotic habitats occupied by federally listed aquatic and semi-aquatic species (see *Fish and Wildlife*) • Important Bird Areas (see *Fish and Wildlife, Migratory Birds*) • Within 0.25 mile of active raptor nests (including special status species; see *Fish and Wildlife, Raptors*) • Greater Sage-Grouse PPMA (see *Special Status Species, Greater Sage-Grouse*) • Within 0.25 mile of either side of centerline of historic roads and trails that are eligible for the NRHP but are not Congressionally designated (see *Cultural Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Black Mountain/Pistone	*Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Grimes Point Archaeological District o Incandescent Rocks Scenic o Virginia City National Landmark Historic District (except exclusion for renewable energy) • NHT corridors (2.5-mile buffer on either side of centerline; see *National Historic Trails*) • Suitable WSR segments (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*): o East Fork Carson River Segment 2 o East Fork Carson River Segment 3 • Within 1-mile radius of known human burial (see *Tribal Interests*) • Lands proposed for protection of wilderness characteristics	buffer for lentic and lotic habitats occupied by federally listed aquatic and semi-aquatic species (see *Fish and Wildlife*) • Important Bird Areas (see *Fish and Wildlife, Migratory Birds*) • Within 0.25 mile of active raptor nests (including special status species; see *Fish and Wildlife, Raptors*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • Within 0.25 mile of either side of centerline of historic roads and trails that are eligible for the NRHP but are not Congressionally designated (see *Cultural Resources*) • ACECs (see *Special Designations, Areas of Critical Environmental Concern*): o Black Mountain/Pistone	lotic habitats occupied by federally listed aquatic and semi-aquatic species (see *Fish and Wildlife*) • Important Bird Areas (see *Fish and Wildlife, Migratory Birds*) • Greater Sage-Grouse PPMA and PGMA (see *Special Status Species, Greater Sage-Grouse*) • Within 1 mile of either side of centerline of historic roads and trails that are eligible for the NRHP but are not Congressionally designated (see *Cultural Resources*) • Pistone site (see *Cultural Resources*) Virginia City National Historic Landmark District (see *Cultural Resources*) • Wyemaha Archaeological District (see *Cultural Resources*) • Grimes Point Archaeological District ACEC (see *Special Designations, Areas of Critical Environmental Concern*) • NHT corridors (1-mile buffer on either side of

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Archaeological District o Grimes Point Archaeological District o Namazii Wunu Cultural o Pah Rah High Basin Petroglyph o Ruhenstroth Paleontological o Tagɨm aša Cultural • NHT corridors (0.25-mile buffer on either side of centerline; see *National Historic Trails*) • Department of Defense Coordination Area (see *Public Health and Safety)*		Archaeological District o Grimes Point Archaeological District o Pah Rah High Basin Petroglyph o Ruhenstroth Paleontological o Tagɨm aša Cultural • NHT corridors (0.25-mile buffer on either side of centerline; see *National Historic Trails*) • Suitable WSR segments (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*): o East Fork Carson River Segment 2 o East Fork Carson River Segment 3 • Department of Defense Coordination Area (see *Public Health and Safety*)	centerline; see *National Historic Trails*) • Suitable WSR segments (within 0.25 mile of either side of the ordinary high water mark; see *Wild and Scenic Rivers*): o East Fork Carson River Segment 2 o East Fork Carson River Segment 3 • Lands proposed for protection of wilderness characteristics • Department of Defense Coordination Area (see *Public Health and Safety*)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
520.	**Action:** Limit lands projects (besides disposals) to 50 percent or less reduction in High Erosion Susceptibility Areas.	**Action:** No similar action.			
521.	**Action:** No similar action.	**Action**: Encourage consolidation and colocation of ROWs within existing disturbance areas in fish and wildlife priority habitats.	**Action**: Require consolidation and colocation of ROWs within existing disturbance areas in fish and wildlife priority habitats to avoid further fragmentation.	**Action**: In the urban interface zone, encourage consolidation and colocation of ROWs within existing disturbance areas in fish and wildlife priority habitats. Outside the urban interface zone, require consolidation and colocation of ROWs within existing disturbance areas.	**Action**: Where feasible, consolidate and collocate ROWs within existing disturbance areas in fish and wildlife priority habitats to avoid further fragmentation.
522.	**Action:** No similar action.	**Action:** Apply appropriate Standard Operating Procedures and BMPs to mitigate disturbance from land use authorization activities in the following areas (dependent on seasonal and site-specific conditions): • Pronghorn kidding areas: May 15 – June 15 • Mule deer fawning areas: June 1 – June 30 • Mule deer migration	**Action:** Prohibit disturbance from land use authorization activities in the following areas (dependent on seasonal and site-specific conditions): • Pronghorn kidding areas: May 15 – June 15 • Mule deer fawning areas: June 1 – June 30 • Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 • Bighorn sheep lambing	**Action:** Within the urban interface zone, prohibit disturbance from land use authorization activities in the following areas (dependent on seasonal and site-specific conditions). Outside of the urban interface zone, apply appropriate Standard Operating Procedures and BMPs to mitigate disturbance from land use	**Action:** Prohibit disturbance from land use authorization activities in the following areas (dependent on seasonal and site-specific conditions) unless appropriate Standard Operating Procedures and BMPs are deemed sufficient by the BLM Authorized Officer: • Pronghorn kidding areas: May 15 – June 15 • Mule deer fawning areas: June 1 – June 30

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and movement corridors: March 1 to May 15 and October 1 to November 30 • Bighorn sheep lambing areas: February 1 – May 15 • Elk calving areas (should elk expand their range further): May 15 – June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: January 1 – April 15Nesting migratory birds, with an emphasis on special status species and birds of conservation concern: May 15 - July 15	areas: February 1 – May 15 • Elk calving areas (should elk expand their range further): May 15 – June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: November 1 – May 1 • Big game migration/ movement corridors • Crucial habitat areas • Nesting migratory birds, with an emphasis on special status species and birds of conservation concern: May 1 - July 30	authorization activities in the following areas (dependent on seasonal and site-specific conditions): • Pronghorn kidding areas: May 15 – June 15 • Mule deer fawning areas: June 1 – June 30 • Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 • Bighorn sheep lambing areas: February 1 – May 15 • Elk calving areas (should elk expand their range further): May 15 – June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: November 1 – May 1Nesting migratory birds, with an emphasis on special status species and birds of conservation concern: May 15 - July 15	• Mule deer migration and movement corridors: March 1 to May 15 and October 1 to November 30 • Bighorn sheep lambing areas: February 1 – May 15 • Elk calving areas: May 15 – June 15 • Mule deer, elk, bighorn sheep, and pronghorn antelope winter range areas: December 1 – May 1Big game migration/ movement corridors • Crucial habitat areas • Nesting migratory birds, with an emphasis on special status species and birds of conservation concern: May 15 - July 15

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
523.	**Action**: Allow new communication site development only when expansion of an existing site is not a reasonable alternative in the Reno area. <u>Pyramid Planning Unit:</u> CS1 Warm Springs Mountain CS2 Virginia Peak CS3 TV Peak (Red Hill) CS4 Peavine Mountain CS5 Beacon Peak CS6 McClellan Peak <u>Pine Nut Planning Unit:</u> CS1 McClellan Peak CS2 Como Pass CS3 Rawe Peak CS4 Pinyon Hill	**Action**: Allow new communication site development only when expansion of an existing site is not a reasonable alternative. Authorize new communication use facilities at an existing site only when it is not technically feasible or reasonable to collocate within/upon existing facilities. See Figure 2-84 for existing sites.			
524.	**Action:** No similar action.	**Action:** Consider developing site plans for communication sites that present management challenges such as one or more of the following: • Multiple users • No legal access • Trespass facilities • No land use authorization for power • Land status concerns	**Action:** Develop and update site plans for all existing and new communication sites.	**Action:** Same as Alternative B except: Require a site plan for sites within the urban interface.	**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Unmitigated visual resource management issues • Unreported communication uses • Abandoned facilities • Antiquated technologies • Waste/trash • Noxious weeds			
525.	**Action**: Applications for ROWs for communication sites, including all military electronic warfare sites, will be considered in the area identified as permitted on the map (page 4 of the Central Nevada Communication Sites Modified Plan Amendment [1998]).	**Action:** No similar action.			
526.	**Action**: Facilitate communication site processing on certain BLM-administered land in central Nevada and minimize surface disturbance in the same area by grouping future communication facilities at locations where existing facilities occur, access is reasonably available, terrain is appropriate for communication facility	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	needs, and other resource values are limited. These preferred locations are Fairview Peak, New Pass, Mount Moses, the north end of the Fish Creek Mountains, and Mount Lewis.				
527.	**Action**: With proper justification, continue to provide for the location of future civilian and military communication sites (including telemetry sites and threat emitters) on more than 4 million acres of central Nevada. Proper justification includes physical and economic factors.	**Action:** No similar action.			
528.	**Action**: Encourage additional Navy electronic warfare site development in the currently heavily used Dixie/Fairview Valleys Bell Flat/Middlegate area.	**Action:** No similar action.			
529.	**Action**: Protect important natural, recreation, wilderness, wildlife, watershed, visual, and Native American values in certain BLM-administered lands in central Nevada by prohibiting future communication and	**Action:** No similar action.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	electronic warfare sites of all types in the most sensitive areas. These include portions of the Clan Alpine, Desatoya, Stillwater, Gabbs Valley and Simpson Park Mountain Ranges, Bald Mountain, and the Sand Mountain and Hickison Petroglyph recreation areas.				
530.	**Renewable Energy (Wind, Solar, Biomass)**				
531.	**Goal:** Encourage development of renewable energy in a timely manner to meet national, regional, and local needs consistent with the objectives for other land uses. (see *Geology and Minerals, Fluid Minerals* for decisions related to geothermal resources)				
532.	**Objective:** No similar objective.	**Objective:** Grant land use authorizations for wind and solar energy, biomass monitoring and development.	**Objective:** Grant land use authorizations for wind and solar energy, biomass monitoring and development while protecting and preserving resources.		
533.	**Action:** Manage 905,900 acres* as variance areas for utility-scale solar development (Figure 2-85). See Table A-2 in the ROD for the Solar Energy Development Programmatic EIS (BLM 2012) for a list of exclusion areas. **Acres are estimated based on current data but could change based on the presence or absence of*	**Action:** Manage 773,400 acres* as variance areas for utility-scale solar development (Figure 2-86). See Table A-2 in the ROD for the Solar Energy Development Programmatic EIS (BLM 2012) for a list of exclusion areas. **Acres are estimated based on current data but could change based on the presence or absence of*	**Action:** Manage 578,400 acres* as variance areas for utility-scale solar development (Figure 2-87). See Table A-2 in the ROD for the Solar Energy Development Programmatic EIS (BLM 2012) for a list of exclusion areas. **Acres are estimated based on current data but could change based on the presence or absence of implicit criteria described in the Solar*	**Action:** Manage 672,100 acres* as variance areas for utility-scale solar development (Figure 2-88). See Table A-2 in the ROD for the Solar Energy Development Programmatic EIS (BLM 2012) for a list of exclusion areas. **Acres are estimated based on current data but could change based on the*	**Action:** Manage 629,900acres* as variance areas for utility-scale solar development (Figure 2-89). See Table A-2 in the ROD for the Solar Energy Development Programmatic EIS (BLM 2012) for a list of exclusion areas. **Acres are estimated based on current data but could change based on the presence or absence of implicit criteria described in the Solar*

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	implicit criteria described in the Solar Programmatic EIS.	*implicit criteria described in the Solar Programmatic EIS.*	*Programmatic EIS.*	*presence or absence of implicit criteria described in the Solar Programmatic EIS.*	*Programmatic EIS.*
534.	**Action:** No similar action.	**Action:** Manage 1,220,200 acres as ROW avoidance areas for wind energy projects (Figure 2-90) to protect sensitive resources. The granting of ROWs for wind energy projects in avoidance areas would require special stipulations to mitigate any impact on resources on: • Lands managed as VRM Class I or Class II. • Lands with a Wind Power Classification of 3-7.	**Action:** No similar action.	**Action:** Manage 1,228,100 acres as ROW avoidance areas for wind energy projects (Figure 2-92) to protect sensitive resources. The granting of ROWs for wind energy projects in avoidance areas would require special stipulations to mitigate any impact on resources on: • Lands managed as VRM Class I or Class II. • Lands with a Wind Power Classification of 3-7.	**Action:** Manage 956,900 acres as ROW avoidance areas for wind energy projects (Figure 2-93) to protect sensitive resources. The granting of ROWs for wind energy projects in avoidance areas would require special stipulations to mitigate any impact on resources on: • Lands managed as VRM Class I or Class II. • Lands with a Wind Power Classification of 3-7. Manage PPMAs and PGMAs as ROW exclusion for utility-scale commercial solar and wind energy facilities (i.e., facilities that generate 20 MW or more).
535.	**Action:** No similar action.	**Action:** No similar action.	**Action:** Manage 2,073,200 acres as ROW exclusion areas for wind energy projects (Figure 2-91) to protect sensitive resources. Resources that will be managed as ROW exclusion areas for wind energy	**Action:** No similar action.	**Action:** Manage 629,900 acres as ROW exclusion areas for wind energy projects (Figure 2-93) to protect sensitive resources. Resources that will be managed as ROW exclusion areas for wind energy

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			projects include: • Lands managed as VRM Class I or Class II • Lands with a Wind Power Classification of 3-7 • Manage PPMAs and PGMAs as ROW exclusion for utility-scale commercial solar and wind energy facilities (i.e., facilities that generate 20 MW or more) • Lands proposed for protection of wilderness characteristics • Virginia City National Landmark Historic District ACEC (Figure 2-91; see Special Designations, Areas of Critical Environmental Concern)		projects include: • Virginia City National Landmark Historic District ACEC (Figure 2-93; see *Cultural Resources*). • Manage PPMAs and PGMAs as ROW exclusion for utility-scale commercial solar and wind energy facilities (i.e., facilities that generate 20 MW or more).
536.	**Action:** No similar action.	**Action:** The Federal Aviation Administration (FAA),Military, and local government agencies would be consulted for the development of solar and wind projects.			
537.	**Areas of Critical Environmental Concern**				
538.	**Goal:** Manage areas as ACECs where special management attention is required to protect and prevent irreparable damage to important biological, historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.				
539.	**Action common to all:** In those areas where ACECs overlap with WSAs, the WSA management prescriptions as stipulated in BLM Manual 6330, Management of Wilderness Study Areas, would take precedence.				
540.	**Summary of Areas of Critical Environmental Concern**				
541.	**Objectives**: Under Alternative A, continue present management	**Objectives**: Provide for special management attention to protect and	**Objectives**: Provide for special management attention to protect and prevent	**Objectives:** Provide for special management attention to protect and	**Objectives**: Provide for special management attention to protect and

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	actions based on current LUP decisions, policy, and regulations.	prevent irreparable damage to important biological, historic, cultural and scenic values, fish and wildlife resources or other natural systems or processes or to protect human life and safety from natural hazards in a manner that emphasizes resource use and economic development.	irreparable damage to important biological, historic, cultural and scenic values, fish and wildlife resources or other natural systems or processes or to protect human life and safety from natural hazards in a manner that preserves and protects the identified resource(s) above other management considerations.	prevent irreparable damage to important biological, historic, cultural and scenic values, fish and wildlife resources or other natural systems or processes or to protect human life and safety from natural hazards in a manner that provides for management of multiple resource use and user conflicts in areas of higher population density near the urban interface.	prevent irreparable damage to important biological, historic, cultural and scenic values, fish and wildlife resources or other natural systems or processes or to protect human life and safety from natural hazards in a manner that balances resource protection with multiple use management decisions.
542.	**Summary:** The following designated ACECs are managed for the protection of the identified relevance and importance values (21,800 acres; Figure 2-94): • Carson wandering skipper ACEC (330 acres) • Incandescent Rocks Scenic ACEC (1,100 acres) • Pah Rah High Basin (Dry Lakes), Petroglyph District ACEC (3,900 acres) • Steamboat Hot Springs	**Summary**: Retain or establish the following areas as ACECs for the protection of the identified relevance and importance values (371,170 acres; Figure 2-95): <u>Existing:</u> • Incandescent Rocks Scenic ACEC (1,100 acres) • Pah Rah High Basin Petroglyph ACEC (5,300 acres) • Stewart Valley Paleontological ACEC	**Summary**: Retain or establish the following areas as ACECs for the protection of the identified relevance and importance values (786,270 acres; Figure 2-96): <u>Existing:</u> • Carson wandering skipper ACEC (330 acres) • Incandescent Rocks Scenic ACEC (1,100 acres) • Pah Rah High Basin Petroglyph ACEC (5,300 acres) • Stewart Valley Paleontological ACEC	**Summary**: Retain or establish the following areas as ACECs for the protection of the identified relevance and importance values (180,000 acres; Figure 2-97): <u>Existing:</u> • Incandescent Rocks Scenic ACEC (1,100 acres) • Pah Rah High Basin Petroglyph ACEC (5,300 acres) • Virginia Range Williams Combleaf	**Summary**: Retain or establish the following areas as ACECs for the protection of the identified relevance and importance values (82,770 acres; Figure 2-98): <u>Existing:</u> • Incandescent Rocks Scenic ACEC (1,100 acres) • Pah Rah High Basin Petroglyph ACEC (5,300 acres) • Stewart Valley Paleontological ACEC (15,900 acres) • Virginia Range Williams

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Geyser Basin ACEC (40 acres) • Stewart Valley Fossil Site ACEC (15,900 acres) • Virginia Range Williams Combleaf Habitat Area ACEC (470 acres)	(15,900 acres) • Virginia Range Williams Combleaf Botanical ACEC (470 acres) <u>Proposed:</u> • Black Mountain/Pistone Archaeological District ACEC (3,400 acres) • Churchill Narrows Buckwheat Botanical ACEC (6,600 acres) • Fox Peak Cultural ACEC (48,400 acres) • Greater Sand Mountain ACEC (17,000 acres) • Grimes Point Archaeological District ACEC (15,900 acres) • Namazii Wunu Cultural ACEC (158,300 acres) • Ruhenstroth Paleontological ACEC (2,300 acres) • Tagim aša Cultural ACEC (81,800 acres) • Virginia City National Landmark Historic District ACEC (14,700 acres)	(15,900 acres) • Virginia Range Williams Combleaf Botanical ACEC (470 acres) <u>Proposed:</u> • Black Mountain/Pistone Archaeological District ACEC (3,400 acres) • Churchill Narrows Buckwheat Botanical ACEC (6,600 acres) • Clan Alpine Greater Sage-Grouse ACEC (98,400 acres) • Desatoya Greater Sage-Grouse ACEC (105,100 acres) • Dixie Valley Toad ACEC (410 acres) • Fox Peak Cultural ACEC (48,400 acres) • Greater Sand Mountain ACEC (17,000 acres) • Grimes Point Archaeological District ACEC (15,900 acres) • Lassen Red Rock Scenic ACEC (800 acres) • Namazii Wunu Cultural ACEC (158,300 acres) • Pine Nut Bi-State Sage-Grouse ACEC (100,400 acres)	Botanical ACEC (470 acres) <u>Proposed:</u> • Black Mountain/Pistone Archaeological District ACEC (3,100 acres) • Churchill Narrows Buckwheat Botanical ACEC (6,600 acres) • Fox Peak Cultural ACEC (48,400 acres) • Grimes Point Archaeological District ACEC (15,900 acres) • Pine Nut Mountains Williams Combleaf Botanical ACEC (330 acres) • Ruhenstroth Paleontological ACEC (2,300 acres) • Tagim aša Cultural ACEC (81,800 acres) • Virginia City National Landmark Historic District ACEC (14,700 acres)	Combleaf Botanical ACEC (470 acres) <u>Proposed:</u> • Churchill Narrows Buckwheat Botanical ACEC (6,600 acres) • Fox Peak Cultural ACEC (49,000 acres) • Grimes Point Archaeological District ACEC (2,100 acres) • Ruhenstroth Paleontological ACEC (2,300 acres)

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Pine Nut Mountains Williams Combleaf Botanical ACEC (330 acres) • Ruhenstroth Paleontological ACEC (2,300 acres) • Sand Springs Desert Study Area ACEC (50 acres) • Steamboat Buckwheat Botanical ACEC (80 acres) • Tagłm aša Cultural ACEC (81,800 acres) • Virginia City National Landmark Historic District ACEC (14,700 acres) • Virginia Mountains Greater Sage-Grouse ACEC (109,200 acres)		
543.	**Proposed Black Mountain/Pistone Archaeological District ACEC**				
544.	**Action:** No similar action.	**Action:** Designate 3,400 acres as the Black Mountain/Pistone Archaeological District ACEC for the protection of cultural resources. • Provide for cultural resource inventory. • Provide for volunteer or staff monitoring of site. • Provide for law enforcement patrols of	**Action:** Designate 3,400 acres as the Black Mountain/Pistone Archaeological District ACEC for the protection of cultural resources. • Provide for cultural resource inventory. • Provide for volunteer or staff monitoring of site. • Provide for law enforcement patrols of site.	**Action:** Designate 3,100 acres as the Black Mountain/Pistone Archaeological District ACEC for the protection of cultural resources. Manage same as Alternative B except: • Allow limited vegetative permitting. • Promote and/or increase interpretation.	**Action:** No similar action. The area would not be designated as an ACEC (see *Cultural Resources* for management prescriptions).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		site. • Provide for research and educational opportunities. • Establish MOU with Walker River Paiute and Yerington Paiute Tribes for collaborative management of site. • Work with local community and tribal entities to establish interpretive tours of site. • Manage as a ROW avoidance area. • Manage as VRM Class III. • Apply CSU stipulations for fluid mineral leasing.	• No interpretation would be allowed. • Recommend for withdrawal from locatable mineral entry. • Close to motorized travel except for administrative purposes. • Manage as a ROW exclusion area. • Vegetative permits would not be authorized. • Not available for livestock grazing. • Manage as VRM Class II. • Apply NSO stipulations for fluid mineral leasing.		
545.	**Proposed Churchill Narrows Buckwheat Botanical ACEC**				
546.	**Action:** No similar action.	**Action:** Designate 6,600 acres as the Churchill Narrows Buckwheat Botanical ACEC to protect biological resources. • Manage site commensurate with other resources for the BLM sensitive species Churchill Narrows Buckwheat. • Provide signage for	**Action:** Designate 6,600 acres as the Churchill Narrows Buckwheat Botanical ACEC to protect biological resources. • Recommend for withdrawal from locatable mineral entry. • Close to fluid mineral leasing. • Close to nonenergy mineral leasing. • Close to mineral material	**Action:** Same as Alternative B.	**Action:** Same as Alternative B plus: • Recommend for withdrawal from locatable mineral entry. • Close to fluid mineral leasing.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		ACEC boundary.	disposal. • Close to motorized and mechanized travel except for administrative purposes. • Manage site as a priority resource for the BLM sensitive species Churchill Narrows Buckwheat. • Provide signage for ACEC boundary.		
547.	**Proposed Clan Alpine Greater Sage-Grouse ACEC**				
548.	**Action:** No similar action.		**Action:** Designate 98,400 acres as the Clan Alpine Greater Sage-Grouse ACEC to protect early and late summer brood rearing habitat. • Adjust season of use for cattle grazing to avoid brood rearing season. • Close to OHV use during brood rearing season, except for administrative use. • Recommend for withdrawal from locatable mineral entry. • Manage as exclusion area for linear ROWs. • Close to fluid mineral leasing. • Close to mineral material disposal.	**Action:** No similar action.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
549.	**Carson Wandering Skipper ACEC**				
550.	**Action:** Manage the existing 330-acre ACEC in accordance with current land use planning management decisions. • Develop a site-specific, detailed ACEC activity plan and environmental assessment in coordination with the University of Nevada Reno, USFWS, and Nevada Division of Wildlife. • Restrict OHV use and mineral withdrawal to protect the site until completion of the activity plan. • Any nonfederal lands in the area, identified as habitat for the Carson wandering skipper, will be considered for acquisition and will be included in the ACEC designation.	**Action:** No similar action (see *Special Status Species, Fish and Wildlife*).	**Action:** Manage the existing 330 acres as the Carson wandering skipper ACEC to protect biological resources. • Coordinate with USFWS and NDOW to identify primary habitat and develop an activity plan for management of the ACEC. • Fence areas identified as primary habitat to exclude OHV and cattle. • Close to motorized travel. • Close to fluid and nonenergy mineral leasing. • Consider acquisition of any nonfederal lands in the area that are identified as habitat for the Carson wandering skipper. • Continue withdrawal from locatable mineral entry. • Not available for livestock grazing.	**Action:** No similar action (see *Special Status Species, Fish and Wildlife*).	
551.	**Proposed Desatoya Greater Sage-Grouse ACEC**				
552.	**Action:** No similar action.		**Action:** Designate 105,100 acres as the Desatoya Greater Sage-Grouse ACEC	**Action:** No similar action.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			to protect PPMA. • Maintain rest rotation grazing system. • Recommend for withdrawal from locatable mineral entry within 3.25 miles of active leks. • Manage as a ROW exclusion area. • Close to fluid mineral leasing. • Close to mineral material disposal.		
553.	**Proposed Dixie Valley Toad ACEC**				
554.	**Action:** No similar action.		**Action:** Designate 410 acres as the Dixie Valley Toad ACEC for the protection of biological resources. • Coordinate with NDOW, USFWS, and the Navy to identify primary habitat and develop an activity plan for management of the ACEC. • Fence site to exclude OHV and cattle. • Manage as VRM Class II. • Close to motorized travel except for administrative use. • Allow for scientific research related to the Dixie Valley Toad (*Anaxyrus boreas*).	**Action:** No similar action.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Allow access to the hot springs for sacred and religious purposes only. • Recommend for withdrawal from locatable mineral entry. • Apply NSO stipulations for fluid mineral leasing.		
555.	**Proposed Fox Peak Cultural ACEC**				
556.	**Action:** No similar action.	**Action:** Designate 48,400 acres as the Fox Peak Cultural ACEC for the protection of cultural resources. • Provide for volunteer or staff monitoring of site. • Provide for research and educational opportunities. • Establish an MOU with the Fallon Paiute-Shoshone Tribe for collaborative management of the site.	**Action:** Designate 48,400 acres as the Fox Peak Cultural ACEC for the protection of cultural resources. • Close to motorized travel except for administrative use. • Recommend for withdrawal from locatable mineral entry. • Manage as VRM Class II. • Provide for law enforcement patrols of site.	**Action:** Same as Alternative B.	**Action:** Designate 49,000 acres as the Fox Peak Cultural ACEC for the protection of cultural resources (Dynamite Cave is within the ACEC; see *Caves and Karst Section* for additional actions). • Provide for volunteer or staff monitoring of site. • Recommend for withdrawal from locatable mineral entry. • Provide for research and educational opportunities. • Partner with the Fallon Paiute-Shoshone Tribe for collaborative management of the site. • Manage as VRM Class II. • Close to fluid mineral leasing. • If the Job Peak WSA is released by Congress

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
					from wilderness consideration, manage the portion of the Job Peak WSA that is within the ACEC (43,300 acres) as part of the Fox Peak ACEC (see *Wilderness Study Areas*). • Manage the portion of Job Peak WSA that is within the ACEC(43,300 acres) as ROW exclusion. • Permit range improvement projects in consultation with tribes.
557.	**Proposed Greater Sand Mountain ACEC** (Sand Mountain SRMA and Sand Springs Desert Study Area ACEC are located within this ACEC; see *Recreation and Visitor Services, Special Recreation Management Areas - Sand Mountain SRMA* and *Special Designations, Areas of Critical Environmental Concern - Sand Springs Desert Study Area ACEC* for additional actions)				
558.	**Action:** No similar action.	**Action:** Designate 17,000 acres as the Greater Sand Mountain ACEC for the protection of cultural resources while providing for activities that support local economic development. • Restrict new ROW authorizations to existing ROW corridors. • Provide for SRP events that are compatible with management objectives on a	**Action:** Designate 17,000 acres as the Greater Sand Mountain ACEC for the protection of cultural and biological resources. • Restrict new ROW authorizations to existing ROW corridors. • Recommend for withdrawal from locatable mineral entry. • Seasonally closed to motorized and mechanized use up to 2 months per year for Native American	**Action:** No similar action.	**Action**: No similar action (see *Recreation and Visitor Services, Special Recreation Management Areas – Sand Mountain SRMA*).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		discretionary basis.	cultural/religious use (generally 2 weeks during each season). • SRPs for organized, commercial, and competitive events would not be issued.		
559.	**Proposed Grimes Point Archaeological District ACEC** (Hidden Cave and the Grimes Point Recreation Trail are located within the ACEC; see *Caves and Karst* and *National Recreation Trails* for additional actions. The Grimes Point Archaeological District ACEC is located with the Wyemaha Archaeological District, see the *Cultural Resources, Wyemaha Archaeological District*)				
560.	**Action:** No similar action.	**Action:** Designate 15,900 acres as the Grimes Point Archaeological District ACEC for the protection of cultural resources. • Provide for volunteer or staff monitoring of site. • Provide for law enforcement patrols of site. • Apply NSO stipulations for fluid mineral leasing. • Limit motorized and mechanized travel to existing roads and trails. • Provide for research and educational opportunities. • Establish MOU with Fallon Paiute-Shoshone Tribe for collaborative management of site.	**Action:** Designate 15,900 acres as the Grimes Point Archaeological District ACEC for the protection of cultural resources. • Provide for volunteer or staff monitoring of site. • Provide for law enforcement patrols of site. • Apply NSO stipulations for fluid mineral leasing. • Recommend for withdrawal from locatable mineral entry. • Close to motorized and mechanized travel except for administrative purposes. • Manage as a ROW avoidance area. • Not available for livestock grazing within a portion of the ACEC (2,100 acres).	**Action:** Same as Alternative B.	**Action:** Designate 2,100 acres as the Grimes Point Archaeological District ACEC for the protection of cultural resources. • Provide for volunteer or staff monitoring of site. • Provide for law enforcement patrols of site. • Close to fluid mineral leasing. • Recommend for withdrawal from locatable mineral entry. • Manage as a ROW avoidance area. • Install cattle exclusion fencing in areas where restricting cattle is required to protect the cultural resources. • Vegetative permits would not be authorized.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Work with local community and tribal entities to establish interpretive tours of site. • Develop and construct an interpretive center. • Manage as a ROW avoidance area.	• Vegetative permits would not be authorized. • Reclamation-administered lands relinquished back to the BLM would be incorporated into the ACEC boundary (2,000 acres).		• Reclamation-administered lands relinquished back to the BLM would be incorporated into the ACEC boundary (2,000 acres). • Provide for research and educational opportunities. • Coordinate with Fallon Paiute-Shoshone Tribe for collaborative management of site. • Work with local community and tribal entities to establish interpretive tours of site. • Develop and construct an interpretive center.
561.	**Incandescent Rocks Scenic ACEC**				
562.	**Action:** Manage the existing 1,100 acre area in accordance with current land use planning management decisions. • Protect the scenic quality of the area (Class A), plus the unique geologic features. Incandescent Rocks is within the foreground - middle ground viewing zone from the Pyramid Lake	**Action:** Manage 1,100 acres as the Incandescent Rocks Scenic ACEC for the protection of scenic values. • Manage as VRM Class II. • Allow geological research and educational opportunities. • Provide for on-site interpretation of the	**Action:** Manage 1,100 acres as the Incandescent Rocks Scenic ACEC for the protection of scenic values. • Recommend for withdrawal from locatable mineral entry. • Close to fluid mineral leasing. • Close to nonenergy mineral leasing. • Close to mineral material disposal.	**Action:** Manage 1,100 acres as the Incandescent Rocks Scenic ACEC for the protection of scenic values. • Recommend for withdrawal from locatable mineral entry. • Manage as VRM Class II. • Allow geological	**Action:** Manage 1,100 acres as the Incandescent Rocks Scenic ACEC for the protection of scenic values. • Recommend for withdrawal from locatable mineral entry. • Manage as VRM Class II. • Close to fluid mineral leasing. • Allow geological research and educational opportunities.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Highway, and contains critical raptor nesting sites. • Plans of Operation will be pursued with the mining industry to protect portions of the unit for recreation use and scenic quality. Heavy reliance will be placed upon 43 CFR 3809 to mitigate impacts. • Provide the public legal access to Incandescent Rocks by obtaining an easement across a 40 acre parcel of private land in T. 23 N., R. 20 E., Section 6, NE1/4 NE1/4. • Limit OHV use to designated roads and trails. Existing roads will be designated open to OHV use except where those roads and trails impact sensitive meadows, seeps, springs and other waters. • Manage as VRM Class II.	geological features. • Develop parking/day use area and interpretative kiosks. • Motorized competitive SRP activities and events would not be authorized. • Develop dispersed camping opportunities. • Develop motorized/nonmotorized trail system.	• Manage as VRM Class II. • Prohibit geo-caching. • Manage as day use only (no camping). • Develop nonmotorized, nonmechanized trails. • SRPs would not be authorized. • Manage as a ROW avoidance area.	research and educational opportunities. • Provide on-site interpretation of the geological features. • Develop parking/day use area and interpretative kiosks. • Develop nonmotorized, nonmechanized trails. • Develop dispersed camping opportunities. • SRPs would not be authorized for motorized commercial, competitive and organized group activities/events.	• Provide for interpretation of the geological features. • Develop nonmotorized, nonmechanized trails. • Manage existing dispersed camping opportunities. • SRPs would not be authorized for motorized commercial, competitive and organized group activities/events.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
563.	**Proposed Lassen Red Rock Scenic ACEC**				
564.	**Action:** No similar action.		**Action:** Designate 800 acres as the Lassen Red Rock Scenic ACEC to protect the scenic qualities of the landscape. • Manage as a ROW exclusion area. • Within the central 5 acres: o Close to fluid mineral leasing. o Close to nonenergy mineral leasing. o Close to mineral material disposal. o Recommend for withdrawal from locatable mineral entry. • Manage as VRM Class II. • Close to motorized travel. • Manage as day use only (prohibit camping and campfires). (also see *Recreation and Visitor Services, Extensive Recreation Management Areas – Petersen ERMA*)	**Action:** No similar action.	**Action:** No similar action (see *Recreation and Visitor Services, Extensive Recreation Management Areas - Petersen ERMA*).
565.	**Proposed Namazii Wunu Cultural ACEC**				
566.	**Action:** No similar action.	**Action:** Designate 158,300 acres as the Namazii Wunu Cultural ACEC for the protection of cultural resources.	**Action:** Designate 158,300 acres as the Namazii Wunu Cultural ACEC for the protection of cultural resources.	**Action:** No similar action (see *Tribal Interests*).	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		• Coordinate with Walker River Paiute and Yerington Paiute tribes for collaborative management of site. • Provide for research and educational opportunities. • Manage as a ROW avoidance area. • Manage as VRM Class III. • Apply CSU stipulations for fluid mineral leasing.	• Coordinate with Walker River Paiute and Yerington Paiute tribes for collaborative management of site. • Close to fluid mineral leasing. • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Recommend for withdrawal from locatable mineral entry. • Manage as a ROW exclusion area. • Vegetative permitting would not be authorized. • Not available for livestock grazing. • Prohibit prescribed fire. • Close to motorized travel except for administrative purposes. • Manage as VRM Class II. • No SRPs would be authorized.		
567.	**Pah Rah High Basin Petroglyph ACEC**				
568.	**Action**: Manage the existing 3,900 acre Pah Rah High Basin Petroglyph ACEC in accordance with current land use planning management decisions.	**Action:** Manage 5,300 as the Pah Rah High Basin Petroglyph ACEC for the protection of cultural resources. • Provide for volunteer	**Action:** Manage 5,300 acres as the Pah Rah High Basin Petroglyph ACEC with an emphasis on the protection and preservation of cultural resources.	**Action:** Same as Alternative B, except: • Develop public education/outreach program designed to increase public	**Action:** Manage 5,300 acres of as the Pah Rah High Basin Petroglyph ACEC for the protection of cultural resources. • Provide law enforcement

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Develop a site-specific, detailed ACEC activity plan and environmental assessment in coordination with the Nevada State Preservation Office, Washoe County, Washoe Tribal Council, Pyramid Lake Paiute Tribal Council, and Reno-Sparks Indian Colony. • Restrict OHV use and mineral withdrawal to protect the site until completion of the activity plan that will include explicit protective and monitoring measures. • Consider for acquisition any nonfederal lands in the area identified as important for petroglyph resources and include as part of the ACEC. • Protect the site from urban expansion, increased use of OHVs and theft of artifacts and vandalism.	or staff monitoring of site. • Provide for law enforcement patrols. • Provide for research and educational opportunities. • Coordinate with Washoe Tribal Council, Pyramid Lake Paiute Tribal Council, and Reno-Sparks Indian Colony for collaborative management of site. • Work with local community and tribal entities to establish interpretive tours of site. • Manage as a ROW avoidance area. • Continue withdrawal from locatable mineral entry.	• Provide law enforcement patrols. • No interpretation would be allowed. • Apply NSO stipulations for fluid mineral leasing. • Continue withdrawal from locatable mineral entry. • Close to motorized travel except for administrative purposes. • Manage as a ROW exclusion area. • Vegetative permitting would not be authorized. • Not available for livestock grazing.	appreciation and understanding of these cultural resources through formal presentations to school groups, civic organizations, businesses; leading tours; participation in academic forums and presentation of professional papers; or cooperative agreements for formal archaeological and historic field schools. • Apply NSO stipulations for fluid mineral leasing. • Continue withdrawal from locatable mineral entry.	patrols. • Coordinate with Washoe Tribal Council, Pyramid Lake Paiute Tribal Council, and Reno-Sparks Indian Colony for collaborative management of site. • Develop public education/outreach program designed to increase public appreciation and understanding of these cultural resources through formal presentations to school groups, civic organizations, businesses; leading tours; participation in academic forums and presentation of professional papers; or cooperative agreements for formal archaeological and historic field schools. • Close to fluid mineral leasing. • Continue withdrawal from locatable mineral entry. • Manage as a ROW exclusion area. • Vegetative permitting would not be authorized.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
569.	**Proposed Pine Nut Bi-State Sage-Grouse ACEC**				
570.	**Action:** No similar action.		**Action:** Designate 100,400 acres as the Pine Nut Bi-State Sage-Grouse ACEC to protect breeding, brood rearing, summer and winter habitat (priority habitat). • Manage season of use for livestock within this ACEC to meet sage grouse habitat objectives. • Manage newly acquired adjacent lands as part of the ACEC. • Prohibit OHV use within 3.25 miles of active leks from March 1 through May 15. • Recommend for mineral entry withdrawal within 3.25 miles of active leks. • Manage as a ROW exclusion area. • Close to fluid mineral leasing. • Close to mineral material disposal.	**Action:** No similar action (see *Special Status Species*).	
571.	**Proposed Pine Nut Mountains Williams Combleaf Botanical ACEC**				
572.	**Action:** No similar action.		**Action:** Designate 330 acres as the Pine Nut Mountains Williams Combleaf Botanical ACEC to protect the Williams Combleaf. • Provide fencing and	**Action:** Designate 330 acres as the Pine Nut Mountains Williams Combleaf Botanical ACEC to protect Williams Combleaf.	**Action:** No similar action.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			signage for ACEC boundary. • Recommend for withdrawal from locatable mineral entry. • Implement habitat restoration. • Close to motorized and mechanized travel except for administrative purposes. • Prohibit surface disturbance.	• Provide fencing and signage for ACEC boundary. • Recommend for withdrawal from locatable mineral entry. • Implement habitat restoration.	
573.	**Proposed Ruhenstroth Paleontological ACEC**				
574.	**Action:** No similar action.	**Action:** Designate 2,300 acres as the Ruhenstroth Paleontological ACEC for the protection of paleontological resources. • Allow for scientific research and studies. • Provide for interpretation and educational opportunities. • Manage as a ROW avoidance area. • Manage as VRM Class III.	**Action:** Designate 2,300 acres as the Ruhenstroth Paleontological ACEC with an emphasis on the protection and preservation of paleontological resources. • Close to fluid mineral leasing. • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Recommend for withdrawal from locatable mineral entry. • Close to motorized travel except for administrative purposes. • Prohibit removal of rocks, mineral specimens, semi-	**Action:** Designate 2,300 acres as the Ruhenstroth Paleontological ACEC for the protection of paleontological resources. • Allow for scientific research and studies. • Develop interpretation in areas with high paleontological values. • Manage as a ROW avoidance area. • Manage as VRM Class III. • Prohibit removal of rocks, mineral	**Action:** Designate 2,300 acres as the Ruhenstroth Paleontological ACEC for the protection of paleontological resources. • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Recommend for withdrawal from locatable mineral entry. • Allow for scientific research and studies. • Prohibit removal of rocks, mineral specimens, semi-precious stones, fossils, and petrified wood. • Close to fluid mineral

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			precious stones, fossils, and petrified wood. • Manage as a ROW exclusion area. • Vegetative permitting would not be authorized. • Not available for livestock grazing. • Manage as VRM Class III. • SRPs would not be authorized.	specimens, semi-precious stones, fossils, and petrified wood.	leasing. • Manage as VRM Class III. • Manage as a ROW exclusion area. • Develop interpretation in areas with high paleontological values.
575.	**Proposed Sand Springs Desert Study Area ACEC** (The study area is located within the Greater Sand Mountain ACEC and the Sand Mountain SRMA; see *Recreation and Visitor Services, Special Recreation Management Areas - Sand Mountain SRMA* and *Special Designations, Areas of Critical Environmental Concern – Greater Sand Mountain ACEC* for additional actions)				
576.	**Action:** No similar action.		**Action:** Designate the 50 acre Desert Study Area as the Sand Springs Desert Study Area ACEC for the protection of cultural resources. • Close to motorized and mechanized travel. • Manage as a ROW exclusion area. • Recommend for withdrawal from locatable mineral entry. • Vegetative collecting would not be permitted. • Manage the Sand Springs Pony Express Station and Pony Express NHT for historical interpretation. • Maintain the Sand Springs	**Action:** No similar action.	**Action:** No similar action (See *Recreation and Visitor Services, Special Recreation Management Areas – Sand Mountain SRMA*).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			Interpretive Trail.		
577.	**Proposed Steamboat Buckwheat Botanical ACEC**				
578.	**Action:** No similar action.		**Action:** Designate 80 acres as the Steamboat Buckwheat ACEC to protect biological resources for the BLM special status species - Steamboat Buckwheat. • Close to motorized and mechanized travel except for administrative purposes. • Provide fencing and signage for ACEC boundary. • Continue withdrawal from locatable mineral entry. • Close to mineral material disposal.	**Action:** No similar action.	
579.	**Steamboat Hot Springs Geyser Basin ACEC**				
580.	**Action:** Manage the existing 40 acre Steamboat Hot Springs Geyser Basin ACEC to protect the geologic values in accordance with current land use planning management decisions: • Acquire legal access to the Steamboat Hot Springs Area. • Acquire adjacent thermal features	**Action:** No similar action. Area would not be designated an ACEC as the relevance and important values no longer exist.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	occurring on private land to the north and east of the geyser terrace, through voluntary exchange or purchase. • Develop minimal recreational facilities within the area to protect the thermal features and the public and to allow for public enjoyment of the area. • Fence the 40 acre area and close it to OHV use. • Develop an ACEC Management Plan.				
581.	**Stewart Valley Paleontological ACEC**				
582.	**Action**: Manage the existing 16,000 acre Stewart Valley Paleontological ACEC in accordance with current land use planning management decisions: • Manage the Stewart Valley ACEC as a Research Natural Area. • Establish special rules and permits for scientific research and field schools. Prohibit commercial or private collection.	**Action:** Manage 15,900 acres as the Stewart Valley Paleontological ACEC for the protection of paleontological resources, allow for scientific research, and provide for interpretation of ACEC. • Re-establish the 1,420 acre mineral withdrawal. • Apply NSO stipulations for fluid mineral leasing. • Manage as VRM Class II.	**Action:** Manage 15,900 acres as the Stewart Valley Paleontological ACEC for the protection of paleontological resources. • Revise and update the existing site management plan. • Prohibit removal of rocks, mineral specimens, semi-precious stones, fossils, and petrified wood. • Re-establish the 1,420 acre mineral withdrawal. • Close to fluid mineral	**Action:** No similar action.	**Action:** Manage 15,900 acres as the Stewart Valley Paleontological ACEC for the protection of paleontological resources, allow for scientific research, and provide for interpretation of ACEC. • Revise and update the existing site management plan. • Prohibit removal of rocks, mineral specimens, semi-precious stones, fossils, and petrified wood.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Limit OHV use in the Stewart Valley ACEC to designated roads, trails and washes.	• Manage as a ROW exclusion area. • Develop self-guided interpretive signage and trail system. • Pursue development of docent led interpretive programs through Mineral County or educational institutions. • Provide for research and educational opportunities.	leasing. • Manage as VRM Class II. • Provide for research and educational opportunities.		• Recommend for withdrawal 1,420 acres from locatable mineral entry. • Close to fluid mineral leasing. • Manage as VRM Class II. • Manage as a ROW exclusion area. • Provide for research and educational opportunities.
583.	**Proposed Tagim aša Cultural ACEC**				
584.	**Action:** No similar action.	**Action:** Designate 81,800 acres as the Tagim aša Cultural ACEC for the protection of cultural resources. • Provide for research and educational opportunities. • Coordinate with Washoe Tribe for collaborative management of site. • Manage as a ROW avoidance area. • Manage as VRM Class III. • Apply CSU stipulations for fluid mineral leasing.	**Action:** Designate 81,800 acres as the Tagim aša Cultural ACEC for the protection of cultural resources. • Recommend for withdrawal from locatable mineral entry. • Close to motorized travel except for administrative purposes. • Manage as a ROW exclusion area. • Vegetative permitting would not be allowed. • Not available for livestock grazing. • Manage as VRM Class II. • Apply NSO stipulations for fluid mineral leasing.	**Action:** Designate 81,800 acres as the Tagim aša Cultural ACEC for the protection of cultural resources. • Provide for research and educational opportunities. • Coordinate with the Washoe Tribe for collaborative management of site. • Manage as a ROW avoidance area. • Manage as VRM Class III. • Apply CSU stipulations for fluid mineral leasing.	**Action:** No similar action (see *Tribal Interests*).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• SRPs would not be authorized.	• Develop public education/outreach program designed to increase public appreciation and understanding of these cultural resources and tribal heritage.	
585.	**Proposed Virginia City National Landmark Historic District ACEC**				
586.	**Action:** No similar action.	**Action:** Designate 14,700 acres as the Virginia City National Landmark Historic District ACEC for the protection of cultural resources. • Allow for scientific research and studies. • Provide for interpretation and educational opportunities. • Manage as VRM Class IV.	**Action:** Designate 14,700 acres as the Virginia City National Landmark Historic District ACEC for the protection of cultural resources. • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Manage as a ROW avoidance area. • Manage as a ROW exclusion area for wind development. • Vegetative permitting would not be authorized. • Not available for livestock grazing. • Manage as VRM Class II. • Apply NSO stipulations for fluid mineral leasing. • SRPs would not be authorized.	**Action:** Designate 14,700 acres as the Virginia City National Landmark Historic District ACEC for the protection of cultural resources. • Allow for scientific research and studies. • Manage as VRM Class III. • Partner with community groups and local government to support preservation and interpretation of the historic resources.	**Action:** No similar action (see *Cultural Resources*).

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Partner with community groups and local government to support preservation and interpretation of the historic resources.		
587.	**Proposed Virginia Mountains Greater Sage-Grouse ACEC**				
588.	**Action:** No similar action.		**Action:** Designate 109,200 acres as the Virginia Mountains Greater Sage-Grouse ACEC to protect PPMA. • Manage season of use for livestock grazing to meet sage grouse habitat objectives. • Manage newly acquired adjacent lands as part of the ACEC. • Prohibit permitted OHV use within 3.25 miles of active leks from March 1 through May 15. • Recommend for withdrawal from locatable mineral entry within 3.25 miles of active leks. • Manage as a ROW exclusion area. • Close to fluid mineral leasing. • Close to mineral material disposal.	**Action:** No similar action(see *Special Status Species*).	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
589.	**Virginia Range Williams Combleaf Botanical ACEC**				
590.	**Action:** Manage the existing 470 acre Virginia Range Williams Combleaf Habitat ACEC in accordance with current land use planning management decisions: • The existing Conservation Agreement (March 24, 1997) between the BLM Nevada State Office and USFWS for conservation actions for the habitat area will continue to be used. Actions may be revised to include other land management agencies, address current conditions and additional populations. • OHV limitations and mineral withdrawal will provide additional protection for this habitat area and an activity plan is not needed. • Consider for acquisition any nonfederal lands in the area identified as habitat for the Virginia	**Action:** Manage 470 acres as the Virginia Range Williams Combleaf Botanical ACEC to protect biological resources for Williams Combleaf. • Provide fencing and signage for ACEC boundary. • Continue withdrawal from locatable mineral entry. • Close to fluid mineral leasing. • Implement habitat restoration.	**Action:** Manage 470 acres as the Virginia Range Williams Combleaf Botanical ACEC to protect biological resources for Williams Combleaf. • Close to motorized and mechanized travel except for administrative purposes. • Provide fencing and signage for ACEC boundary. • Close to fluid mineral leasing. • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Continue withdrawal from locatable mineral entry. • Implement habitat restoration.	**Action:** Manage 470 acres as the Virginia Range Williams Combleaf Botanical ACEC to protect biological resources for Williams Combleaf. • Provide fencing and signage for ACEC boundary. • Close to fluid mineral leasing. • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Continue withdrawal from locatable mineral entry. • Implement habitat restoration.	**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	Range Williams Combleaf and include as part of the ACEC.				
591.	**Back Country Byways**				
592.	**GOAL:** Enhance existing and develop new back country byways that offer opportunities to provide the public with interpretation and environmental education, wildlife viewing and an understanding of the historical and present uses of the lands unique to Nevada.				
593.	**Objective:** No similar objective.	**Objective:** In partnership with state and local agencies, develop new or modify existing back county byways to allow for public exploration of Nevada's unique history, culture and landscapes.			
594.	**Fort Churchill Back Country Byway**				
595.	**Objective:** Continue managing the 67 mile Type I and Type II Fort Churchill to Wellington BLM Back Country Byway (Figure 2-99).	**Objective:** Designate the Fort Churchill Back Country Byway only from Dayton to Wellington emphasizing Nevada history and culture (Figure 2-100).	**Objective:** Rescind the Back Country Byway designation of the Fort Churchill to Wellington Byway from the BLM National Byway system (Figure 2-101).	**Objective:** No similar objective.	**Objective:** Same as Alternative B and emphasize multiple use and provide for mitigation of user conflicts and resource damage.
596.	**Action:** No similar action.	**Action:** • Review and upgrade existing signage. • Review and correct classification of byway type.	**Action:** • Remove signage.	**Action:** No similar action.	**Action:** • Review and upgrade existing signage. • Review and correct classification of byway type. • Coordinate with partners to maintain and enhance the byway.
597.	**Marietta Back Country Byway**				
598.	**Objective:** No similar objective.	**Objective:** Designate the Marietta Back Country Byway route that emphasizes the Candelaria mining district, Teals Marsh and the Marietta Wild Burro Range to provide for exploration of	**Objective:** Designate the Marietta Back Country Byway route that emphasizes the Marietta Wild Burro Range and excludes the historic mining districts to protect historical resources (Figure 2-101).	**Objective:** No similar objective.	**Objective:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Nevada history and culture (Figure 2-100).			
599.	**Action:** No similar action.	**Action**: • Add completed route to BLM road maintained system. • Partner with State of Nevada, Mineral County, and special interest groups to provide for road, interpretive signage, and kiosk installation and maintenance. • Work with BLM social media and Mineral County tourism board to promote byway. • Provide for interpretation of the historical mining features of Candelaria and Marietta Mining Districts along with the Marietta Wild Burro Range and Teels Marsh. • Develop interpretive brochures and materials that would be made available on-line and in local communities.	**Action:** • Add completed route to BLM road maintained system. • Partner with State of Nevada, Mineral County, and special interest groups to provide for road, interpretive signage, and kiosk installation and maintenance. • Work with BLM social media and Mineral County tourism board to promote byway. • Sensitive archaeological and historical features will not be identified or interpreted. • Interpretation will focus on natural and scenic values of Teels Marsh and the Marietta Wild Burro Range.	**Action:** No similar action.	**Action**: Same as Alternative B.
600.	**New Pass to Hawthorne Back Country Byway**				
601.	**Objective:** No similar objective.	**Objective:** Designate, promote and highlight the	**Objective:** Designate, promote and highlight the	**Objective:** No similar objective.	**Objective:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		historic values of Nevada's western heritage including mining, livestock ranching, and the unique Basin and Range geomorphology by providing an auto tour route (Figure 2-100).	natural and scenic values of Nevada's western heritage including mining, livestock ranching, and the unique Basin and Range geomorphology by providing an auto tour route that provides protection of historical or cultural features through selective information (Figure 2-101).		
602.	**Action**: No similar action.	**Action:** • Add completed route to BLM road maintained system. • Partner with State of Nevada, Churchill, Nye and Mineral Counties, the Hawthorne Army Depot and special interest groups to provide for road interpretive signage, and kiosk installation and maintenance. • Work with BLM social media and local tourism boards to promote byway. • Develop interpretive brochures and materials that will be made available on-line and in local communities. • Interpret for historical	**Action**: • Add completed route to BLM road maintained system. • Partner with State of Nevada, Churchill, Nye and Mineral Counties, the Hawthorne Army Depot and special interest groups to provide for road interpretive signage, and kiosk installation and maintenance. • Work with BLM social media and local tourism boards to promote byway. • Develop interpretive brochures and materials that will be made available on-line and in local communities. • Interpret the natural and scenic values of Lodi	**Action:** No similar action.	**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		and archaeological features along the route with markers and kiosks.	Valley and the Gillis Mountain Range.		
603.	**National Historic Trails**				
604.	**GOAL:** Preserve and protect the historical trail remains, associated historic sites and historical setting of the Pony Express and California NHTs for public use and enjoyment.				
605.	**Actions common to all:** • In cooperation with the Oregon-California Trails Association and other partners, identify, record, and evaluate NHT segments and sites for NRHP eligibility. • Scientific and historical studies of cultural landscapes, sites, historic trails, and other resources, including excavation, would be allowed by qualified researchers on a case-by-case basis within the Pony Express and California Trail corridors with written authorization. • Establish collaborative partnerships with the National Park Service, National Trails Centers, partner groups, interest groups, interested individuals, local communities, and other stakeholders to implement Pony Express and California Trail related projects. • Establish National Trail management corridors for the Pony Express and California National Historic Trails. • Maintain a list of trails that have been authorized by Congress that are under study and trails that have undergone the study process and are either recommended as suitable or not suitable.				
606.	**Objective:** Ensure the protection of trail resources, their interpretation, and their appropriate public use. Maintain the nationally important historic sites in public ownership.	**Objective:** Manage the NHTs to preserve the historic and scenic values and the cultural landscapes and viewsheds.			
607.	**Action**: Evaluate individual segments of National Historic Trails for inclusion into the NRHP based on integrity in a mixture of location, design, setting, materials, workmanship, feeling, or association.	**Action**: Evaluate high-potential sites and high-potential segments of the NHTs for inclusion into the NRHP based on resources qualities values and associated settings along with the primary uses identified.	**Action**: Evaluate trail related sites and segments of National Historic Trails for inclusion into the NRHP based on resources qualities values and associated settings along with the primary uses identified.		**Action:** Same as Alternative B.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
608.	**Action**: No specific management has been identified in the Consolidated RMP and subsequent amendments for the Congressionally designated Pony Express and California NHTs. (Figure 2-99)	**Action:** Manage the NHTs as follows (Figure 2-100): • Manage as VRM Class II (0.25-mile buffer on either side of centerline). • Manage as a ROW avoidance area (0.25-mile buffer on either side of centerline). • Mitigate direct and indirect adverse effects on eligible, unevaluated, or high-potential trail segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. • New audible (e.g., noise) and atmospheric (e.g., smoke and dust) effects will not exceed current levels along the NHTs where feasible.	**Action:** Manage the NHTs as follows (Figure 2-101): • Manage as VRM Class II (2.5-mile buffer on either side of centerline). • Manage as a ROW avoidance area (2.5-mile buffer on either side of centerline). • Mitigate direct and indirect adverse effects on eligible, unevaluated, or high-potential trail segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. • New audible (e.g., noise) and atmospheric (e.g., smoke and dust) effects would not exceed current levels along the NHTs. The BLM would seek opportunities to reduce audible noise levels.	**Action:** Same as Alternative B. (Figure 2-102)	**Action:** Manage the NHTs as follows (Figure 2-103): • Manage as VRM Class II (1-mile buffer on either side of centerline). • Manage as a ROW avoidance area (1-mile buffer on either side of centerline). • Mitigate direct and indirect adverse effects on eligible, unevaluated, or high-potential trail segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. • New audible (e.g., noise) and atmospheric (e.g., smoke and dust) effects would not exceed current levels along the NHTs where feasible.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
609.	**Action**: No similar action.	**Action:** Open the NHT corridor to mineral materials sales and disposals as long as the actions are compatible with VRM classification and the historic values.	**Action:** Close the NHT corridor to nonenergy mineral leasing, mineral material disposals, and fluid mineral leasing within a 2.5-mile buffer on either side of centerline.	**Action:** Same as Alternative B.	**Action:** Close high-potential and eligible sites and segments along the NHT corridor to leasing (fluid and nonenergy) and mineral material disposals within a 1-mile buffer on either side of centerline. The remainder of the NHT corridor would be open to such leasing and development as long as the actions are compatible with the historic values.
610.	**Action**: Provide for public interpretation of the Pony Express and California Historic Trail.	**Action:** • Develop and enhance significant segments and sites by installing directional signs to trail segments from main roads, trail markers at trail traces, and interpretative signs. • Pursue legal access for public visitation to trail segments.	**Action:** • Pursue legal access for the protection of the trail segments. • Continue to support stewardship programs to monitor sites and generally assist with management.	**Action:** • Develop and enhance significant segments and sites by installing directional signs to trail segments from main roads, trail markers at trail traces, and interpretative signs. • Pursue legal access for public visitation to trail segments. • Continue to support stewardship programs and partnerships to lead trail tours, monitor sites, and generally assist with management.	
611.	**Action:** No similar action.	**Action**: • Provide recreation opportunities consistent with historic value of the NHTs. • Develop and place facilities outside the trail corridor when feasible to protect	**Action**: • Provide recreation opportunities consistent with historic value of the NHTs. • Develop and place facilities outside the trail corridor when feasible to protect resource values, provide for visitor safety, and support selected use opportunities. • Develop facilities within the trail corridor only when needed to protect trail integrity and resources, or to establish an NHT recreation retracement route.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		resource values, provide for visitor safety, and support selected use opportunities.			
612.	**Action**: Maintain the following nationally important historic sites in public ownership: • Pony Express • California Emigrant Route	**Action**: Retain or cooperatively manage BLM-administered lands to assure long-term use, protection, and access to areas along the NHTs. Manage NHTs on withdrawn lands that revert back to BLM-administration consistent with NHT on BLM-administered lands.	**Action**: Retain BLM-administered lands and acquire available state and private lands and easements to assure long-term use, protection, and access to areas along the NHTs. Manage NHTs on withdrawn lands that revert back to BLM-administration consistent with the historic value.	**Action:** Same as Alternative B.	**Action:** Same as Alternative C.
613.	**California National Historic Trail**				
614.	High-potential sites: • Fernley Ruts (also known as Fernley Deep Sand Swales) High potential route segments: • Mickey Canyon • Humboldt Sink to Dayton (Carson Route)				
615.	**Action**: Manage Fernley Ruts under a historic preservation and access easement.	**Action:** Same as Alternative A.	**Action:** Same as Alternative A plus: • Enhance protection measures (e.g., fencing and signage).	**Action:** Same as Alternative A.	**Action:** Same as Alternative C.
616.	**Action:** No similar action.	**Action:** Manage intact Mickey Canyon and Humboldt Sink to Dayton (Carson Route) NHT segments to protect their historic values. Mitigate	**Action:** Manage Intact Mickey Canyon and Humboldt Sink to Dayton (Carson Route) NHT segments to protect their historic values. Do not allow	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		actions that would adversely affect the NHT through avoidance, project redesign, data collection, interpretation, public education, or other means.	actions that would adversely affect the NHT.		
617.	**Pony Express National Historic Trail**				
618.	High potential historic sites: • Cold Springs Station/East Gate Station • Sand Springs Station				
619.	**Action:** Designate appropriate sites for public use and provide access and information. Promote visitation and interpretation of the Sand Springs and Cold Springs Pony Express Stations.	**Action**: No similar action(see *Cultural Resources*).			
620.	**Action:** Maintain current self-guided interpretive trails and informational signs at Sand Springs and Cold Springs Pony Express Stations.	**Action:** No similar action (see *Cultural Resources*).	**Action:** No similar action (see *Special Designations, Areas of Critical Environmental Concern – Sand Springs Desert Study Area ACEC* and *Cultural Resources*).	**Action:** No similar action.	**Action:** No similar action (see *Recreation and Visitor Service, Special Recreation Management Areas – Sand Mountain SRMA* and *Cultural Resources*).
621.	**Action:** Scientifically excavate, stabilize, and develop the Sand Springs and Cold Springs Pony Express Stations as public interpretive sites.	**Action:** No similar action.			
622.	**National Recreation Trails**				
623.	**GOAL:** Provide continued protection and support for national trails, to preserve, improve, and restore the character to be consistent with guidelines of the National Recreation Trails System Act.				
624.	**Objective:** No objective identified.	**Objective:** Manage the 0.75-mile Grimes Point National Recreation Trail consistently with secretarial designation.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
625.	**Grimes Point National Recreation Trail** (see *Special Designations, Areas of Critical Environmental Concern - Grimes Point Archaeological District ACEC*)				
626.	**Action:** Grimes Point Recreation Trail was designated with no specific management identified.	**Action:** Manage trail with the following management actions: • Develop a management plan to include maintenance, interpretation, and monitoring of petroglyphs. • Provide for a minimum of one annual trail inspection to document the integrity of the petroglyph rock art. • Provide brochures and maintain interpretive trail markers. • Continue site steward monitoring with the Nevada Rock Art Foundation and other similar groups or qualified individuals. • Continue to manage under a memorandum of agreement with the Reclamation until such time as the land is relinquished to the BLM. • Coordinate with the Fallon Paiute Shoshone Tribe for the management of the trail.			
627.	**Wilderness Study Areas**				
628.	**GOAL**: Continue to manage WSAs to prevent impairment of wilderness values; protect naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation opportunities; and maintain suitability for future designation as wilderness until such time that congress either designates the WSAs as wilderness or releases them from further consideration.				
629.	**Action common to all:** • Areas that are released from wilderness consideration by Congress will be re-inventoried for wilderness characteristics. Lands found to possess wilderness characteristics, such as apparent naturalness and outstanding opportunities for solitude or primitive and unconfined recreation, will be managed for wilderness values commensurate with multiple uses while applying management restrictions to reduce impacts on the identified wilderness characteristics. Lands that do not possess wilderness characteristics will be managed consistently with adjacent lands. • No surface disturbance, permanent new development or ROWs are allowed.				
630.	**Objective:** Manage and protect WSAs to preserve wilderness characteristics so as not to impair the suitability of such areas for designation as wilderness by Congress (Figure 2-104).				
631.	**Action:** In accordance with Interim Management Policy for Lands Under Wilderness Review (IMP; BLM 1995), WSAs are managed as follows (nondiscretionary): • Limit motorized travel to existing ways and trails. • Close to fluid mineral	**Action**: In accordance with Management of Wilderness Study Areas M-6330, WSAs are managed as follows (nondiscretionary): • Limit motorized and mechanical travel to designated primitive routes. • Close to fluid mineral	**Action:** Same as Alternative B except: • Close to motorized and mechanized travel.	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	leasing. • Manage as VRM Class I. • Close to nonenergy solid mineral leasing. • Close to mineral material disposal. • New authorizations must meet the nonimpairment criteria.	leasing. • Manage as VRM Class I. • Close to nonenergy solid mineral leasing. • Close to mineral material disposal. • New authorizations must meet the nonimpairment criteria.			
632.	**Action:** Manage the following WSAs: • Augusta Mountains (46,400 acres in CCD. This WSA is managed by the Humboldt BLM Field Office. See Winnemucca RMP) • Burbank Canyons (12,700 acres) • Carson Iceberg (500 acres) • Clan Alpine (195,700 acres) • Desatoya Mountains (42,200 acres) • Gabbs Valley Range (80,500 acres) • Job Peak (89,400 acres) • Slinkard (2,400 acres) • Stillwater Range (94,200 acres)	**Action:** If released from wilderness consideration by Congress, manage for the highest resource values as follows: Burbank Canyons • Manage as VRM Class II. Carson Iceberg • Manage as VRM Class II. Clan Alpine • Manage as VRM Class III. Desatoya Mountains • Manage as VRM Class II. Gabbs Valley Range • Manage as VRM Class II. Job Peak • Manage as VRM Class II.	**Action:** If released from wilderness consideration by Congress, same as Alternative B except manage the following as lands with wilderness characteristics: Carson Iceberg • Manage as VRM Class I. • Close to motorized travel except for administrative purposes. Clan Alpine • Manage as VRM Class II. Desatoya Mountains • Manage as VRM Class II. Common to all above: • Do not authorize motorized SRPs. • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Close to fluid mineral leasing.	**Action:** If released from wilderness consideration by Congress, same as Alternative B except manage the following as lands with wilderness characteristics: Carson Iceberg • Manage as VRM Class II. • Close to fluid mineral leasing. • Manage as a ROW avoidance area. • Restrict new or expanded range improvements. • Develop mitigation measures to retain outstanding opportunities for solitude or primitive and unconfined recreation.	**Action:** If released from wilderness consideration by Congress, same as Alternative B except manage the following as lands with wilderness characteristics: Carson Iceberg • Manage as VRM Class I. Clan Alpine • Manage as VRM Class II. Desatoya Mountains • Manage as VRM Class II. Common to all above: • Close to fluid mineral leasing. • Manage as a ROW avoidance area. • Restrict new or expanded range improvements. • Develop mitigation measures to retain outstanding opportunities

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		Slinkard • Manage as VRM Class II. Stillwater Range • Manage as VRM Class II.	• Manage as a ROW exclusion area. • Recommend for withdrawal from locatable mineral entry. • Prohibit new or expanded range improvements. • Develop mitigation measures to retain outstanding opportunities for solitude or primitive and unconfined recreation.		for solitude or primitive and unconfined recreation. Portion of Job Peak (43,300 acres) that overlaps with the Fox Peak Cultural ACEC will continue be managed as part of the ACEC. Should any of the management prescriptions of the ACEC be more restrictive, they will take precedence (see *Special Designations, Areas of Critical Environmental Concern* – Fox Peak ACEC).
633.	**Wild and Scenic Rivers**				
634.	**GOALS**: Protect National Wild and Scenic River System (NWSRS)-eligible river segments in accordance with the Wild and Scenic Rivers Act and BLM guidance (BLM Manual 6400 [BLM 2012o]).				
635.	**Objectives:** River segments eligible for NWSRS designation shall be accorded protective management, as necessary, to ensure that the qualities upon which eligibility is based are not degraded. A river's outstanding remarkable values shall be afforded adequate protection, subject to valid existing rights. Until the eligibility determination is superseded, management activities and authorized	**Objective:** No similar objective.	**Objectives:** Maintain the free-flowing character, preserve or enhance the outstandingly remarkable values, and allow no activities within the river corridor that would alter the tentative classification of those river segments determined to be suitable for congressional designation as part of the NWSRS.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	uses shall not be allowed to adversely affect either eligibility or the tentative classification (43 CFR 8351).				
636.	**Action:** Identify 3 segments of the East Fork of the Carson River as eligible for inclusion in the NWSRS. Manage 3 segments of the East Fork of the Carson River to protect the outstanding remarkable values, free-flowing nature, and water quality (Figure 2-105).	**Action:** Determine that eligible segments are not suitable for inclusion in the NWSRS and release them from interim management protection afforded to eligible segments. • East Fork Carson River Segment 1 • East Fork Carson River Segment 2 • East Fork Carson River Segment 3	**Action:** Determine the following 3 river segments as suitable for inclusion in the NWSRS (Figure 2-106): • East Fork Carson River Segment 1 • East Fork Carson River Segment 2 • East Fork Carson River Segment 3 Coordinate with Humboldt-Toiyabe National Forest on classification designation and management actions.		
637.	**East Fork Carson River Segment 1**				
638.	**Action:** The East Fork Carson River Segment 1 would be managed to protect the outstanding remarkable values (Recreation, Scenic, and Fish), free flowing nature and tentative classification of Wild.	**Action:** No similar action.	**Action:** Manage the East Fork Carson River Segment 1 as follows (within 0.25 mile of either side of the ordinary high water mark): • Tentative Classification: Wild. • Manage as VRM Class 1. • Manage as a ROW exclusion area. • Apply NSO stipulations for fluid mineral leasing. • Close to mineral material disposal. • Close to nonenergy mineral leasing. • Recommend for withdrawal from locatable mineral entry. • Prohibit surface-disturbing activities. • Collaborate with the Forest Service on the issuance of recreation permits.		
639.	**East Fork Carson River Segment 2**				
640.	**Action:** The East Fork Carson River Segment 2 would be managed to	**Action:** No similar action.	**Action:** Manage the East Fork Carson River Segment 2 as follows (within 0.25 mile	**Action:** Same as Alternative C except: • Manage as VRM Class	**Action:** Same as Alternative C.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	protect the outstanding remarkable values (Recreation, Scenic, Fish, and Geologic), free flowing nature and tentative classification of Recreational.		of either side of the ordinary high water mark): • Tentative Classification: Recreational. • Manage as VRM Class II. • Manage as a ROW avoidance area. • Provide access to the river segment. • Collaborate with the Forest Service on the issuance of recreation permits.	III. • Improve Hangman's Bridge river access site.	
641.	**East Fork Carson River Segment 3**				
642.	**Action:** The East Fork Carson River Segment 3 would be managed to protect the outstanding remarkable values (Recreation, Scenic, Fish, and Geologic), free flowing nature and tentative classification of Scenic.	**Action:** No similar action.	**Action:** Manage the East Fork Carson River Segment 3 as follows (within 0.25 mile of either side of the ordinary high water mark): • Tentative Classification: Scenic. • Manage as VRM Class II. • Manage as a ROW avoidance area. • Collaborate with the Forest Service on the issuance of recreation permits.	**Action:** Same as Alternative C except: • Tentative Classification: Recreational.	**Action:** Same as Alternative C.
643.	**Back Country Wildlife Conservation Areas**				
644.	**GOAL**: Preserve and safeguard high value fish and wildlife habitat and hunting and fishing on lands with back country character.				
645.	**Objective:** No similar objective.		**Objective:** Use a balanced, multiple-use conservation approach to safeguard fish and wildlife habitat, existing	**Objective:** No similar objective.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			dispersed nonmotorized recreation opportunities, maintain existing authorized access, and maintain the surface values of backcountry areas.		
646.	**Action:** No similar action.		**Action:** Manage 817,800 acres as Backcountry Wildlife Conservation Areas to provide for high quality fish and wildlife habitat and/or significant recreational opportunities, such as hunting and fishing (Figure 2-107): • Gillis West (42,500 acres) • Gillis East (63,900 acres) • Gabbs Valley Range North (50,800 acres) • Gabbs Valley Range South (154,400 acres) • Pilot Mountains (93,700 acres) • Excelsiors (125,800 acres) • Fairview (131,400 acres) • Sand Springs (53,700 acres) • Clan Alpine (101,600 acres) Management actions include: • Manage as ROW exclusion except within existing ROWs.	**Action:** No similar action.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
			• Restrict livestock grazing to prescriptive grazing, to be authorized on an annual basis, and consistent with BLM-approved sage-grouse management guidance. • Close to mineral material disposal. • Close to nonenergy mineral leasing. • Apply NSO stipulation to fluid mineral leasing. • Manage for the protection of PPMA and PGMA sage-grouse habitat in cooperation with USFWS and NDOW. • Implement fire-management strategies designed to mimic natural fire regime and enhance fish and wildlife habitat. • Consult with NDOW and USFWS to evaluate the impact of habitat management on sage-grouse, Lahontan cutthroat trout, bighorn sheep, mule deer, pronghorn, elk, and other species' habitat population trends.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
647.	**Tribal Interests**				
648.	**GOAL**: Ensure tribal issues and concerns are given consideration and continue the ongoing working relationship with Native American tribes.				
649.	**Objective:** No similar objective.	**Objective:** Protect known Native American burials.			
650.	**Action:** No similar action.	**Action:** • Implement Native American Graves Protection and Repatriation Act and consult with appropriate tribes when intentional excavation of Native American human remains is necessary or when inadvertent discovery occurs of Native American human remains. • Close the area within a 300-foot radius of a known human burial to: o Mineral material disposal o Fluid mineral leasing o Nonenergy solid mineral leasing • Authorize SRPs within 100 feet of known burial location on a case-by-case basis. • Avoidance of known or discovered human	**Action:** • Implement Native American Graves Protection and Repatriation Act and consult with appropriate tribes when intentional excavation of Native American human remains is necessary or when inadvertent discovery occurs of Native American human remains. • Close the area within a 1-mile radius of a known human burial to: o Mineral material disposal o Fluid mineral leasing o Nonenergy solid mineral leasing • Manage as a ROW avoidance area within a 1-mile radius of the site. • Do not authorize SRPs within 500 feet of a known burial location. • Subject to compliance with Native American Graves Protection and Repatriation Act,	**Action:** • Implement Native American Graves Protection and Repatriation Act and consult with appropriate tribes when intentional excavation of Native American human remains is necessary or when inadvertent discovery occurs of Native American human remains. • Close the area within a 0.25-mile radius of a known human burial over to: o Mineral material disposal o Fluid mineral leasing o Nonenergy solid mineral leasing • Close known human burial areas over 50 years old to surface-disturbing activities. • Authorize SRPs within 200 feet of	**Action:** Same as Alternative B with the following additions: • Coordinate with local governments to protect known burial locations. • Manage as ROW avoidance area within a 1-mile radius of the site.

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		remains is the preferred option, subject to management requirements and results of any tribal consultation per Native American Graves Protection and Repatriation Act, as appropriate. Where avoidance is not feasible, archaeological data recovery may be implemented in accordance with appropriate laws.	archaeological excavation (including data recovery) may be allowed to provide for appropriate research questions and/or management requirements.	known burial location on a case-by-case basis. • Coordinate with local governments to protect known burial locations. • Avoidance of known or discovered human remains is the preferred option, subject to management requirements and results of any tribal consultation per Native American Graves Protection and Repatriation Act, as appropriate. Where avoidance is not feasible, archaeological data recovery may be implemented in accordance with appropriate laws.	
651.	**Action:** The Navy and BLM will coordinate with Native American tribes and individuals in accordance with BLM policy.	**Action:** No similar action.			
652.	**Objective:** No similar objective.	**Objective:** Demonstrate a legally adequate good faith effort to consult and identify resource types or places of cultural significance with federally recognized tribes.			

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
653.	**Action:** No similar action.	**Action:** • Coordinate with federally recognized tribes on an ongoing basis relating to any resource values or issues of tribal concern and invite tribes to engage in periodic meetings to express issues and concerns. • Conduct consultation on a formal government-to-government basis. Call and/or email tribal representatives in emergencies or where the need for notification is urgent. • Maximize opportunities for cooperation with tribal governments for managing cultural resources and public education.			
654.	**Action:** No similar action.		**Action:** Develop a cooperative management agreement with Native American tribes to manage sensitive sites or areas.		
655.	**Objective:** No similar objective.	**Objective:** Protect cultural properties, places, or objects important to the tribes to the degree possible under law, regulations, and guidance. Confidential information about tribal practices and beliefs, the location with which they are associated, and sacred sites would be kept confidential and protected from public disclosure to the extent allowed by law.			
656.	**Action:** No similar action.		**Action:** Inventory potentially sensitive cultural places identified during Native American consultation independent of specific land-use actions.	**Action:** Same as Alternative C with the primary focus being the urban interface area.	**Action:** Inventory potentially sensitive cultural places identified during Native American consultation under Section 110 of the National Historic Preservation Act.
657.	**Action:** No similar action.	**Action:** Identify places of importance through the consultation process.	**Action:** Identify places of importance through the consultation process. Evaluate areas that qualify as Traditional Cultural Properties and nominate NRHP-eligible properties.	**Action:** Identify places of importance through the consultation process. Nominate areas that qualify as Traditional Cultural Properties and conduct evaluations for the NRHP only within the urban interface area.	**Action:** Same as Alternative C.
658.	**Action:** No similar action.	**Action:** Avoid impacts on sacred sites regardless of eligibility and on Traditional Cultural Properties considered	**Action:** Avoid or mitigate adverse effects of federal actions on known tribal concerns.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		eligible for or listed on the NRHP. If avoidance is not possible, develop and implement mitigation measures in consultation with the tribes.			
659.	**Public Health and Safety**				
660.	**GOAL:** Provide for public health and safety, especially in areas of concern, in development sites, and areas of concentrated use.				
661.	**Actions common to all:** • Identify naturally occurring or human-made public safety hazards and take appropriate action to protect public health and safety. • Investigate reported hazardous materials, solid wastes sites, and illegal dumpsites. Plan necessary containment, clean-up, and restoration of sites on a case-by-case basis as soon as possible after they are reported. • Evaluate all BLM actions (including land use authorizations, mining and milling activities, and unauthorized land uses) for their potential to prevent production or dumping of hazardous or solid wastes. Identify appropriate mitigation for activities associated with all types of hazardous materials, waste management and all types of fire management. • Provide public safety information through signing and kiosk information and brochures at the Sand Mountain Recreation Area in regards to abandoned mines that could be encountered at the area. • Implement a total public closure during the Reno Air Races (generally 4 days in mid-June and 7 days in early- to mid-September, exact dates depend on event schedule). • Work with applicable federal, tribal, state, and local law enforcement to develop MOUs for joint law enforcement responsibility. • Set priorities for remediation of physical safety hazards using the following criteria: o Where a death or major injury has occurred o Where site is on or in immediate proximity to a recreation site or a known high use area o Where a formal risk assessment has determined a high or extremely high-risk level o The site is eligible for listing in the Abandoned Mines & Site Cleanup Module. • Identify the probable scope of needed containment and clean-up efforts and rank sites according to relative priority for treatment planning and action. Priorities to consider include: o High levels of heavy metals in waste. o Ground- or surface-water quality degradation o Ongoing, active resource damage. o Safety hazards near established recreation areas or other areas frequented by users o Other site-specific factors • Use BLM personnel or hire contractors to remove accumulations of hazardous materials or solid waste from BLM-administered lands, including the removal, disarming, or neutralizing of explosives.				

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	• Undertake education, enforcement, and administrative fire-prevention measures to reduce human-caused fires. • Install and maintain the fencing and signage of dangerous hot spring pools with temperatures exceeding 120 degrees Fahrenheit. • Restrict the use of pesticides.				
662.	**Objective:** No similar objective.	**Objective:** Take appropriate measures to protect the public from known unexploded ordnance locations on BLM-administered lands, such as signing, fencing, removal, and remediation.			
663.	**Action:** No similar action.	**Action:** In cooperation with the US Department of Defense, identify the locations on BLM-administered lands that are potential areas of unexploded ordnances concern. Investigate, inventory and record the presence of unexploded ordnances on BLM-administered lands.			
664.	**Objective:** No similar objective.	**Objective:** Manage the Dixie Valley area to provide for safe military activities (Figure 2-108).			
665.	**Action:** No similar action.	**Action:** • Manage as a ROW avoidance area. • Where feasible, consolidate and collocate ROWs within existing disturbance area (including communication sites). • Close to nonenergy mineral leasing. • Close to mineral material disposal. • Recommend for withdrawal from locatable mineral entry. • Require BMPs and design features to minimize impacts on military flight operations.	**Action:** No similar action.	**Action:** Same as Alternative B.	

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		The BLM will consult with the Department of Defense on the following: • Activities that may have: o Visual components (e.g. steam, lighting, and facility heights). o Vertical obstruction components (e.g. towers and structures). o Ground obstruction components (e.g. photovoltaic solar arrays, and above-surface piping). • Frequency spectrum components (e.g. facilities with electromagnetic spectrum emissions).			
666.	**Objective:** No similar objective.	**Objective:** Emphasize public education to promote safety for users.			
667.	**Action:** No similar action.	**Action:** Provide public safety information through	**Action:** Same as Alternative B with the following addition: • Post signs, where necessary, to alert the public to safety issues.		

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		BLM visitor-use brochures, websites, and various direct contacts with members of the public. Include information on hazards associated with abandoned mines, recreational shooting, unexploded ordinances, natural resource conditions, or hazardous conditions.			
668.	**Objective:** No similar objective.	**Objective:** Remediate and/or sign dangerous locations, accessible mine shafts, adits, or hot springs, and dangerous conditions or materials when identified.			
669.	**Action:** Close 286 acres known as Harvey's Place within the Indian Creek Recreation withdrawal area to public access to protect public health and safety.	**Action:** Close 286 acres known as Harvey's Place located in the withdrawal area within the Alpine SRMA to public access, including motorized, nonmotorized, and mechanized uses, to protect public health and safety. The closure pertains to South Tahoe Public Utility District's existing ROW CANVCA 013255. Closure prevents unauthorized access or contact with discharged filtered-secondary treated wastewater (CA Title 22, Sec. 603010(g) prohibits human contact with recycled wastewater).			
670.	**Action:** Per Federal Register Notice, the discharge of firearms is prohibited in the following areas (see *Recreation and Visitor Services, Recreational Shooting*): • American Flat Mill 10 acres (Notice # NV-030-97001; December 20,1996) • Pine Nut Road No. 2 (Notice # NV030-97-1330-00; October 15, 1997) • Moonrocks (Notice # NV-030-92-04; July 27, 1992)				
671.	**Action:** No similar action.	**Action:** Continue work with the BLM Abandoned Mines Program.			
672.	**Action:** No similar action.	**Action:** Coordinate with the Nevada Division of Minerals to promote identification, signing, fencing or other closure of dangerous, accessible mine shafts and adits.			
673.	**Interpretation and Education**				
674.	**GOAL:** Engage the public through education and increased awareness and understanding of public land.				
675.	**Objective:** No similar objective.	**Objective**: Provide education and interpretive opportunities that foster	**Objective:** Provide education and interpretive opportunities that foster	**Objective:** Provide education and interpretive	**Objective:** Provide education and interpretive opportunities that foster

Table 2-2
Description of Alternatives A, B, C, D, and E

Row #	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
		environmental literacy, stewardship, and awareness of multiple use management strategies emphasizing resource use and economic development.	environmental literacy, stewardship, and awareness of multiple use management strategies emphasizing preservation and protection of identified resource(s) above other management considerations.	opportunities that foster environmental literacy, stewardship, and awareness of multiple use management strategies emphasizing multiple resource use management and user conflict resolution in areas of higher population density near the urban interface.	environmental literacy, stewardship, and awareness of multiple use management strategies emphasizing balancing resource protection with multiple use management decisions.
676.	**Action:** No similar action.	**Action:** Increase public knowledge, appreciation and understanding of BLM resources: • Provide repeating, on the ground, school district sanctioned education and interpretive experiences as outlined by the BLM Hands on the Land initiative. • Provide education and interpretive programs and products as outlined by the BLM's Take It Outside: Connect to your BLM-administered lands initiative. • Provide indoor and outdoor interpretive presentations to civic organizations, businesses and other government agencies. • Develop and provide online education and interpretive programs. • Develop brochures and electronic literature. • Develop interpretive trail signs utilizing print and electronic media. • Develop strategic partnership opportunities via cooperative agreements.			

Table 2-3
Washoe County Parcels Proposed for BLM Acquisition

General Location	County APN Number	Legal Land Description (Mount Diablo Meridian)	
		Township and Range	Within Section
Pah Rah Range/Northern Washoe Open Space: *Palomino Valley*	076-251-08	T. 22 N., R. 21 E.	7
	061-060-54	T. 43 N., R. 20 E.	36
	061-110-09	T. 44 N., R. 23 E.	7
	060-070-05	[TBD]	[TBD]
	066-260-10	T41. N., R. 20 E.	8
Pah Rah Range/Northern Washoe Open Space: *Monte Cristo Ranch Unit 1*	076-430-02	T. 23 N., R. 21 E.	22 and 27
	076-440-03	T. 23 N., R. 21 E	25 and 36
	076-500-01	T. 23 N., R. 21 E	32
		T. 22 N., R. 22 E.	5
	076-530-11	T. 23 N., R. 22 E	32 and 33
		T. 22 N., R. 22 E.	5
	076-530-07	T. 23 N., R. 22 E	32 and 33
	076-510-02	T. 22 N., R. 22 E	4 and 5
Pah Rah Range/Northern Washoe Open Space: *Monte Cristo Ranch Unit 2*	076-590-02	T. 22 N., R. 22 E	10 and 15
	076-590-03	T. 22 N., R. 22 E	10,11,14 and 15
	076-570-05	T. 22 N., R. 22 E	10 and 11
Swan Lake	080-671-08	T. 21 N., R. 19 E.	28
Red Rock Estates / Air Race Buffer	079-332-36	T. 21 N., R. 19 E.	5 and 6
	079-332-37	T. 21 N., R. 19 E.	5 and 6
Hungry Valley-Eagle Canyon Open Space	080-710-01	T. 21 N., R. 19 E.	24

Table 2-4
Segments Determined Eligible for Inclusion in the National Wild and Scenic River System

River Segment	Length on BLM-Administered Land (miles)	Outstandingly Remarkable Value(s)	Tentative Classification
East Fork Carson River Segment 1	1.51	Recreation, Scenic, Fish	Wild
East Fork Carson River Segment 2	1.03	Recreation, Scenic, Fish, Geologic	Recreational
East Fork Carson River Segment 3	1.97	Recreation, Scenic, Fish, Geologic	Scenic

Table 2-5
Proposed Habitat Objectives for Greater Sage-Grouse

Life Requisite	Habitat Indicator	Objective
GENERAL		
All life stages	Rangeland Health Standards	Meeting all standards[1]
LEK		
Cover	Availability of sagebrush cover	Has adjacent sagebrush cover
Security	Proximity of tall trees	Within 3 kilometers (1.86 miles): • none within line of sight of the lek • <3.5% conifer cover land cover
	Proximity of tall structures	None within 3 miles (5 km)
NESTING		
Cover	Sagebrush canopy cover (%)	≥20
	Sagebrush species present	Includes *Artemesia tridentata* subspecies
	Perennial grass cover (%)	≥10 if shrub cover <25[2]
	Annual grass (%)	<5
	Total shrub cover (%)	≥40
	Conifer encroachment (%)	<5
BROOD-REARING/SUMMER		
Cover	Sagebrush canopy cover (%)	≥10
Cover and Food	Perennial forb canopy cover (%)	≥5 arid ≥15 mesic

Table 2-5
Proposed Habitat Objectives for Greater Sage-Grouse

Life Requisite	Habitat Indicator	Objective
Food	Riparian Areas/Meadows	Manage for PFC
	Perennial forb availability (riparian areas/meadows)	≥ 5 plant species present[3]
Security	Conifer encroachment (%)	<3 phase I (0 – 25% cover) No phase II (25 – 50% cover) No phase III (>50% cover) within 850-meter buffer of microhabitat plot
	Riparian Area/Meadow Interspersion with adjacent sagebrush	Perimeter to area ratio of 0.15 within 159-meter buffer of the microhabitat plot
WINTER		
Cover and Food	Sagebrush canopy cover (%)	≥10
	Sagebrush height in centimeters(cm)	≥25
	Conifer encroachment (%)	<5 phase I (0 – 25% cover) no phase II (25 – 50% cover) no phase III (>50% cover) within 850-meter buffer of microhabitat plot
	Sagebrush extent (%)	>85 sagebrush land cover within 850-meter buffer centered on microhabitat plot
	Sagebrush species comp (%)	>50 *A. t. tridentate* sites >25 *A. arbuscula* sites >25 *A. t. vaseyana* sites

Sources: Blomberg et al. 2012; Casazza 2011; Coates et al. 2011; Coates and Delehanty 2010; Coates and Casazza (in prep. A); Coates and Casazza (in prep. B); Connelly et al. 2000; Kolada 2009a, 2009b; Lockyer et al. (in review); Nevada Governor's Sage-Grouse Conservation Team 2012

[1]Upland standards are based on indicators for canopy and ground cover, including litter, live vegetation, and rock, appropriate to the ecological potential of the site.
[2]Assumes upland rangeland health standards are being met.
[3]Standard considered In addition to PFC. Measured ESD/Daubenmire (25 centimeter x 50 centimeter frame). Includes all mesic plant species, not only perennial forbs.

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Chapter 3

Affected Environment

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 INTRODUCTION

The purpose of this chapter is to describe the existing biological, physical, and socioeconomic characteristics of the CCD RMP planning area (planning area), including human uses that could be affected by implementing the alternatives described in **Chapter 2**. This chapter includes a discussion of resources, resource uses, special designations, and social and economic conditions. Each topic area includes an introduction, a description of current conditions, and a description of resource changes (trends and forecasts) that explain the direction of change between the present and some point in the past.

Acreage figures and other numbers used are approximate projections; readers should not infer that they reflect exact measurements or precise calculations. Acreages were calculated using GIS technology, and there may be slight variations in total acres between resources.

The planning area includes all lands, regardless of jurisdiction, within the planning area boundaries. However, the BLM makes decisions on only the lands and federal mineral estate that it administers (the decision area).

3.1.1 Context for the State of Nevada

Nevada is the 7th largest state in the United States and has an area of approximately 110,000 square miles. Nevada, in shape, consists of a broad rectangular area in the north, based on the line of latitude 42 degrees north, and angles downward and eastward from 39 degrees latitude between 120 degrees and 114 degrees longitude to a point at about 35 degrees latitude. After it was granted statehood, Nevada's boundaries were enlarged to include part of the Utah and New Mexico Territories.

Nevada has over 200 mountain ranges within its borders. Boundary Peak in Esmeralda County has the highest elevation at 13,140 feet, and the Colorado River in Clark County has the lowest elevation at 470 feet. The BLM

administers nearly 48 million acres of land in Nevada, or approximately 67 percent of Nevada's land base. Overall, about 86 percent of Nevada's total land area is administered by the federal government.

3.1.2 Ecoregional Context

Ecoregions defined by the EPA are derived from the seminal work *Ecoregions of the Conterminous United States* by J.M. Omernik (Omernik 1987). The framework is designed to serve as a spatial framework for research, assessment, management, and monitoring of environmental resources. Ecoregions denote areas within which ecosystems (and the type, quality, and quantity of environmental resources) are generally similar.

Nevada BLM has adopted the Rapid Ecoregional Assessment data. Rapid Ecoregional Assessments are a synthesis and analysis of the best available information about natural resource conditions and trends within an ecoregion. They highlight and map areas of high ecological value, including important wildlife habitats and corridors, and gauge their potential risks from four key environmental change agents: climate change, wildfires, invasive species, and development. Rapid Ecoregional Assessments also map areas that have high energy development potential, and relatively low ecological value, which could be best-suited for siting future energy development. In addition, Rapid Ecoregional Assessments establish landscape-scale baseline ecological data to gauge the effect and effectiveness of future management actions.

The BLM recognizes that public lands are facing increasingly complex and widespread environmental challenges that transcend traditional management boundaries. These challenges include managing wildfire, controlling weeds and insect outbreaks, providing for energy development and urban growth, and addressing the effects of climate change. The Rapid Ecoregional Assessments are being prepared to help land managers and stakeholders better understand these challenges and to provide science-based information to support balanced stewardship of the diverse natural resources of the public lands.

Rapid Ecoregional Assessments do not make management decisions or allocate resource uses. They provide science-based information and tools for land managers and stakeholders to consider in subsequent resource planning and decision-making processes. The BLM will use the Rapid Ecoregional Assessments to inform resource management at the local and ecoregional levels. At the local level, the Rapid Ecoregional Assessments will enhance the quality of land use planning and environmental analysis conducted by BLM field offices. The information, maps, and tools provided by the Rapid Ecoregional Assessments will strengthen analyses of the potential and cumulative effects of climate change and other environmental disturbances on important ecological values.

At the ecoregional level, the BLM will use the Rapid Ecoregional Assessments, along with input from partner agencies, stakeholders, and Native American

tribes, to develop broad-level management strategies, called ecoregional direction, for an ecoregion's BLM-administered lands. Ecoregional direction will be prepared after a Rapid Ecoregional Assessment is completed.

3.2 RESOURCES

This section contains a description of the biological and physical resources of the planning area and follows the order of topics addressed in **Chapter 2**:

- Air Quality
- Climate Change
- Soils and Water Resources
- Vegetation
- Fish and Wildlife
- Special Status Species
- Wild Horses and Burros
- Wildland Fire Ecology and Management
- Cultural Resources
- Paleontological Resources
- Visual Resources
- Lands with Wilderness Characteristics Outside Existing Wilderness Study Areas (WSAs)
- Cave and Karst Resources

3.2.1 Air

Ambient air quality is affected by the type and amount of air pollutants emitted into the atmosphere, the size and topography of the air basin, prevailing meteorological conditions, and the conversion of air pollutants and other particles by a complex series of chemical and photochemical reactions in the atmosphere. Air quality related values include effects on soil and water, such as sulfur and nitrogen deposition and lake acidification, and aesthetic effects, such as visibility. Air emission sources within the planning area can affect air quality both within and outside the planning area. Activities on BLM-administered lands must be managed in accordance with the Clean Air Act, as amended, and be in compliance with all other applicable federal, state, and local air regulations.

Regulatory Considerations

The Clean Air Act (42 USC 7401−7642) established the principal framework for national, state, and local efforts to protect air quality in the US. Under the Clean Air Act, EPA has set time-averaged standards known as national ambient air quality standards (NAAQS) for six air pollutants considered to be key indicators of air quality: carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone,

particulate matter with a diameter less than or equal to 10 microns (PM_{10}), particulate matter with a diameter less than or equal to 2.5 microns ($PM_{2.5}$), and sulfur dioxide (SO_2). States may set their own ambient air quality standards, but these standards must be at least as stringent as the national standards. The State of Nevada has adopted most of the NAAQS to regulate air pollution in the state. The state has adopted a more stringent carbon monoxide standard for areas higher than 5,000 feet, a more stringent sulfur dioxide standard, and a standard for hydrogen sulfide, for which there is no national standard (Nevada Administrative Code 445B.22097). California, in which a small amount of the planning area is located, has also adopted a state hydrogen sulfide standard. **Table 3-1**, State and National Ambient Air Quality Standards, portrays the Nevada, California, and national ambient air quality standards.

Table 3-1
State and National Ambient Air Quality Standards

Pollutant	Averaging Time	Nevada Standards	California Standards	National Standards
Ozone	1 hour (outside Lake Tahoe Basin)	0.12 ppm	0.09 ppm	Standard rescinded
Ozone	1 hour (in Lake Tahoe Basin)	0.10 ppm	0.09 ppm	Standard rescinded
Ozone	8 hour	Not applicable	0.070 ppm	0.075 ppm
Carbon Monoxide	1 hour	35 ppm	20 ppm	35 ppm
Carbon Monoxide	8 hour (areas below 5,000 feet elevation)	9 ppm	9 ppm	9 ppm
Carbon Monoxide	8 hours (areas at or above 5,000 feet elevation)	6 ppm	6 ppm	9 ppm
Nitrogen Dioxide	Annual average	0.053 ppm	0.030 ppm	0.053 ppm
Nitrogen Dioxide	1 hour	Not applicable	0.18 ppm	0.100 ppm
Sulfur Dioxide	Annual average	0.030 ppm	Not applicable	Standard rescinded
Sulfur Dioxide	24 hour	0.14 ppm	0.04 ppm	Standard rescinded
Sulfur Dioxide	3 hour	0.5 ppm	Not applicable	0.5 ppm
Sulfur Dioxide	1 hour	Not applicable	0.25 ppm	0.075 ppm
Inhalable Particulate Matter (PM_{10})	Annual arithmetic mean	50 μg/m³	20 μg/m³	Not applicable
Inhalable Particulate Matter (PM_{10})	24 hours	150 μg/m³	50 μg/m³	150 μg/m³
Fine Particulate Matter ($PM_{2.5}$)	Annual arithmetic mean	Not applicable	12 μg/m³	12 μg/m³

Table 3-1
State and National Ambient Air Quality Standards

Pollutant	Averaging Time	Nevada Standards	California Standards	National Standards
Fine Particulate Matter ($PM_{2.5}$)	24 hours	Not applicable	Not applicable	35 µg/m³
Lead Particles (TSP sampler)	Calendar quarter	1.5 µg/m³	Not applicable	1.5 µg/m³
Lead Particles (TSP sampler)	Rolling 3-month average	Not applicable	Not applicable	0.15 µg/m³
Lead Particles	30-day average	Not applicable	1.5 µg/m³	Not applicable
Hydrogen Sulfide	1 hour	0.08 ppm	0.03 ppm	Not applicable
Sulfates	24-hour	Not applicable	25 µg/m³	Not applicable
Vinyl Chloride	24-hour	Not applicable	0.01 ppm	Not applicable

Sources: CARB 2012; NDEP 2010a; EPA 2011a
Notes:
ppm = parts per million
All standards except the national PM_{10} and $PM_{2.5}$ standards are based on measurements corrected to 25 degrees Celsius and 1 atmosphere pressure.
The national PM_{10} and $PM_{2.5}$ standards are based on direct flow volume data without correction to standard temperature and pressure.
The national 1-hour ozone standard was rescinded for 41 states (including Nevada) prior to June 2005 but remains in effect for portions of Colorado, Georgia, Maryland, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia.
The national 8-hour ozone standard was revised from 0.08 ppm to 0.075 ppm, effective May 27, 2008.
A 1-hour NO_2 standard was added in California in February 2007 and nationally on April 12, 2010.
The national 24-hour standard for $PM_{2.5}$ was revised from 65 micrograms per cubic meter to 35 micrograms per cubic meter effective December 17, 2006. The national primary standard for annual $PM_{2.5}$ was revised from 15 micrograms per cubic meter to 12 micrograms per cubic meter on December 14, 2012.
The "10" in PM_{10} and the "2.5" in $PM_{2.5}$ are not particle size limits but identify the particle size class (aerodynamic diameter in microns) collected with 50 percent mass efficiency by certified sampling equipment. The maximum particle size collected by PM_{10} samplers is about 50 microns. The maximum particle size collected by $PM_{2.5}$ samplers is about 6 microns.
The national 3-month rolling average standard for lead was adopted in November 2008. The previous calendar quarter lead standard will remain in effect for a minimum of 1 year.
The Nevada standard for hydrogen sulfide represents an increment above naturally occurring background concentrations.

A NAAQS is composed of two parts – an allowable concentration of a criteria pollutant and an averaging time over which the concentration is to be measured. Averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposure to a high concentration for a short time or to a lower average concentration over a longer period. For some pollutants, there is more than one air quality standard, reflecting both short-term and long-term effects. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Hazardous Air Pollutants

In addition to criteria pollutants, the Clean Air Act regulates toxic air pollutants, or hazardous air pollutants, that are known or suspected to cause cancer or other serious health effects or adverse environmental impacts. The hazardous air pollutant regulatory process identifies specific chemical substances that are potentially hazardous to human health and sets emission standards to regulate the amount of those substances that can be released by individual facilities or by specific types of equipment. The EPA has issued rules covering 80 categories of major industrial sources as well as categories of smaller sources. Controls are usually required at the source to limit the release of these air toxics into the atmosphere.

Federal emission standards for hazardous air pollutants have been promulgated as National Emission Standards for Hazardous Air Pollutants and as Maximum Available Control Technology standards. Nevada has adopted a state Maximum Available Control Technology standard for mercury emissions from thermal process units at precious metals mining operations. There are two precious metals mines in Mineral County, and operators of these mines are required to comply with the state's Mercury Control Program. Because major sources of hazardous air pollutants are controlled at the source, hazardous materials are not an issue of concern in the planning area.

General Conformity Rule

Section 176(c) of the Clean Air Act requires that federal actions conform to the appropriate state implementation plan. A state implementation plan is a plan developed at the state level that provides for the implementation, maintenance, and enforcement of NAAQS and is enforceable by the EPA. The EPA has promulgated rules establishing conformity analysis procedures for transportation-related actions and for other general federal agency actions (40 CFR Parts 6, 51, and 93). The EPA general conformity rule requires preparation of a formal conformity determination document for federal agency actions that are undertaken, approved, or funded in federal nonattainment or maintenance areas when the total net change in direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds.

Prevention of Significant Deterioration

Prevention of Significant Deterioration sets forth a permit process that applies to new major sources or major modifications of existing sources for pollutants where the source is located in an attainment or unclassifiable area as defined by the NAAQS. Prevention of Significant Deterioration requires the use of Best Available Control Technologies and provides for an air quality impact analysis as well as public involvement. The purpose of the Prevention of Significant Deterioration is to protect the public health and welfare and to preserve, protect, and enhance the air quality of national parks and wilderness areas, as well national monuments, seashores, and other areas of national recreational, scenic, or historic value.

Air quality control regions are classified either as Class I, II, or III to indicate the degree of air quality deterioration that the state or federal government will allow while not exceeding NAAQS (though no Class III areas have been designated). As a Class II area, a moderate change in air quality due to industrial growth while still maintaining air quality that meets the NAAQS would be allowed. Class I areas are special areas of natural wonder and scenic beauty, such as national parks, national monuments, and wilderness areas, where air quality should be given special protection. Class I areas are subject to maximum limits on air quality degradation. There are no Prevention of Significant Deterioration program Class I visibility protection areas within the planning area. The only Class I area in Nevada is the Jarbidge Wilderness in north-central Elko County. In California, the nearest Class I area is in the Mokelumne Wilderness in Alpine County, which is outside of the planning area. Jarbidge Wilderness is more than 62 miles (100 kilometers) from the planning area, while Mokelumne Wilderness is within 62 miles (100 kilometers) of the planning area.

Current Conditions

The Nevada Division of Environmental Protection (NDEP), Bureau of Air Quality Planning operates and maintains a network of ambient air quality monitors throughout rural Nevada, while the Washoe County Health District Air Quality Management Division operates and maintains a network of ambient air quality monitors in Washoe County. Air quality is not monitored in the small regions of the California counties in the planning area.

The Clean Air Act requires each state to identify areas that have ambient air quality in violation of federal standards using monitoring data collected through state monitoring networks. Areas that violate air quality standards are designated as nonattainment areas for the relevant criteria air pollutants. Areas that comply with air quality standards are designated as attainment areas for the relevant criteria air pollutants. Areas that have been redesignated from nonattainment to attainment are considered maintenance areas. Areas of uncertain status are generally designated as unclassifiable but are treated as attainment areas for regulatory purposes.

The majority of the planning area is attainment or unclassifiable for the NAAQS. A portion of Washoe County is a serious nonattainment area for PM_{10}, and portions of Carson City, Douglas, and Washoe Counties are maintenance areas for carbon monoxide (EPA 2013).

The primary sources of air pollutant emissions on BLM-administered lands in the planning area include activities related to tourism, recreation (including off-highway vehicle [OHV] use), exploration and development of mineral resources, construction, agriculture, and geothermal power development. Wildfires in Northern California, Yosemite, and the Lake Tahoe area can sometimes be transported into the CCD planning area and reduce visibility in scenic areas.

Resource Changes

The NDEP, Bureau of Air Quality Planning issued an air quality trend report for 2000 to 2010 (NDEP 2013). This report used ambient air data collected in Nevada's 15 rural counties (all counties except Clark and Washoe) to reveal trends in ambient air quality. Monitoring data show that ambient concentrations of carbon monoxide have decreased and are well below NAAQS; ambient concentrations of ozone have remained steady and are below NAAQS; ambient concentrations of $PM_{2.5}$ have trended upward and are approaching NAAQS in some areas (Carson City and Gardnerville) but have decreased in other areas (Fernley); and ambient concentrations of PM_{10} have decreased and remain below NAAQS.

The Washoe County Air Quality Management Division publishes annual air quality trend reports for Washoe County. The most recent report is for the 10-year period between 2003 and 2012 (Washoe County 2013). Monitoring data show that ambient concentrations of $PM_{2.5}$ were at or above the NAAQS at monitored stations from 2003 to 2010 but below the NAAQS in 2011 and 2012. Ambient concentrations of ozone have remained steady at just below current NAAQS, though occasional exceedances of the 8-hour standard have occurred in the last 3 years. Ambient concentrations of carbon monoxide have decreased slightly and are well below NAAQS. The adoption of more stringent NAAQS by EPA may affect the future attainment status of portions of the planning area.

The forecast for air quality is a continuation of current trends. The following factors may affect future air quality of the planning area:

- The population will continue to grow.
- Air pollutants from the Reno-Sparks metropolitan area can be transported onto BLM-administered lands.
- The Carson City 2009-2011 annual $PM_{2.5}$ observations do not comply with the new NAAQS for annual $PM_{2.5}$, approved in December 2012.
- The 2010-2011 Wadsworth 24-hour PM_{10} observations do not comply with the NAAQS for PM_{10}.

The majority of the BLM-administered lands in the planning area are in Mineral and Churchill Counties, where the 2010 population densities average 1.3 and 5.0 people per square mile, respectively. These low population densities suggest that there are not enough emissions sources (e.g., vehicles, industries, and construction) to lead to an exceedance of any federal or state air quality standard.

3.2.2 Climate

Climate and Meteorology

The planning area is located in the Great Basin on the east side of the Sierra Nevada Mountain Range. Elevation ranges from 3,796 feet at Pyramid Lake to 11,236 feet at Mount Grant in Mineral County. Several mountain ranges and deep sediment-filled basins are located in the region. Most of the mountain ranges are aligned in a north-south direction.

The predominant wind direction in Nevada is from the west. In Reno and Fallon, winds are mostly southerly in the winter months and westerly to northwesterly from spring to fall (WRCC 2013). The local topography could channel the local winds in another direction. When an air mass approaches from the west, it first hits the western slope of the Sierras, where it is forced upwards and cooled. The moisture condenses and can fall out as precipitation. When the air mass descends on the eastern slope of the Sierras, most of the moisture has fallen out. As a result, the air mass over the planning area is typically low in humidity; annual precipitation at most meteorological observation sites averages only 5 to 10 inches per year, with higher totals over the mountain ranges.

In the summer, most of the planning area has an average daytime high temperature in the upper 80s to lower 90s degrees Fahrenheit (°F), with lows in the upper 40s and 50s. Temperatures are cooler at the higher elevations. In the winter, temperatures typically range from the teens to mid-20s at night to the 40s in the daytime.

The Western Regional Climate Center has 34 long-term weather station sites within or adjacent to the planning area. Records of weather patterns illustrate variations or fluctuations in precipitation and temperature in the planning area. Climate oscillations that affect the planning area include El Niño, the Interdecadal Pacific Oscillation, La Niña, and the Pacific Decadal Oscillation. These variations in climate impact lake levels, snow cover, soil erosion, sedimentation, slope and dune movement, and effects on fire frequency.

Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change as:

> a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persist for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity (IPCC 2007).

The earth has a natural greenhouse effect, wherein naturally occurring gases such as water vapor, carbon dioxide, methane, and nitrous oxide absorb and retain heat. Without the natural greenhouse effect, the earth would be approximately 60 °F cooler. Climate change is caused in part by the increase in

greenhouse gases in the atmosphere beyond naturally occurring levels. Over time the amount of energy sent from the sun to the earth's surface should be approximately the same as the amount of energy radiated back into space, leaving the temperature of the earth's surface roughly constant. Increased levels of greenhouse gases trap more heat in the atmosphere rather than allowing it to escape back into space.

Climate models predict that if greenhouse gases continue to increase, the average temperature at the earth's surface could increase from 3.2 to 7.2 °F (1.8 to 4 degrees Celsius [°C]) above 1990 levels by the end of this century (EPA 2011b). An increase in the average temperature of the earth may produce changes in sea levels, rainfall patterns, and intensity and frequency of extreme weather events. The Intergovernmental Panel on Climate Change, in its Fourth Assessment Report, stated that warming of the earth's climate system is unequivocal and that warming is very likely due to anthropogenic (human-caused) greenhouse gas concentrations (IPCC 2007).

Greenhouse Gas Emissions

Greenhouse gases are compounds in the atmosphere that absorb infrared radiation and re-radiate a portion of that radiation back to the earth's surface, thus trapping heat and warming the atmosphere. Greenhouse gases have the potential to affect climate patterns, which in turn can affect resource management. The most important naturally occurring greenhouse gas compounds are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Carbon dioxide, methane, and nitrous oxide are produced naturally by the following processes:

- Respiration and other physiological processes of plants, animals, and microorganisms
- Decomposition of organic matter
- Volcanic and geothermal activity
- Naturally occurring wildfires
- Natural chemical reactions in soil and water

Ozone is not released directly by natural sources but forms during complex chemical reactions in the atmosphere among organic compounds and nitrogen oxides in the presence of ultraviolet radiation. While water vapor is a strong greenhouse gas, its concentration in the atmosphere is primarily a result and not a cause of changes in surface and lower atmospheric temperature conditions.

Although naturally present in the atmosphere, concentrations of carbon dioxide, methane, and nitrous oxide are also produced by industrial processes, transportation technology, urban development, agricultural practices, and other human activity. The EPA estimated that national greenhouse gas emissions in 2012 (the most recent year for which national data has been tabulated) totaled

6,526 million metric tons of carbon dioxide equivalents (a measure that accounts for the global warming potential of the different greenhouse gases). This is a decrease of nearly 800 million metric tons since the peak in 2007 (7,325 million tons) and 292 million metric tons over 1990 levels (6,233 million tons; EPA 2014a).

The EPA categorized the major economic sectors contributing to US emissions of greenhouse gases in 2012 as follows (EPA 2014a):

- Electric power generation (32 percent)
- Transportation (28 percent)
- Industrial processes (20 percent)
- Agriculture (10 percent)
- Commercial and residential (10 percent)

NDEP estimated that Nevada's statewide greenhouse gas emissions in 2010 (the most recent year for which state data has been tabulated) totaled 45 million metric tons of carbon dioxide equivalents (NDEP 2012a). This was 0.7 percent of 2010 US greenhouse gas emissions (NDEP 2012a).

The major sectors contributing to Nevada's greenhouse gas emissions in 2010 were as follows (NDEP 2012a):

- Electric power generation (38 percent)
- Transportation (34 percent)
- Industrial processes (12 percent)
- Agriculture (3 percent)
- Commercial and residential (13 percent)

Sources of greenhouse gas emissions in the planning area include wildfires and prescribed burns, vehicles (including OHVs), construction and operation for mineral and energy development, and grazing livestock, wild horses, and burros.

Resource Changes

Nevada has experienced a minor increase in temperature, increased precipitation, shortened snow seasons, and more storms overall over the last century (NOAA 1997); EPA estimates that average annual temperature in the Southwest has increased 1.5°F (EPA 2014b). Precipitation patterns along Nevada's Sierra Mountains are strongly influenced by El Niño events, which are caused by warmer than normal surface temperatures in the equatorial Pacific Ocean. Historically, moderate to strong El Niño episodes have had ambiguous impacts in the northern half of Nevada with near normal precipitation occurring (NOAA 1997). Warmer and more arid conditions, coupled with a shorter snow

season, have led to limited water supplies and severe drought in parts of the state. By 2100, the average temperature in Nevada is predicted to increase by 3 to 4°F in the spring and fall and by 5 to 6°F in the summer and winter. El Niño also is predicted to increase in frequency and duration as a result of global climate change. These temperature changes will affect evaporation and precipitation in the state, likely resulting in the decreased availability of water (National Conference of State Legislatures 2008).

Nevada's gross greenhouse gas emissions have risen faster than those of the US, increasing almost 30 percent from 1990 to 2010 (NDEP 2012a) compared to 10 percent for the US over that same time period (EPA 2014a). The NDEP 2012 report stated that gross greenhouse gas emissions grew by approximately 1.5 million metric tons per year from 1990 to 2005, but that this trend reverted in 2006 and emissions started declining at a rate of 1.8 million metric tons per year. The report attributed this downturn to the decommissioning of the coal-fired Mojave Generating Station and the economic downturn (NDEP 2012a).

Rapid population growth has been the most important driver in greenhouse gas emissions growth in Nevada. Much of this population growth has taken place near Las Vegas, which also adds to emissions in the state through air travel. The majority of the growth in greenhouse gas emissions came from transportation and electricity generation (EPA 2012a).

Climate change has produced existing and anticipated effects on the following resources in the planning area:

- Soils and Water resources
- Vegetation
- Fish and wildlife
- Threatened and endangered species
- Wild horses and burros (through changes in vegetation and soil)
- Livestock grazing (through changes in vegetation and soil)
- Tribal interests (through changes in vegetation and soil and their effects on availability of traditionally used plants)

Rapid Ecoregional Assessment

The BLM initiated the Central Basin and Range Rapid Ecoregional Assessment in 2010 and the findings were made public in 2013. The Rapid Ecoregional Assessment is intended to provide science-based information and tools for land managers and stakeholders to consider in subsequent resource planning and decision making processes. The planning area is wholly within the Central Basin and Range Ecoregion. The Central Basin and Range Rapid Ecoregional Assessment described and mapped conservation elements, including regionally important habitats, distributions of species of concern, and sensitive soils. The

Rapid Ecoregional Assessment analyzed stressors to conservation elements from four overarching environmental change agents, including climate change, at a broad scale (BLM 2013h).

Using natural climatic variation from 1900 to 1979 as a baseline, two forms of climate analyses were conducted for two time slices: the 2020s (near-term) and the 2050s (mid-century). The analyses included an evaluation of climate space trends across the ecoregion and an analysis of potential change in climate envelopes for selected terrestrial conservation elements for the mid-century time slice. Climate envelope analysis first describes the set of values for temperature and precipitation variables that characterize the current distribution of a given conservation element. Then, the same combination of variables is mapped using climate forecasts for upcoming decades. The climate envelope analysis primarily focused on terrestrial conservation element distribution, with a focus on widely distributed species and major vegetation assemblages. **Figure 3-1**, Climate Trends in 2025, displays projected near-term climate trends within the planning area.

The comparison of forecasted to current climate envelope distributions only provides one indication of the direction and magnitude of potential climate-induced stress for a given conservation element. Therefore, bioclimate envelope modeling provides correlative predictions of geographic ranges under future climate scenarios, not a mechanistic understanding of the processes guiding how plant and animal communities will respond, which will likely vary by type and location, thus leading to uncertainty when considering climate effects to resources and resource uses. Actions aimed at increasing or maintaining habitat resistance and resiliency to climate change effects are important. Thus using an adaptive management framework based on long-term monitoring datasets for land use planning is a key to addressing this uncertainty.

Based on the Rapid Ecoregional Assessment findings for the near term, climate space trends indicate the potential for extreme growing season temperatures throughout the vast majority of the ecoregion, including the planning area.

The Rapid Ecoregional Assessment indicates that many grazing allotments and herd management areas (HMAs) are projected to experience significant temperature increases, primarily in late spring through early fall, especially in the lower elevation basins within the planning area. This indicates that there are potential economic risks to some local communities and counties between now and mid-century.

Generally, sagebrush obligate species have higher loss in climate envelope (climate variability experienced during the 20th century projected to change) indicating that the vast 'sagebrush sea' could see increasing predominance of salt-desert scrub, particularly in the lowest-elevation basins.

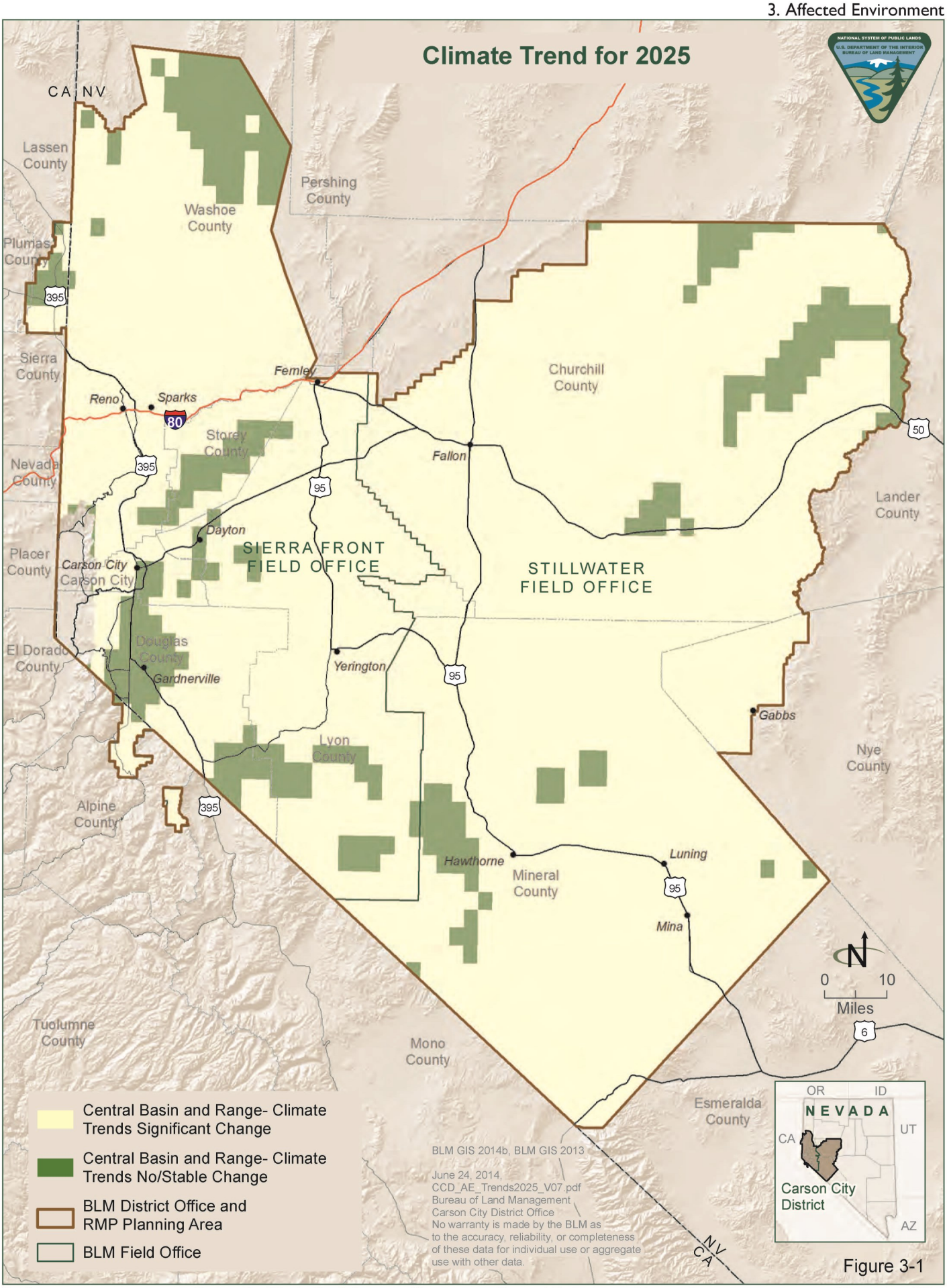
Climate Trend for 2025
CA NV
Lassen County
Pershing County
Washoe County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Douglas County
Alpine County
Storey County
Churchill County
Lander County
Lyon County
Mineral County
Nye County
Esmeralda County
Mono County
Tuolumne County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Gabbs
Hawthorne
Luning
Mina
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
395
80
95
50
6
0 10
Miles
Central Basin and Range- Climate Trends Significant Change
Central Basin and Range- Climate Trends No/Stable Change
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, BLM GIS 2013
June 24, 2014,
CCD_AE_Trends2025_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
OR
ID
NEVADA
CA
UT
AZ
Carson City District
NV
CA

Figure 3-1

There is potential for species associated with salt desert scrub habitat to replace lower elevation sagebrush species such as big basin sagebrush, which in turn may replace mountain sagebrush species, ultimately diminishing species diversity as a whole throughout the planning area.

The climate change analysis and data available for the Rapid Ecoregional Assessment was not conducive to assessing impacts on aquatic resources. However, based on references cited in the Rapid Ecoregional Assessment, forecasted changes for temperature, and to a lesser degree precipitation, would be expected to have short and long-term effects on aquatic resources. Primary potential impacts are as follows:

- Stream and riparian areas drying earlier in the season
- Shrinkage of perennial stream flows or open water sources
- Higher water temperatures
- Reduced groundwater recharge
- Loss of riparian vegetation at lower elevations where seasonal flows determine distribution
- Reduced discharge to springs and seeps

Climate Space Trends Summary
The following summarize the climate space trends analysis:

- Three climate variables were examined with the PRISM and EcoClim datasets.
- Near-term and mid-century: Results for precipitation suggest no strong trend toward either wetter or drier conditions in any month for the Central Basin and Range, or the planning area, with the exception of a slight increase in summer monsoon-style rains toward the south and east of the Central Basin and Range and potentially the southern part of the planning area (stems from high baseline variability and modeling limitations for precipitation).
- Near-term: July to September minimum temperatures are predicted to exceed one standard deviation beyond 20th Century baseline for 90 percent of Central Basin and Range, including the planning area (5 percent of Central Basin and Range for November through June).
- Near-term: July, August, and September maximum temperatures are predicted to exceed 1 standard deviation over 50, 65, and 70 percent of the Central Basin and Range, respectively.
- Near-term: Predictions are variable specific to the planning area but maximum temperature extremes forecasted less than or equal to 6 degrees in some areas.

- Mid-century: Minimum temperatures are predicted to exceed 1 standard deviation for most of the Central Basin and Range, including the planning area.
- Mid-century: July to September minimum temperatures are predicted to exceed 2 standard deviations for 90 percent of the Central Basin and Range, including the planning area.
- Mid-century: July and August maximum monthly temperatures predicted to exceed 2 standard deviations for 90 percent and 85 percent of the Central Basin and Range area, respectively.
- Mid-Century: Predictions are variable specific to the planning area but maximum temperature extremes forecasted less than or equal to 9 degrees in some areas.

Selected Bioclimate Envelope Modeling Summary (only conducted for mid-century time slice)

Bioclimate envelope modeling is based on a species' or vegetation assemblage's current distribution. But final projections may not line up with current distributions because the projected climate envelope may be the outside of current distribution. Contraction is where current climate characteristic of the species or vegetation assemblage is projected to be replaced by a significantly different climate regime. Expansion indicates where the current climate regime is forecasted to occur outside of current distribution by 2060. One could initially view these areas as potential expansion zones for this characteristic climate regime. Maintaining climate indicates areas where the forecasted change overlaps with current distribution. While climate change analysis for the mid-century is beyond the temporal scope of this RMP, long-term monitoring and adaptively planning for projected trends are important to consider:

- Mule deer seasonal ranges (winter and summer) are forecasted to experience climate contractions at the lower elevations over much of the planning area.
- Current climate for year-round mule deer range is projected to be maintained or expand in the planning area.
- Current distributions of Bighorn Sheep are mostly expected to maintain current climate in the planning area.
- Current distributions of Greater Sage-Grouse are not projected to maintain current climate, except for a few high elevation spots in the north and northeastern portion of the planning area.
- Current climate for mixed salt desert scrub vegetation assemblage is projected to be maintained or expand over much of the planning area.

- While not uniform across the planning area, big basin sagebrush communities expected to lose climate at low elevations, and maintain or expand at higher elevations.
- Montane sagebrush communities primarily forecast to lose current climate except in some higher elevation areas in the southeast and northeast portions of the planning area (parts of Wassuk Range, Clan Alpine Mountains, and Desatoya Mountains).

3.2.3 Soils and Water Resources

Soils

Many resources and resource uses depend upon suitable soils, indicating that soil attributes, conditions, and management are important to RMP management decisions. Resources and resource uses dependent upon suitable soils include livestock grazing, wild horse and burro management (through the maintenance of populations at appropriate management levels [AMLs]), wildlife habitat designation, water quality, ROW authorizations, mineral entry, recreational uses, and travel management designations.

When making land management decisions based on soil-related hazards or limitations or when making management decisions that would likely affect soil resources, the CCD evaluates soil surveys available from the NRCS. Through conducting soil surveys the NRCS has classified soils into map units using the boundaries of Major Land Resource Areas, which are geographically associated land resource units that share common characteristics related to the physiography, geology, climate, water resources, soils, biological resources, and land uses (NRCS 2009). Each soil map unit consists of an individual soil or a group of soils (called a soil series) with similar soil formation. Soil series are grouped together based on soil characteristics that are described through chemical and physical properties, range of elevation, climate, runoff capabilities, erosion hazards, associated native vegetation, wildlife habitat use, and suitability for community development.

In addition to mapping the soils in map units, the NRCS evaluates the soil's susceptibility to wind erosion and suitability for farmland, and may classify soils as sensitive based on various parameters, including the presence of biological soil crusts and salinity.

Ecological Site Descriptions (NRCS 2012a) were subsequently developed for the soils within each Major Land Resource Area (NRCS 2012b). Ecological Site Descriptions are a description of the original or natural plant community that can be supported at a given site based on multiple environmental factors such as soils, topography, and climate. State and transition models have been developed for some Ecological Site Descriptions and are currently being developed in others. State and transition models describe the variability of a particular site and can help determine if an ecological threshold has been crossed. An

ecological threshold is the boundary between two soil states. The ecological threshold is crossed when one or more ecological processes that support the initial state have been irreversibly changed. The term irreversible implies that the restoration of a site to a state cannot be accomplished through natural events or through a simple change in management. Active restoration such as brush management, range planting, or prescribed burning must be conducted before the return to a previous state is possible. Once a threshold is crossed, disequilibrium among one or more of the primary ecological processes (e.g., soil and site stability, hydrologic function, and biotic integrity) exists and is expressed through changes in the vegetative community and eventually the soil resource. If vegetation is lost, the hydrologic function is affected by loss of infiltration and soil and site stability is affected by loss of hydrologic function and loss of the natural plant community. When the system reestablishes equilibrium among its primary ecological processes, a new stable state is formed. Knowledge found in Ecological Site Descriptions can be invaluable for resources uses and management such as habitat restoration, livestock grazing, and wild horse and burro management.

Current Conditions

Third-order soil surveys provided by the NRCS cover most of the planning area. These surveys indicate that there are over 7,000 different soil units within planning area, which is the result of varying climatic, vegetative, topographic, and geographic conditions. Key landscape characteristics in the planning area include dunes, playas, deflation basins, cavernous weathering, angular slopes (with and without coarse debris), arroyos, pediments, fans, and badlands. Badlands were formed by geomorphic processes predominately found in arid and semiarid systems (NDOW 2012b). Common processes on the landscape include desiccation, wind action, running water, mechanical weathering, and rapid mass movements.

Many soils in the planning area are susceptible to erosion via wind. The NRCS has classified wind erosion ratings using the Wind Erodibility Index and Wind Erodibility Groups. The Wind Erodibility Index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per year per acre expected to be lost to wind erosion. This scale ranges from 0 to 310, with a rating of 310 indicating the highest susceptibility to wind erosion. The Wind Erodibility Group breaks down the Wind Erodibility Index scale into 9 groups, as shown in **Table 3-2**, Wind Erodibility Groups. Acres of soils within the planning area that are classified by Wind Erodibility Group are found in **Table 3-3**, Approximate Acres of Soil by Wind Erodibility Group.

Table 3-2
Wind Erodibility Groups

Wind Erodibility Group [1,3,4,5,7]	Properties of Soil Surface Layer	Dry Soil Aggregates More Than 0.84 mm (wt. %)	Wind Erodibility Index (tons/ac/yr)
1	Very fine sand, fine sand, sand, or coarse sand[2]	1 2 3 5 7	310 250 220 180 160
2	Loamy very fine sand, loamy fine sand, loamy sand, and loamy coarse sand; very fine sandy loam and silt loam with 5 or less percent clay and 25 or less percent very fine sand; and sapric soil materials; except Folists.	10	134
3	Very fine sandy loam (but does not meet Wind Erodibility Group criterion 2), fine sandy loam, sandy loam, and coarse sandy loam; noncalcareous silt loam that has greater than or equal to 20 to less than 50 percent very fine sand and greater than or equal to 5 to less than 12 percent clay.	25	86
4	Clay, silty clay, noncalcareous clay loam that has more than 35 percent clay and noncalcareous silty clay loam that has more than 35 percent clay; all of these do not have sesquic, parasesquic, ferritic, ferruginous, or kaolinitic mineralogy (high iron oxide content).	25	86
4L	Calcareous[6] loam, calcareous silt loam, calcareous silt, calcareous sandy clay, calcareous sandy clay loam, calcareous clay loam, and calcareous silty clay loam.	25	86
5	Noncalcareous loam that has less than 20 percent clay; noncalcareous silt loam with greater than or equal to 5 to less than 20 percent clay (but does not meet Wind Erodibility Group criterion 3); noncalcareous sandy clay loam; noncalcareous sandy clay; and hemic soil materials.	40	56
6	Noncalcareous loam and silt loam that have greater than or equal to 20 percent clay; noncalcareous clay loam and noncalcareous silty clay loam that have less than or equal to 35 percent clay; silt loam that has parasesquic, ferritic, or kaolinitic mineralogy (high iron oxide content).	45	48

Table 3-2
Wind Erodibility Groups

Wind Erodibility Group [1,3,4,5,7]	Properties of Soil Surface Layer	Dry Soil Aggregates More Than 0.84 mm (wt. %)	Wind Erodibility Index (tons/ac/yr)
7	Noncalcareous silt; noncalcareous silty clay, noncalcareous silty clay loam, and noncalcareous clay that have sesquic, parasesquic, ferritic, ferruginous, or kaolinitic mineralogy (high content of iron oxide) and are Oxisols or Ultisols; and fibric soil materials.	50	38
8	Soils not susceptible to wind erosion due to rock and pararock fragments at the surface and/or wetness; and Folists.	--	0

Source: NRCS 2009

Table 3-3
Approximate Acres of Soil by Wind Erodibility Group

Wind Erodibility Group	Acres
1	583,200
2	529,600
3	741,000
4	1,512,400
4L	54,200
5	2,485,500
6	580,900
7	1,120,400
8	543,600
Not Classified	283,600

Source: NRCS 2009

The BLM manages uplands within the planning area. These areas tend to have steep slopes, high drainage densities, high relief, and high ruggedness, which increases erosion rates (see **Table 3-4**, Acres of Steep Slopes). When coupled with the climate patterns experienced in the planning area, which include an intense rainfall regime, these characteristics can lead to high sediment loads and run-off rates during storm events. The development of top soil is a slow process in the semi-arid environment of the planning area, and if washed away during a storm event can lead to denuded soils. Denuded soils are susceptible to erosion and headcutting. Headcutting in stream or spring/seep systems ultimately results in draining source water. These related and cumulative stages of soil degradation are a large concern within the planning area. Locations within the planning area where erosion is of concern include Petersen Mountains, Pine Nut Mountains, Virginia Mountains, Warm Springs and Hungry Valley, Sun Valley, Jumbo/Geiger Grade, and portions of Prison Hill, C Hill, and Mullen Pass.

Table 3-4
Acres of Steep Slopes

Slope	Acres
0-5	3,430,800
6-10	1,177,000
11-15	174,600
16-20	796,700
21-25	387,000
26-30	80,000
31-35	1,187,500
36-40	922,500
41-45	24,000
46-50	18,300
51-55	320,700
56-60	7,600
61-65	371,600

Source: NRCS 2009

In addition to steep slopes and Wind Erodibility Group classifications, alterations in watershed conditions can result from physical changes to a stream channel as a result of wildfire. For example, a wildfire near Carson City resulted in changes in sediment transport and water quality. The mid-reach of Clear Creek experienced severe erosion, which has incised the stream channel and deposited sediment into lower portions of the creek. Another example following wildfire occurred along US Highway 50 in 2003, and left slopes susceptible to increased sediment runoff. Heavy rains in December 1997 resulted in a large flood event that washed out portions of old US Highway 50 in areas where the road closely parallels the stream. Currently, CCD does not identify potential problem areas of post-fire sediment yield and water quality in drainages near populated areas.

The BLM authorized officer dictates the cattle numbers and length of time with input from the permittee and other interested parties, with meeting soil health standards one of the factors considered when determining appropriate use. The standards for rangeland health involving soils include Standard 1: Soils:

> Soil processes will be appropriate to soil types, climate, and land form as indicated by:
>
> 1. Surface litter is appropriate to the potential of the site.
> 2. Soil crusting formations in shrub interspaces, and soil compaction are minimal or not in evidence, allowing for appropriate infiltration of water.
> 3. Hydrologic cycle, nutrient cycle, and energy flow are adequate for the vegetation communities.

4. Plant communities are diverse and vigorous, and there is evidence of recruitment.
5. Basal and canopy cover (vegetative) is appropriate for site potential.

In NEPA documents, the NRCS Soil Survey mapping units are used as indicators for quantifying erodibility, flood prone areas, rangeland health assessments, and potential sediment problems.

Resource Changes

Increases in the degradation of soil resources are in part driven by population growth, popularity of OHV use, cattle grazing, wild horse and burro management, and other surface-disturbing activities. With increased OHV use within the planning area, disturbance effects on soils need to be recognized, especially on slopes and highly erodible soils. Vehicles exert significant compressional and shear forces. Vehicles often compact soils, causing scour and sedimentation of drainages. Another driver for increased degradation of soil resources results from hoof action by wildlife, livestock and wild horses as a result of water scarcity. Hooves exert compressional and shear forces on soils, causing compaction of the resource. Other activities such as ROW authorizations and mineral development have also increased and are contributing to sediment yields and erosion susceptibility.

Soil resources are currently evaluated on a case-by-case basis in NEPA documents. This may or may not adequately provide for future protection of the resource. The degree of degradation to soils is expected to be high under current management.

It is widely recognized that soils and climate are components of an ecological site and that the interaction between the soils, climate, and vegetation are reflected in the ecological site description. Different responses to timing and amount of precipitation and temperature may mean a shift in biological soil crust species composition. Biological soil crusts form a matrix that stabilizes and protects soil surfaces from erosive forces (BLM 2001a). Since the planning area is currently in a winter-precipitation dominated regime with a predicted increase in summer rain, effects of climate change may be reflected in different soil crust composition.

Water Resources

Water resources include water of sufficient quality that is physically and legally available for use. Within the planning area, water supply is limited by natural processes. Due to population growth and development, demand for water has increased throughout the district over the past few decades. The amount, distribution, intensity, and type of precipitation has significant impacts on both surface and groundwater resources. Water resources in the planning area

mainly consist of upland spring and seep sources, a few small creeks and streams, and shallow bodies of intermittent surface water.

Water Quality

Based on the authority of the federal Clean Water Act, the State of Nevada has established surface water quality standards as presented in the Nevada Administrative Code 445A. Narrative standards that address the general physical, chemical, and biological characteristics of all surface waters in the state are listed in Nevada Administrative Code 445A.121. In addition to the standards applying to all surface waters, specific beneficial uses and standards have been established for waters categorized as Class A, B, C, or D waters. Class A waters are relatively undisturbed by humans and are located away from activities such as industry or intensive agriculture, Class B waters are only moderately influenced by human activities, Class C waters are considerably influenced by human activities, and Class D waters are highly impaired due to human activities. The uses and standards for class waters are presented in **Appendix G**, Nevada Class Waters Description.

Based on Nevada Administrative Code 445A, a waterbody not meeting the standards may be listed as impaired on the 303(d) list, published by NDEP in a biennial report. The State of Nevada also prepares a 305(b) report summarizing water quality assessment information. The Tributary Rule is applicable to the BLM, since it provides protection for those surface waters that are not specifically defined as a class or designated water. Additionally, the Clean Water Act's antidegradation policy is addressed in the 303(d) list to ensure maintenance of high quality waters. Standards for toxic materials (Nevada Administrative Code 445A.123 to 445A.127) apply to designated waters and waters such as the Truckee, Carson, and Walker Rivers (Nevada Administrative Code 445A.145 to 445A.225). For California, the combined 305(b) and 303(d) report is called the California 303(d)/305(b) Integrated Report. Measurements to evaluate protection and restoration efforts are carried out by the Surface Water Ambient Monitoring Program. The Surface Water Ambient Monitoring Program implements the Lahontan Basin Plan, covering lands within the planning area, and the California Toxics Rule established under the California Water Code (Article 3 174-188.5). The Surface Water Ambient Monitoring Program determines compliance with chemical and physical water quality objectives, and develops indices of biological integrity. The Lahontan Region, which is the second largest Water Board region in California, spans eastern California from the Oregon border to the Mojave Desert. Total maximum daily loads incorporated into Lahontan Water Board's Basin Plan include Revised Sodium-Related Standards for the Carson and Walker River Watersheds and Truckee River Sediment Total Maximum Daily Loads (SWRCB 2008). California's 2008-2010 lists of water quality limited segments still requiring a total maximum daily loads report includes the East Fork of the Carson River for Total Dissolved Solids.

Both states focus efforts on their most important water bodies, such as municipal water supplies and critical wildlife habitats. They do not have the capability to designate uses and establish specific standards for every water body, especially in the uplands. For example, many of the water bodies that concern the BLM during rangeland health evaluations are small, remote springs, seeps, and creeks that do not have designated uses or specific standards.

The isolated springs and seeps within the planning area draw from general narrative standards of visual and olfactory senses within the 2007 Standards and Guidelines for Rangeland Health Assessment. Rangeland Health Assessments point toward Nevada Administrative Code 445A relative to the area being assessed. With consideration to what is present on the landscape, narratives mostly apply within the planning area. Standard 3: Water Quality is described below. Standard 1: Soils, Standard 2: Riparian/Wetland, and Standard 4: Plant and Animal Habitat are described in **Section 3.2.4**, Vegetation (soils have a vegetative component) and Standard 5: Special Status Species Habitat is described in **Section 3.2.6**, Special Status Species.

Standard 3: Water Quality. Water quality criteria in Nevada or California State Law shall be achieved or maintained, as indicated by the following:

- Chemical constituents do not exceed the water quality standards.
- Physical constituents do not exceed the water quality standards.
- Biological constituents do not exceed the water quality standards.
- The water quality of all water bodies, including groundwater located on or influenced by BLM-administered lands, will meet or exceed the applicable Nevada or California water quality standards. Water quality standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and antidegradation requirements set forth under state law, and as found in Section 303(c) of the Clean Water Act.

Unique factors that affect water quality in the planning area include:

- Locally high concentrations of pollutants (e.g., boron, arsenic, lead, mercury, and other heavy metals)
- Historic mining sites
- Evaporative concentration in desert environments
- Volcanic and geothermal sources

Within the planning area uplands, nonpoint source impacts potentially result from transportation corridors (railways and roads), urban runoff and construction-related impacts from rapid land development, recreation developments (official and unofficial), livestock grazing, use of herbicides for

weed control, numerous abandoned mines, septic systems, and wildland fires. Sedimentation resulting from hydro-modification activities such as reservoir management or irrigation is also a concern, as are impacts on wetlands and riparian areas from fill or channelization.

Water Rights

Nevada's water law is one of the most comprehensive water laws in the West. This law is based on prior appropriation and beneficial use. Prior appropriation grants senior water rights and is also known as first in time, first in right. This concept helps protect senior water uses when water rights are allocated to new users (NDWR 2013).

The State Engineer oversees water rights within Nevada; the BLM has no authority over water rights. The BLM is authorized to apply to the Nevada State Engineer to appropriate water for beneficial use for BLM programs and projects. Beneficial uses recognized by the State of Nevada include wildlife (including wild horses and burros); establishing and maintaining wetlands, fisheries, and other wildlife habitats; recreation; and quasi-municipal, irrigation, domestic, environmental, and storage. See Nevada Revised Statutes 533.023 533.030, 533.035, 533.040, 533.055, 533.070, 533.075, 533.367, 533.437, 533.490 for limitations and exceptions as well as various State Engineer and Court Decisions. Nevada Revised Statutes 533.040 ended historical livestock water rights held in cooperative agreements with grazing permittees by the BLM. The BLM has authority to approve or not approve development of the point of diversion and place of beneficial use on BLM-administered lands. For example, a water right permit may be issued by the State of Nevada, but in order to develop the water, the BLM must assess the full spectrum of potential impacts of the development on the BLM-administered land.

Federal reserved water rights are a judicial creation; they are derived from federal, not state, law. A federally reserved water right includes water rights on BLM-administered lands reserved for a particular governmental purpose. On reserved or withdrawn lands reserved water rights allow the federal government to remove water from availability for appropriation under state law, and to establish and exercise water rights in accordance with federal law. Reservation of water is inferred if water is necessary to accomplish the purposes for which the land reservation was created.

Water right decrees may address the amount of water to which each party is entitled, the source of the water, the area to which it may be applied, and the priority date for each use. Such decrees govern the Truckee, Carson, Walker, and Humboldt Rivers, as well as most of the streams that run off the east slope of the Sierra Nevada.

California uses a hybrid system for water right allocations, originally recognizing riparian rights but later converting to a system of appropriation while preserving existing riparian rights. The hybrid system, called the California Doctrine, gives

landowners bordering a waterway certain appurtenant rights for "reasonable use" of the water on land adjacent to the waterway. If there is insufficient water to satisfy the reasonable needs of all riparian areas, all landowners must reduce usage of water in proportion to their rights. Riparian rights do not need to be put to beneficial use in order to remain active, meaning that landowners may initiate new uses at any time and others must adjust their usage in response (SWRCB 2011).

Current Conditions

Surface Water. The interstate surface waters of the Truckee, Carson, and Walker Rivers are within the planning area. These rivers are displayed in **Figure 3-2**, Water Bodies. The Truckee River begins at the outlet of Lake Tahoe, flows through the Sierra Nevada Mountains into Nevada, through Reno, and along the northern end of the Carson Range. At Derby Dam the Truckee River is diverted into two sections. The Truckee River turns north, flowing along the east side of the Pah Rah Range and empties into Pyramid Lake, and the Truckee Canal continues east and flows through Fernley and then turns south and empties into Lahontan Reservoir. The lower reach east of Reno is fish habitat for the cui ui and Lahontan cutthroat trout; these native fish species are listed as endangered and threatened, respectively. The Truckee River Basin is approximately 3,120 square miles, with less than 20 percent managed by the BLM. To the south, the Carson River rises in two forks in the Sierra Nevada; the East Fork begins in Alpine County southeast of Markleeville, and the West Fork begins near Carson Pass. After these forks join in Nevada, the Carson River flows northeast until it is impounded by the Lahontan Dam. From there water continues out into the Carson Sink. The Carson River Basin is approximately 3,990 square miles, with approximately 35 percent managed by the BLM.

The Walker River forms in Lyon County, south of Yerington by the confluence of the East Walker and West Walker Rivers. It initially runs north but then turns southeast along the east side of the Wassuk Range. Most of the flow is used for irrigation, leaving very little to enter Walker Lake. The Walker River Basin is approximately 3,130 square miles, with approximately 40 percent managed by the BLM.

The amount of BLM-administered land within each of these river basins is significant, even though the BLM does not always manage land adjacent to the river. On average, the Truckee River yields 804 cubic feet per second, the Carson River yields 389 cubic feet per second, and the Walker River yields 164 cubic feet per second annually (USGS 2012a). Consideration given to flow rates highlight the significance of public land management on vegetative cover, on-site moisture, and erosion.

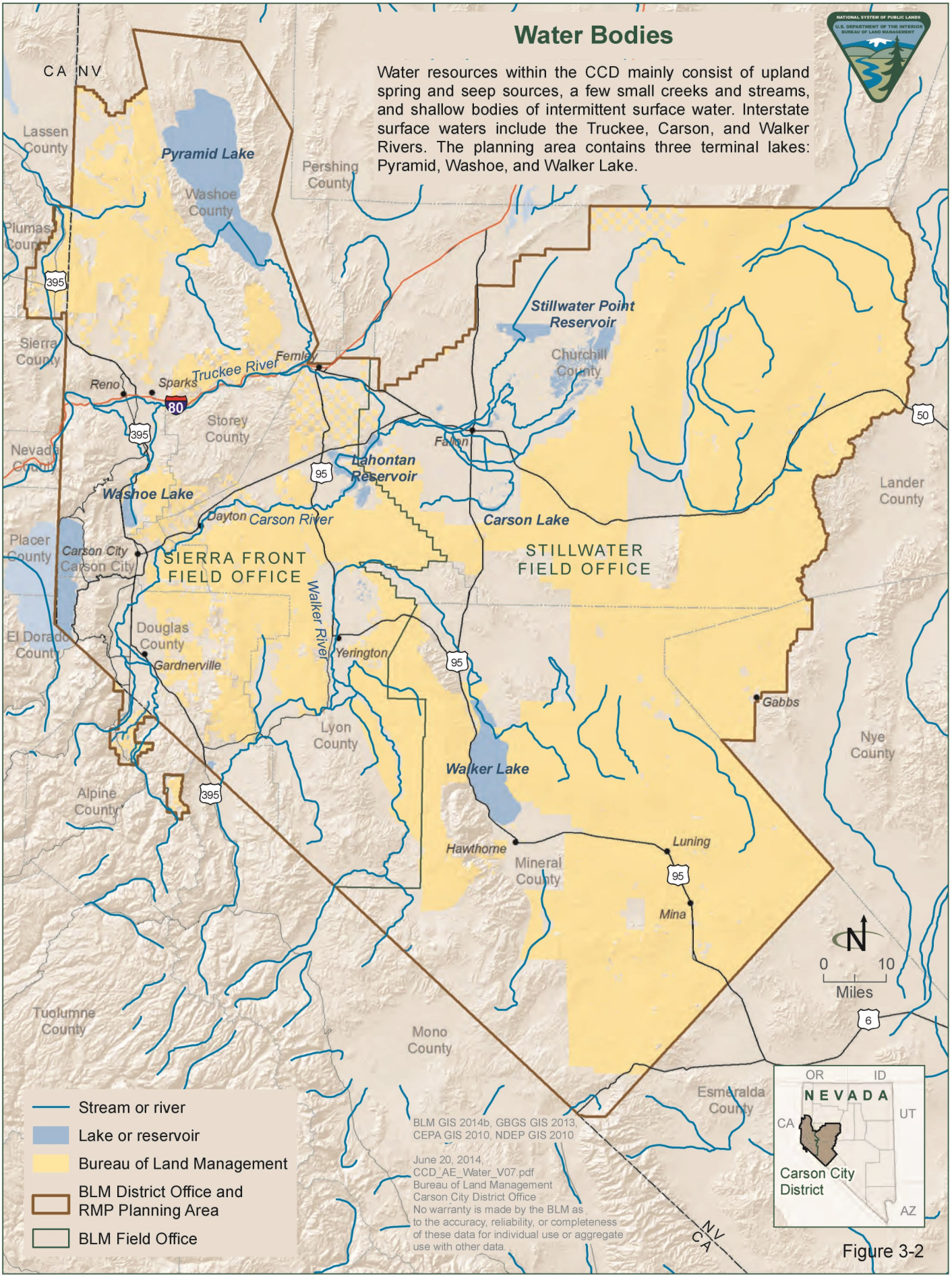
Water Bodies
Water resources within the CCD mainly consist of upland spring and seep sources, a few small creeks and streams, and shallow bodies of intermittent surface water. Interstate surface waters include the Truckee, Carson, and Walker Rivers. The planning area contains three terminal lakes: Pyramid, Washoe, and Walker Lake.
CA NV
Lassen County
Pyramid Lake
Washoe County
Pershing County
Plumas County
Sierra County
Reno
Sparks
Truckee River
Fernley
Storey County
Nevada County
Washoe Lake
Dayton
Carson River
Placer County
Carson City
Carson City
SIERRA FRONT FIELD OFFICE
Douglas County
Gardnerville
El Dorado County
Walker River
Yerington
Lyon County
Alpine County
Tuolumne County
Mono County
Lahontan Reservoir
Fallon
Stillwater Point Reservoir
Churchill County
Carson Lake
STILLWATER FIELD OFFICE
Lander County
Gabbs
Nye County
Walker Lake
Hawthorne
Mineral County
Luning
Mina
Esmeralda County
Stream or river
Lake or reservoir
Bureau of Land Management
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, GBGS GIS 2013, CEPA GIS 2010, NDEP GIS 2010
June 20, 2014, CCD_AE_Water_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
0 10
Miles
OR ID
NEVADA
CA
UT
AZ
Carson City District
NV
CA

Figure 3-2

Groundwater. There are 14 Hydrographic Regions in Nevada. The three major water basins within the planning area are the Truckee, Carson, and Walker River Basins. The most significant groundwater sources in the planning area are found in unconsolidated sediments and volcanic rocks beneath valley floors. These volcanic rocks and saturated sediments under alluvial fans and the valley floor transmit and store large volumes of groundwater into the most important aquifers in the planning area and contain shallow, intermediate, deep, and basalt aquifers. Geothermal aquifers are an important renewable resource and are located throughout the planning area (Maurer et. al. 1996). A complete list of the hydrographic regions and basins in the planning area are housed at the Nevada Division of Water Resources. Real time and historic data of groundwater within the planning area are in US Geological Survey (USGS) databases and can be accessed at http://waterdata.usgs.gov/nv/nwis/current/?type=gw.

Water Quality

305(b) and 303(d) Lists. The State of Nevada's 305(b) report suggested water quality improved in the 2004 reporting cycle and has maintained this improvement more recently. This was due to removal of some point sources and implementation of more stringent standards on other existing point sources. Most exceedances were seasonal and were of a natural condition. The 305(b) report was inconclusive of nonpoint source loads, such as in the case of Perry Canyon, which is a location of historical mine issues, including acid mine drainage on public and private land within the planning area. Similarly, California's Surface Water Ambient Monitoring Program findings indicate sampled waters were generally of high quality, with approximately 90 percent of the results in compliance with the Lahontan Basin Plan's numeric standards.

The Nevada 2008-10 Water Quality Integrated Report (NDEP 2013) contains an assessment for 541 waterbody segments in the State of Nevada. During this sampling period, there were 165 segments on the 303(d) list of impaired waters. Common impairments in lakes and reservoirs were from phosphorus, turbidity, and total dissolved solids. Stream impairments were most commonly from phosphorus, temperature, turbidity, and total suspended solids. A waterbody will be delisted if it meets certain requirements. For example, a waterbody can be delisted if the segment has met water quality standards or if the standards have changed within the current assessment cycle. During this assessment, 176 waterbody segment/parameter combinations were delisted, and 33 waterbodies were removed from the 303(d) list for all parameters. The planning area contained 51 waterbody segments on the 303(d) list within the Truckee, Carson, and Walker River watersheds. These areas also had 31 waterbody segments with parameters delisted due to improving conditions (NDEP 2013).

Rangeland Health Assessments. As part of implementing the 2007 Standards and Guidelines for Rangeland Health, BLM employees conducted Rangeland Health

Assessments on 38 allotments comprising approximately 2,113,771 acres across the planning area between 2003 and 2012. The planning area was assessed for adherence to Standard 3: Water Quality as follows:

- 12 percent (245,180 acres) did not require this standard;
- 63 percent (1,335,373 acres) was rated as fully meeting the standard; and
- 25 percent (533,218 acres) had problems of enough significance to not meet the standard.

Of the 38 allotments that were assessed in the planning area, 8 did not have water sources on BLM-administered land and were not included in any Riparian Functional Assessments. Of the 184 springs, seeps, and streams that were analyzed, 29 percent were found in proper functioning condition on the day of the field visit.

Water Supply

Surface Water. The BLM has incomplete undigitized spring inventory data. Inventory data from 1979 to 1981 include location, flow rates, water quality, and accessibility. Color-coded 7.5-minute maps have been used to create a historic spring layer in GIS for the Stillwater Field Office. Spring inventory forms and 7.5-minute maps have not been digitized for the Sierra Front Field Office. Historical and real time flow rates of surface water in streams, rivers, and lakes throughout the planning area can be found on the USGS website at http://waterdata.usgs.gov/nv/nwis/rt.

Surface water in the planning area is water collected on the ground or in a stream, river, lake, or riparian/wetland. Surface water is naturally replenished by precipitation and naturally lost through evaporation and sub-surface seepage into the ground. Rivers, streams, or creeks may be perennial, with continuous flow year round during years of normal rainfall; intermittent, with cessation of flow for weeks or months each year; or ephemeral, with flows observed for hours or days following precipitation. The three terminal lakes within the planning area are at-risk natural desert terminal lakes with unique ecosystems. The Truckee River Operating Agreement is in place to help Pyramid Lake receive the water it needs, and actions for Walker Lake include the purchase of water rights and ceasing irrigation on agriculture lands to help deliver more water. The BLM is involved in these restorative or sustainable actions indirectly, with the purchase and implemented work on the Mustang and 102 Ranches along the Truckee River's banks for restoration of river sinuosity and overall health. Another unique case of managing surface water supply within the planning area is Winters Ranch in Washoe Valley. The three creeks crossing Winters Ranch contribute an average annual 8,260 acre-feet of water to Washoe Lake and eventually the Truckee River, and approximately two-thirds of the average annual water yield of these creeks are managed by the BLM.

Groundwater. Activities in the planning area do not generally impact groundwater availability; however, groundwater availability is looked at on a case-by-case basis. Impacts on groundwater are monitored as necessary to uphold the multiple use and sustained yield mandates and to support implementation of restorative or exploratory projects on BLM-administered land. Examples include hydrologic studies of groundwater movement and supply for management decisions on Winters Ranch, and monitoring for fuels treatments in Porter and Dalton Canyons in the Desatoya Mountains.

Water Rights

Since 2005, water rights held by the CCD have been limited by Nevada Revised Statutes 533.040 to exclude livestock watering. The BLM authorizes ingress and egress to springs with livestock water rights on BLM-administered lands. Current water rights held by the CCD include permits and certificates for wildlife. The BLM applies for wildlife water rights on BLM-administered lands and handles these rights on a case-by-case basis on the professional judgment of whether or not a water source needs to be protected, developed, or maintained for wildlife use. In HMAs, the BLM may hold water rights for wild horses; however, the debate over wild horses and burros qualifying as wildlife pertaining to water rights has not been resolved in the courts. Previous cooperative agreements between grazing allotment permittees and the CCD for holding stockwater rights were frozen by Nevada Revised Statutes 533.503. Therefore, the BLM can no longer apply for new water rights, nor can the BLM change an existing right. The State Engineer can still issue joint permits or certificates of appropriation so long as one of the joint holders satisfies Nevada Revised Statutes 533.503.

Resource Changes

Narrative standards for water quality cited above have no accessible data to compare, therefore a trend is unknown.

Surface water availability in the planning area is highly related to seasonal flows and climate, with cycles of normal, below, and above years.

Trends for groundwater are related to use, especially in populated areas, where increased pumping of water over time decreases the water table level.

The majority of riparian and wetland areas that were functioning at risk were trending downward from the previous assessment.

There is no apparent trend relating to water rights in the planning area.

Given current management, overall water resources will continue on a flat trajectory or decrease due to the increase and/or concentrated use. Demand may outrun supply, if unfettered development continues.

3.2.4 Vegetation

Vegetation provides an enormous variety of functions in an ecosystem, and also provides for a variety of human and animal uses. Vegetation stabilizes soils, prevents erosion, reduces carbon dioxide, releases oxygen, increases species diversity, and provides habitat and food for animals and resources for human use (Prevey et al. 2010; Connelly et al. 2004). A vegetative community is the basic unit of vegetation that allows for the representation of an assemblage of ecologically interrelated vegetative species (Daubenmire 1968).

Ecosystems reflect complex sets of interactions between plants, animals, soil, water, air, temperature, topography, fire, and humans. Influences exerted on one component affect other components in the system. Vegetation provides many functions within ecosystems, including habitat for wildlife. Many of the BLM's land management policies are directed toward managing for healthy vegetative communities that support resistant and resilient ecological systems.

The BLM has adopted an eco-regional approach to landscape assessment and management: "The fundamental concept is that ecological regions can be identified through the analysis of the patterns and that physical and biological phenomena (i.e., physiography, geology, vegetation, climate, soils, and hydrology) either affect or reflect differences in ecosystem quality or quantity" (BLM 2012a).

The planning area is primarily located in the Central Basin and Range ecoregion, which encompasses 120,000 square miles (BLM 2012a). The Central Basin and Range ecoregion is internally drained and is characterized by north-south trending mountain ranges that are separated by broad xeric basins, valleys, and salt flats. Elevations range from 3,350 feet to more than 13,120 feet. There is a significant rain shadow effect from the Sierra Nevada Mountains to the east and the Rocky Mountains to the west that create an arid climate throughout the ecoregion.

Current Conditions

Vegetation is measured in many ways to provide information on the health of a community. The compilation of all the data relating to any one area allows the BLM to complete a Standards Determination in which the applicable standards are rated as either being met or not being met. If they are not being met, the causes are examined, and management is changed to address those causes.

Standards and Guidelines for Rangeland Health

There are five standards in the 2007 Standards and Guidelines for Rangeland Health (BLM 2007a). Below are listed the standards that have vegetation components and can be found in their respective sections. **Appendix D**, Nevada Standards for Public Land Health and Guidelines for Livestock Grazing Management, contains a full description of the standards and guidelines.

Standard 1. Soils. The goal to be achieved in this standard is soil stability and function applicable to the potential of the soil being evaluated. Soil processes will be appropriate to soil types, climate, and land form, as indicated by:

- Surface litter is appropriate to the potential of the site.
- Soil crusting formations in shrub interspaces, and soil compaction are minimal or not in evidence, allowing for appropriate infiltration of water.
- Hydrologic cycle, nutrient cycle, and energy flow are adequate for the vegetation communities.
- Plant communities are diverse and vigorous, and there is evidence of recruitment.
- Basal and canopy cover (vegetative) is appropriate for site potential.

Standard 2. Riparian/Wetlands. The goal to be achieved in this standard is riparian and wetland systems that are in properly functioning condition. This means they have properly functioning hydrologic, vegetational, and erosional/depositional (soils) attributes and processes appropriate to their potential, as indicated by:

- Sinuosity, width/depth ratio, and gradient are adequate to dissipate streamflow without excessive erosion or deposition.
- Riparian vegetation is adequate to dissipate high flow energy and protect banks from excessive erosion.
- Plant species diversity is appropriate to riparian-wetland systems.

Standard 4. Plant and Animal Habitat. The goal is to have populations and communities of native plant species and habitats for native animal species that are healthy, productive, and diverse, as indicated by:

- Good representation of life forms and numbers of species.
- Good diversity of height, size, and distribution of plants.
- Number of wood stalks, seed stalks, and seed production adequate for stand maintenance.
- Vegetative mosaic, vegetation corridors for wildlife, and minimal habitat fragmentation.

As part of implementing the 2007 Standards and Guidelines for Rangeland Health for the Sierra Front-Northwestern Great Basin Area (BLM 2007a), BLM employees conducted Rangeland Health Assessments in 38 allotments across the planning area between 2007 and 2012 in which they assessed the current condition of the vegetation and overall land health. Approximately 2,113,771 acres were assessed for the rangeland health standards. Results of the

Rangeland Health Assessments are described below. The primary issues influencing vegetation are discussed at the end of this section under *Trends* and *Forecast*.

The planning area was assessed for adherence to Standard 1: Soils as follows:

- 96 percent (2,025,248 acres) was rated as fully meeting the standard.
- 4 percent (88,523 acres) had problems of enough significance to not meet the standard.

The planning area was assessed for adherence to Standard 2: Riparian and Wetlands as follows:

- 13 percent (267,345 acres) did not require this standard.
- 18 percent (388,002 acres) was rated as fully meeting the standard.
- 69 percent (1,458,424 acres) had problems of enough significance to not meet the standard.

The planning area was assessed for adherence to Standard 4: Plant and Animal Habitat:

- 42 percent (884,578 acres) was rated as fully meeting the standard.
- 58 percent (1,229,193 acres) had problems of enough significance to not meet the standard.

Vegetative Communities

The ecological systems discussed below are those that provide the most important land cover across the planning area. Vegetation can be generally characterized by plant community types (associations). A terrestrial ecological system is defined as a group of plant community types (associations) that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients.

Based on SynthMap GIS data (Peterson 2008), which uses the Southwest Regional Gap Analysis Project land cover descriptions, the planning area can be grouped into vegetation communities. These vegetation communities represent different vegetation and habitat types and potentials. **Table 3-5**, Vegetation Communities, depicts the estimated acreage within the planning area for each vegetation community. **Figure 3-3**, Vegetation Communities, portrays the vegetation communities throughout the planning area.

Table 3-5
Vegetation Communities

Vegetation Community*	Percent of District	Percent of BLM-administered land	Acres in District	Acres (of BLM-administered land)
Sagebrush	28	33	2,519,440	1,234,300
Intermountain Cold Desert Scrub	41	48	3,644,955	2,604,200
Forests/Woodlands	15	14	1,392,186	692,800
Annual Grassland/Invasive Species	1	1	101,633	58,600
Riparian Systems	4	<1	322,881	15,700
Special Assemblages	<1	<1	26,114	8,500
Other	10	4	934,271	187,000
Total	*100*	*100*	*8,941,480*	*4,803,300*

* Vegetation within the planning area has been characterized by using the SyntheMap raster data set developed by NatureServe for the Natural Heritage Program (Peterson 2008). The BLM has chosen to use the SyntheMap dataset over other datasets such as Southwest Regional Gap Analysis Project, Gap, and LANDFIRE for the following reasons:
• SyntheMap used data from Southwest Regional Gap Analysis Project and LANDFIRE as the basis for refining the vegetation typing done by these projects.
• BLM specialists reviewed the data set and concurred that it characterized current vegetation more consistent with knowledge of actual field conditions.
• SyntheMap will improve overtime because it is continuously updated as field knowledge becomes available.

Sagebrush

There are several different types of sagebrush systems throughout the planning area. Elevation, amount of precipitation, and type of soil are all important factors on the species present. Although some other types are present throughout this vegetative community, the predominant species assemblages are detailed below.

Great Basin Xeric Mixed Sagebrush Shrubland—This system occurs on dry flats and plains, alluvial fans, rolling hills, rocky hillslopes, and saddles, usually at lower elevations between 3,200 and 8,500 feet. These sites are dry, with vegetation dominated by black sagebrush (*Artemisia nova*) and low sagebrush (*Artemisia arbuscula*); these sites may also have rabbitbrush (*Chrysothamnus* sp.), shadscale (*Atriplex confertifolia*), Mormon tea (*Ephedra* spp.), spiny hopsage (*Grayia spinosa*), greasewood (*Sarcobatus vermiculatus*), and horsebrush (*Tetradymia* spp.) as shrub components. The grass and forb component is often sparse and is composed of perennial bunchgrasses such as Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass (*Achnatherum thurberianum*), squirreltail (*Elymus elymoides*), and Sandberg's bluegrass (*Poa secunda*).

Inter-mountain Basins Big Sagebrush Steppe—This is widespread throughout the Great Basin. This system is found at slightly higher elevations, and the soils are typically deep and nonsaline, sometimes with a microphytic crust. The shrub-steppe is dominated by perennial grasses and forbs, with basin big sagebrush

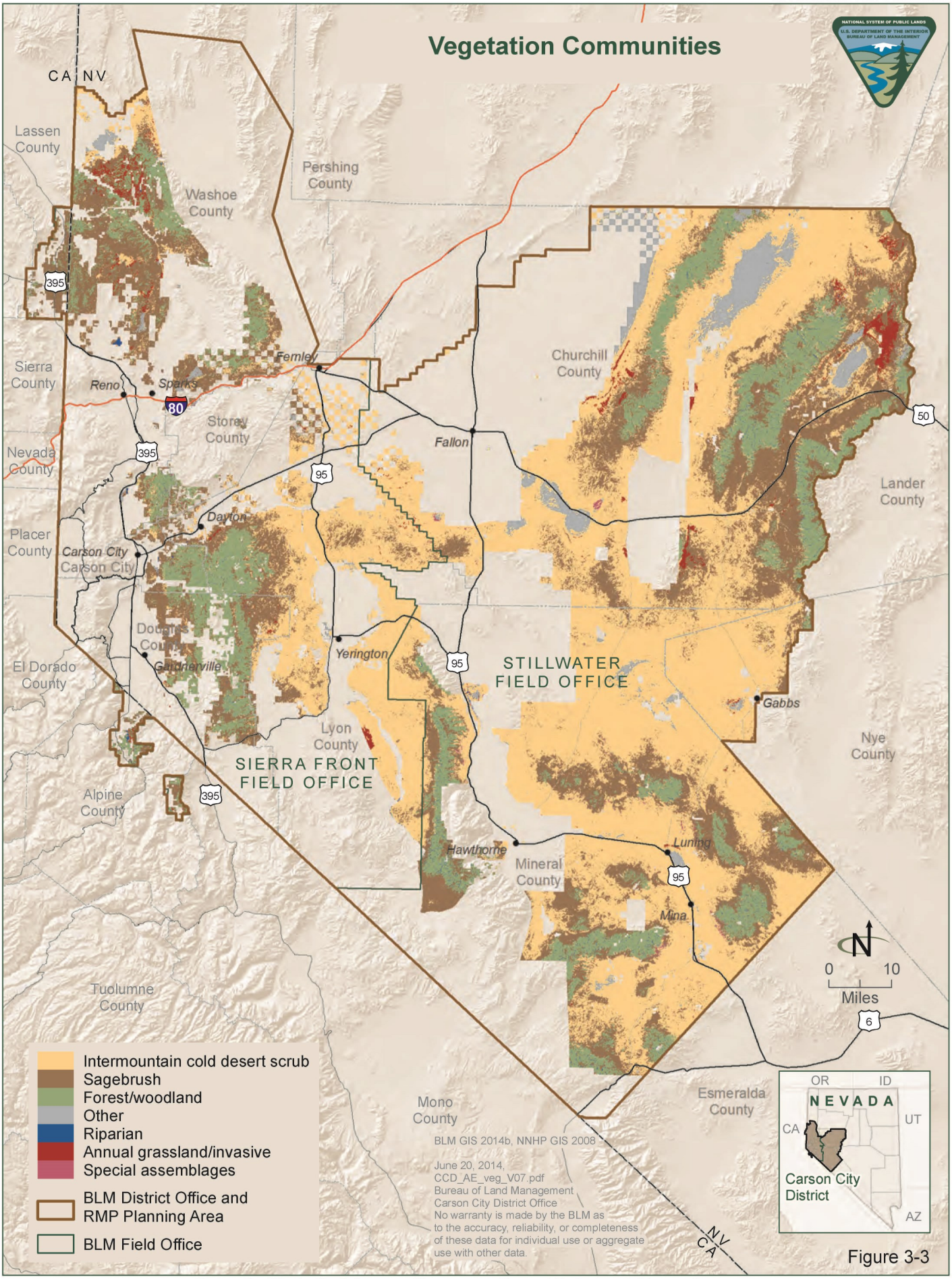
Vegetation Communities
CA NV
Lassen County
Washoe County
Pershing County
Churchill County
Sierra County
Reno
Sparks
Fernley
Storey County
Nevada County
Fallon
Lander County
Placer County
Dayton
Carson City
Carson City
Douglas County
Gardnerville
Yerington
El Dorado County
STILLWATER FIELD OFFICE
Gabbs
Lyon County
Nye County
SIERRA FRONT FIELD OFFICE
Alpine County
Hawthorne
Luning
Mineral County
Mina
Tuolumne County
Mono County
Esmeralda County
0 10
Miles
Intermountain cold desert scrub
Sagebrush
Forest/woodland
Other
Riparian
Annual grassland/invasive
Special assemblages
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, NNHP GIS 2008
June 20, 2014,
CCD_AE_veg_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
OR
ID
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Figure 3-3

(*Artemisia tridentata* ssp. *tridentata*), Wyoming big sagebrush (*Artemisia tridentata spp. wyomingensis*), and bitterbrush (*Purshia tridentata*) dominating or co-dominating the shrub component. Other shrub species often present include shadscale (*Atriplex confertifolia*), rabbitbrush (*Chrysothamnus* sp.), and horsebrush (*Tetradymia* spp.). The native perennial grasses associated with this system include: Indian ricegrass (*Achnatherum hymenoides*), Idaho fescue (*Festuca idahoensis*), Prairie junegrass (*Koeleria macrantha*), Sandberg's bluegrass (*Poa secunda*) and bluebunch wheatgrass (*Pseudoroegneria spicata*). The natural fire regime of this system likely maintained a patchy shrub component, but the shrubs increase with overgrazing or lack of fire.

Inter-Mountain Basins Big Sagebrush Shrubland—This system occurs in broad basins between mountain ranges, usually between 4,900 and 7,500 feet in elevation. The soils are typically deep and well-drained. These shrublands are co-dominated by Basin big sagebrush (*Artemisia tridentata* spp. *tridentata*) and Wyoming big sagebrush (*Artemisia tridentata* spp. *tridentate*). There is often a scattered juniper component (*Juniperus* spp.), as well as greasewood (*Sarcobatus vermiculatus*), Atriplex species (*Atriplex* spp.), rabbitbrush (*Chrysothamnus* spp.), and bitterbrush (*Purshia tridentata*). The grass component is usually about 25 percent or less of the vegetative cover, and species include: Indian ricegrass (*Achnatherum hymenoides*), needle and thread grass (*Hesperostipa comata*), Idaho fescue (*Festuca idahoensis*), Basin wildrye (*Leymus cinerus*), Sandberg's bluegrass (*Poa secunda*), and bluebunch wheatgrass (*Pseudoroegneria spicata*).

<u>Intermountain Cold Desert Scrub</u>

Several different species assemblages are included in the Intermountain Cold Desert Scrub vegetative community; however, the most common are detailed below.

Inter-Mountain Basins Semi-Desert Shrub-Steppe—This system occurs at lower elevation on alluvial fans and flats with moderate to deep soils. This system is dominated by grasses, with an open shrub layer. The most typical grasses include Indian ricegrass (*Achnatherum hymenoides*), needle and thread grass (*Hesperostipa comata*), and Sandberg's bluegrass (*Poa secunda*). Shrubs present include fourwing saltbush (*Atriplex canescens*), rabbitbrush (*Chrysothamnus spp.*), Mormon tea (*Ephedra spp.*), and winterfat (*Krascheninnikovia lanata*). Although big sagebrush may be present, it will not be a dominant component of this system. This system is open and spotty, with uneven distribution of vegetation.

Inter-Mountain Basins Mixed Salt Desert Scrub—This system is extensive and is found in saline basins, alluvial slopes, and plains. This system experiences very low amounts of annual precipitation and has very open canopies. Shrub species often present include an Atriplex component, such as shadscale (*Atriplex confertifolia*) or fourwing saltbush (*Atriplex canescens*). Other shrubs present include Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*), rabbitbrush (*Chrysothamnus* spp.), Mormon tea (*Ephedra* spp.), spiny hopsage

(*Grayia spinosa*), and winterfat (*Krascheninnikovia lanata*). The herbaceous layer varies greatly, being quite sparse in some areas and fairly dense in other areas. Grasses commonly include: Indian ricegrass (*Achnatherum hymenoides*), thickspike wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*), western wheatgrass (*Pascopyrum smithii*), and Sandberg's bluegrass (*Poa secunda*).

Inter-Mountain Basins Greasewood Flat—This system occurs on stream terraces and flats or may form rings around more sparsely vegetated playas. The soils are typically saline, with a shallow water table and intermittent flooding. Although these sites dry out during the growing season, the water table remains high enough to maintain vegetation despite the salt accumulations. The shrub canopy is often open to moderately dense, with such shrubs as: greasewood (*Sarcobatus vermiculatus*), fourwing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), and winterfat (*Krascheninnikovia lanata*). The grass component includes alkali sacaton (*Sporobolus airoides*), saltgrass (*Distichlis spicata*), and some amount of basin wildrye (*Leymus cinereus*).

Forests and Woodlands

There are eight distinct forest and woodland types within the planning area**.** The pinyon-juniper woodland community type is a mixture of singleleaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*) with some pure stands of pinyon and juniper occurring in limited amounts. Recently, pinyon-juniper woodlands are starting to be described in terms of relative stand development (Tausch et al. 2009). There are three transitional phases of woodland development:

- Phase I—Trees are present but shrubs and grasses are the dominant vegetation that influences ecological processes (hydrologic, nutrient, and energy cycles) on the site.
- Phase II—Trees are co-dominant with shrubs and herbs, and all three vegetation layers influence ecological processes on the site.
- Phase III—Trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site. Shrubs no longer dominate the understory.

Qualitative assessments have determined that phase I and II pinyon-juniper woodlands are typically located on gentle terraces adjacent to sagebrush dominated shrublands. Occasionally, Phase I woodlands are located on steep, extremely rocky slopes that receive low precipitation. Phase II and III woodlands are located on gentle, moderate and steep slopes and are typically in large contiguous blocks dominated by pinyon-juniper, with the occasional high elevation meadow or shrubland interspersed.

Mountain mahogany stands are typically located on rocky, coarse textured soils and occur as either pure stands of curl-leaf mountain mahogany (*Cercocarpus ledifolius*) or transitional stands that are mixed with pine and juniper trees. Even

less is known on the current condition of mountain mahogany stands. The groves are seemingly quite old, evidenced by the fact that the trees are fairly large, and this is a slow growing species. Regeneration is limited and as such senescence is occurring in older groves, which diminishes the browse potential of these stands. Often the trees lack leaves to the level that browse species can reach.

Three needled pine type is dominated by a mixture of Jeffrey pine (*Pinus jeffreyi*) and ponderosa pine (*Pinus ponderosa*) or a combination of the two. This community type is found on xeric montane to subalpine regions of the Great Basin and Sierra Nevada. They tend to have a semi-open canopy leaving room for associates incense cedar (*Calocedrus decurrens*), western juniper (*Juniperus occidentalis* ssp. *australis*), singleleaf pinyon, and white fir (*Abies concolor* ssp. *lowiana*), as well as common sage steppe shrubs and bunchgrasses.

The riparian deciduous community type is the most dispersed forest and woodland type with stands occurring in all the major mountain ranges within the planning area. These stands are generally found where there is surface water or a shallow water table. Dominant trees include quaking aspen (*Populus tremuloides*) and black poplar (*Populus balsamifera* ssp. *trichocarpa*) at higher elevations, and Fremont cottonwood (*Populus fremontii*) and pacific willow (*Salix lasiandra*) at lower elevations. There are quaking aspen stands that occupy nonriparian sites but the majority of these stands are found in areas that have more available water than upland forests. Riparian deciduous and aspen-dominated stands are a mix of densities and age classes throughout the planning area. Many of these stands are experiencing impacts from wildlife, wild horses, and livestock browsing, insects, disease, and conifer encroachment. The older stands are also showing age-related declines, such as diminished live crown ratios, higher susceptibility to insects and disease, and individual stem death.

The soft pine type is dominated by western white pine (*Pinus monticola*) and sugar pine (*Pinus lambertiana*) and grows in association with lodgepole pine (*Pinus contorta* var. *murrayana*) and Jeffrey pine. Both sugar pine and western white pine are highly susceptible to the introduced pathogen blister rust (*Cronartium ribicola*), which often results in rapid mortality once infected.

Dominant tree species in the mixed conifer type include Jeffrey pine, white fir, incense cedar, and to a lesser extent western juniper and singleleaf pinyon. The pure fir type is comprised of nearly pure stands of white fir with dense canopies and almost no understory. The limber pine type occupies rocky mountaintop sites exposed to windy conditions and is dominated by a sparse overstory of limber pine (*Pinus flexillis*) with a sparse understory of xeric shrubs or cushion plants. Poor growing conditions preclude other trees from inhabiting this zone.

Annual Grasslands

Approximately 101,633 acres of the planning area has been converted to annual grassland comprised of invasive nonnative species. As dominant native species

lose dominance in the ecosystem, nonnative invasive species, such as cheatgrass (*Bromus tectorum*), are provided an avenue to gain dominance in the system (Prevey et al. 2010). Cheatgrass then provides a fine fuel with great horizontal continuity that creates different fire behavior than native fuels would. Cheatgrass germinates early in the season, before the majority of native perennials have come out of dormancy. Cheatgrass often becomes established in the understory of a Sagebrush or Intermountain Cold Desert Scrub system and then gains dominance once a disturbance, such as fire, temporarily eliminates the native overstory competition.

Riparian Systems

Springs and Springbrooks—Nevada has the most known springs of any state in the US, with over 4,000 mapped. The springs are quite diverse in amount of water produced, and perennial or seasonal amounts of water. More information on the types of systems present throughout the planning area is available in **Section 3.2.3**, Water Resources.

Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland—This system occurs in mountain ranges throughout the planning area mostly between 4,000 and 7,000 feet elevation. There is a wide variety of plant associations, depending on the system's elevation, stream gradient, floodplain width and overall system dynamics. The dominant trees usually include species such as white fir (*Abies concolor*), water birch (*Betula occidentalis*), Fremont cottonwood (*Populus fremontii*), and douglas-fir (*Pseudotsuga menziesii*). The shrub component is ordinarily comprised of silver sagebrush (*Artemisia cana*), dogwood (*Cornus sericea*), narrowleaf willow (*Salix exigua*), and Lemmon's willow (*Salix lemmonii*). There is potential for a prolific and diverse herbaceous component. Rushes (*Juncus ssp*.) and sedges (*Carex* ssp.) are often dominant in the herbaceous layer, but perennial grasses and mesic forbs are also commonly found. Common perennial grasses and mesic forbs include tufted hairgrass (*Deschampsia caespitosa*), slender wheatgrass (*Elymus trachycaulus*), rocky mountain iris (*Iris missouriensis*), false lily of the valley (*Maianthemum stellatum*), or Fendler's meadow-rue (*Thalictrum fendleri*).

Overall, riparian systems are about 4 percent of the planning area, but provide a much greater percentage of the desirable resources for livestock, wild horses, wildlife, and recreationists. These systems often experience overuse or misuse, since so many user groups concentrate on riparian systems.

Special Assemblages

Island or Geographically Isolated Perennial Plant Communities—There are several island or geographically isolated plant communities that exist within specialized habitats distinct from the larger vegetation matrix in the planning area. Many of these isolated plant species are BLM special status species and are not mentioned in this section as they are treated in the BLM special status in the

Analysis of the Management Situation. Examples of these nonsensitive types of geographically isolated plant species include: limber pine (*Pinus flexilis*), western whitebark pine (*Pinus albicaulis*), white fir (*Abies concolor*), and other species on the Nevada Natural Heritage Program watch list.

Unique Habitats—Unique habitats are distinct from the surrounding vegetation matrix and require management that is different from the broader landscape. Examples of unique habitats are playa lakes, vernal pools, sand dunes, salt marshes, hot springs, cold springs, and vegetation communities dependent upon unique soils. Each of these unique habitats were created by some natural process in the past and rely upon the continuation of these natural processes for maintenance and replenishing of chemical and physical properties that support the vegetation and wildlife found at these unique sites. Many of these sites may harbor BLM special status species and may have management that is specific to these sites. Other sites may be managed as recreation areas, such as Sand Mountain.

Other

The 'Other' category captures all the components of the planning area that do not fit into one of the major vegetative communities. Included in this category are agricultural lands, developed land, barren land, and disturbed mining land.

Noxious and Invasive Weeds

Invasive species include plants able to establish on a site where they were not present in the original plant composition, and are of particular concern following a disturbance. Invasive species aggressively outcompete native species within a community and often alter the physical and biotic components enough to deteriorate the entire ecological community. They are often exotic species that do not have naturally occurring, local predators. Invasive species make efficient use of natural resources difficult and may interfere with management objectives for that site. Noxious weeds are a subset of invasive species, specified by federal or state laws as being especially undesirable, troublesome, or difficult to control. The BLM maintains a National List of Invasive Weed Species of Concern which identifies noxious and invasive weeds of concern on BLM-administrated lands and has designated those weeds for control and management. A noxious weed grows and spreads in places where it interferes with the growth and production of desired species. Indicators of nonnative, invasive vegetation condition include acres affected by grazing, wildland fire, and infestation of noxious weeds and other invasive nonnative plant species. Indicators of noxious weed conditions include the extent and density of occurrence. The diversity of noxious weed species may indicate the effectiveness of current management efforts or may reflect new pressures on the land. Indicators of potential infestation areas include significant site disturbance, such as wildfire, road construction, and overgrazing, as many noxious weeds are aggressive early successional species that colonize recently disturbed sites. Human-caused disturbances are generally responsible for most weed infestations.

Within the planning area, there are numerous areas infested with noxious weeds in patches of varying sizes and weed densities. Currently, the aggregate acreage of all noxious weeds is approximately 300 acres. As not all noxious weeds have been mapped, the total acreage is undoubtedly larger. Current surveying and mapping of noxious weeds is ongoing within the planning area. Additional invasive species, not included on federal and state noxious weed lists, are also found in the planning area.

Table 3-6, Noxious Weeds Found within the Planning Area, outlines noxious weeds found in the planning area. Noxious weeds are found in places where the native plant community has been degraded and where there is sufficient soil moisture. Consequently, noxious weeds are not found in widespread contiguous areas throughout the district but instead typically found in large and small patches, primarily in riparian areas, ephemeral drainages, playa lake margins, burned areas, and along roadsides.

Table 3-6
Noxious Weeds Found within the Planning Area

Common Name	Scientific Name
Russian knapweed	*Acroptilon repens*
Hoary cress	*Cardaria draba*
Musk thistle	*Carduus nutans*
Diffuse knapweed	*Centaurea diffusa*
Yellow starthistle	*Centaurea solstitialis*
Spotted knapweed	*Centaurea stoebe* ssp. *mincranthos*
Canada thistle	*Cirsium arvense*
Poison hemlock	*Conium maculatum*
Perennial pepperweed/ Tall whitetop	*Lepidium latifolium*
Dalmatian toadflax	*Linaria dalmatica*
Purple loosestrife	*Lythrum salicaria*
Scotch thistle	*Onopordum ancanthium*
African rue	*Peganum harmala*
Mediterranean sage	*Salvia aethiopis*
Medusahead	*Taeniatherum caput-medusae*
Tamarisk	*Tamarix* sp.
Puncturevine	*Tribulus terrestris*

The current strategy for noxious and invasive weed management is to map and treat noxious and invasive weeds using conventional methods such as GPS units to map infested areas followed by mechanical, biological and chemical treatments. Current efforts are designed to move toward an integrated weed management strategy that includes mapping, treating, evaluating and revegetation of weed-infested areas. This effort will allow staff to prioritize and focus on treating areas having high priority such as sage-grouse habitat.

Resource Changes

Trends

Major Vegetation Issues in the Planning Area

Many of the ecological systems within the planning area are out of balance and will require management changes and/or reclamation to restore resilient ecological systems. The three primary issues influencing vegetation are: 1) reduced resiliency to disturbance; 2) invasive and noxious species, and 3) reduced fire return intervals (too many fires in too short a time period). These are described below.

1) Reduced resilience to disturbance (i.e., skewed functional structural groups). Of the 2,113,771 acres of the planning area that had Rangeland Heath Standard Determinations done, 58 percent of those did not meet Standard 4. Standard 4, Animal and Plant Habitats, examines the vegetation as it relates to the ecological site potential for the site. Areas that have a dense shrub canopy and very little grass/forb component in the understory are classified as having a skewed functional structural group if the site potential is a grass-dominated system. The grass, forbs and shrubs all provide a different function to the ecological system, as well as providing different habitat values for associated wildlife. Having a skewed structural functional group makes it very hard for a vegetative community to have the resiliency to heal itself after a disturbance, such as fire.

   Skewed structural functional groups can be caused by a variety of factors, such as historic or current overgrazing, decadent plant communities, drought, past disturbance such as fire, and a variety of other causes.

2) Noxious and Invasive Species. Cheatgrass is the most ubiquitous invasive annual grass in the planning area. According to SyntheMap data, and largely verified by BLM personnel, over 101,633 acres are present in the planning area, of which over 58,724 acres are on BLM-administered lands. Mostly, these are lands that had cheatgrass as a component of the vegetation prior to disturbance, and post-disturbance the native species had minimal numbers, or were otherwise unable to compete, making the invasive annual grass the dominant vegetation onsite. Total acres and BLM acres within the planning area that are dominated by invasive vegetation are depicted below (**Table 3-7**, Total Acres and BLM Acres within the Planning Area Dominated by Invasive Vegetation).

Table 3-7
Total Acres and BLM Acres within the Planning Area Dominated by Invasive Vegetation

Type of Introduced Vegetation	Planning Area (acres)	BLM (acres)
Annual Grass / Forbs	16711	2787
Bromus tectorum Semi-natural Herbaceous Vegetation	0.5	0.3
Introduced Riparian Vegetation	4150	268
Introduced Upland Vegetation-Annual and Biennial Forbland	20298	12005
Introduced Upland Vegetation-Annual Grassland	59367	43061
Introduced Upland Vegetation-Perennial Grassland and Forbland	1031	603
Nonnative/Ornamental Grass	75	0
Salsola spp. Herbaceous Vegetation [Provisional]	0.2	0
Tamarix spp. Semi-natural Temporarily Flooded Shrubland Alliance	0.7	0

Noxious and invasive species are also present throughout the planning area, and continue to arrive and spread at rates that exceed our ability to treat and eradicate these species. Degraded or disturbed ecosystems are most easily invaded by these species.

3) Reduced fire return intervals (more fires in a shorter time period). For example, the fire return intervals in sagebrush-dominated systems are estimated to be between 15 and 150 years naturally, depending on the species of sagebrush and the vegetative community (Suring et al. 2005). The reduced fire return interval has created alterations in ecological systems throughout the planning area. Cheatgrass was introduced to the United States in the 1800s, and by the 1990s it was already thought to have invaded over 6.8 million hectares (16.8 million acres) of the sagebrush ecosystem (Pellant and Hall 1994). It is known to replace native perennial grasses, forbs and shrubs (Suring et al. 2005). Over 126,121 acres of the planning area has burned in the last 10 years alone (2002-2011). Please refer to **Section 3.2.8**, Wildland Fire Ecology and Management, for maps depicting fires and fire history throughout the planning area.

Sagebrush

There are large amounts of sagebrush habitat throughout the planning area that is experiencing active pinion and juniper expansion. This has many negative associated vegetative impacts that are detailed in the Forests and Woodlands section. In addition, there is cheatgrass present in sagebrush habitats district-wide, creating a potential for habitat conversion post-disturbance. Over 67,000 acres of the planning area is presently annual grassland, having already experienced type conversion from the previous native vegetative community. Cheatgrass is a very aggressive species that is well suited to outcompete native vegetation for water and soil nutrients, since it germinates and becomes active much earlier in the season than native vegetation. Cheatgrass can get very dense

in the understory, and provide horizontal continuity of fuel that native bunchgrasses would not provide. This large amount of standing cheatgrass leads to an increased fire frequency, shortening the return interval from 15 to 150 years in a native system to as frequent as 3 to 5 years in a cheatgrass-dominated system (Young and Evans 1978). This frequent fire cycle very quickly removes all native vegetation that is not fire-tolerant from the system. Once these cheatgrass cycles have begun, they are extremely difficult to reverse.

Intermountain Cold Desert Scrub

This comprises the largest single vegetation type present in the planning area. There have been large amounts of this vegetation type that have converted to cheatgrass through an increased fire cycle. In some areas of this type of vegetative community, cheatgrass has slowly gained dominance without the disturbance driver (Svejcar and Tausch 1991). Due to the low precipitation in this vegetation type, restoration efforts post-disturbance are often not successful (Jessop and Anderson 2007), especially if cheatgrass has already gained dominance in the understory.

Forest/Woodlands

All forest and woodland types in the planning area are experiencing the same issues as other forests and woodland types in the intermountain west. Fire exclusion, coupled with impacts from livestock grazing, and timber harvest has led to high tree densities, expansion/reforestation of pinyon-juniper, contraction of aspen and riparian deciduous stands, and drought/insect/disease-related mortality.

The rapid pinyon-juniper woodland expansion observed during the late 1800s and early 1900s resulted from a combination of conditions: heavy livestock grazing that removed the herbaceous vegetation, fire suppression (Heyerdahl et al. 2001; Savage and Swetnam 1990; Swetman and Betancourt 1998), timber harvest for mining operations, and wet conditions that created an ideal situation for tree establishment (Antevs 1938). Expansion into sagebrush vegetation types (Phase I woodland) is continuing to occur, which diminishes the extent of this vegetation type on the landscape.

Fire exclusion in pinyon-juniper woodlands has led to higher tree densities, accumulation of live and dead fuel loads, and subsequently higher intensity fire that kills the entire stand. In Phase III woodlands, stand-replacing fire leads to invasion of nonnative vegetation (e.g., cheatgrass and other noxious weeds) because high tree densities have shaded out the native grass, forb, and shrub understory, resulting in diminished seed banks for natural recovery after fire.

Aspen stands are becoming smaller in extent, and less age diversity is present. Many stands experience difficulties reproducing successfully, as the suckers are not able to grow past browse height prior to being decimated by browsers. As water tables have lowered, some aspen stands have decreased or died out as the trees become incapable of reaching the water. Conifer from adjacent areas

are establishing within these stands with some cases of shading out the shade-intolerant aspens. This encroachment also increases live and dead fuel loading within the aspen stands, making them more susceptible to stand-replacing fire.

The last major drought that caused widespread mortality to forest and woodlands in the planning area was from 2001 to 2004 (Shaw et al. 2005). This drought was similar in magnitude to severe droughts in the early 1900s and the 1950s (Cole et al. 2004; McPhee et al. 2004). During the most recent drought, the majority of trees killed were pinyon pine; the interspersed juniper showed little mortality. Drought-stressed trees were attacked by the following insects and diseases: pinyon ips (*Ips confuses* [*LeConte*]), twig beetles (*Pityophthorus* spp. and *Pityogenes* spp.), pitch moths (families *Pyralidae* [especially *Dioryctria* spp.]) and *Sesiidae*), black stain root disease (*Leptographium wageneri* [*Kendrick*] *Wingfield*), and pinyon dwarf mistletoe (*Arceuthobium divaricatum Engelm*). These are native pathogens and insects that control stand density during times of water stress (droughts). Old-growth stands of pinyon-juniper are assumed to have been affected by this drought as well, diminishing the amount of old trees on the landscape.

Riparian Systems

Proper functioning condition assessments show that the majority of riparian areas are not in proper functioning condition. **Table 3-8**, Carson City District Riparian Functional Assessment Ratings (Lentic and Lotic), depicts the amount of riparian areas in the planning area that have been rated and the designated ratings. Many of the assessments indicate downward trends due to ongoing disturbances, mainly anthropogenic. Almost 70 percent of the land assessed was rated as not meeting Standard 2 (Riparian/Wetland systems are in proper functioning condition), and 25 percent of the land assessed did not meet Standard 3 (Water quality criteria in Nevada or California State Law shall be achieved or maintained).

Table 3-8
Carson City District Riparian Functional Assessment Ratings (Lentic and Lotic)

Signed S&G Determinations from 2003-2011	Number of Water Sources Analyzed	Proper Functioning Condition	Functional at Risk	Nonfunctional
38	184	29%	54%	15%

Concentrated livestock, wildlife, and wild horse and burros use can heavily impact riparian areas, resulting in compacted soils, loss of plant species diversity, introduction and spread of invasive species. OHVs can also impact riparian areas by crushing the vegetation, compacting the soils, and introducing and spreading invasive species. Riparian areas are especially susceptible to invasive species invasion due to the favorable soil and moisture that is available. Over time, the loss of vegetation can lead to invasive species establishment, which then forms a

local source that can further spread to other areas. Disturbances can also lead to the development of headcuts, which lead to channel entrenching, increased erosion and sedimentation along with a lowering of the water table, increasing the potential for invasions of more xeric species. Riparian areas are negatively impacted by lowering of the water table or groundwater flow alterations or disruptions, due to the exporting of groundwater outside of the hydrologic basin.

Limited resources do not allow proper management or protection of riparian areas. Protection structures such as fencing are either not erected or once constructed are often not maintained or are vandalized to the point where protection is no longer provided.

Due to the novelty of the resource in the desert, the springs and springbrooks receive a large amount of use by humans, wildlife, livestock, and wild horses. In addition to ongoing degradation, water tables throughout the planning area are lowering due to droughts and other factors.

Special Assemblages

Currently it is not possible to determine trends as very limited information exists on these island communities. Limited data of the vegetation condition at many of these sites make trend determination difficult. Overall, the trend seems to be static to downward as these habitats are often fragmented by unauthorized trails, invaded by native and nonnative species, and exhibit loss of biodiversity.

Other

This category will continue to grow if areas are developed, disturbed, or otherwise removed from their previous vegetative community.

Noxious Weeds

Under the current noxious weed management, noxious weeds continue to gain dominance in areas where weeds are established. These areas then become launching points from which new areas with suitable habitat and disturbance are infected.

Forecast

Overall, the intact habitats need to be retained as such, and habitats that are not yet past a transitional threshold need to be prioritized for management while they still contain the components required for site rehabilitation. If vegetative communities continue becoming further degraded, and more native vegetative communities pass the threshold to introduced species dominance, restoration will become increasingly difficult. As native stable and resilient vegetative communities are lost and converted, all aspects of the environment will suffer.

Sagebrush

Pinyon and juniper are expected to continue expanding into sagebrush communities. The BLM can combat some of the deleterious ecological impacts of this expansion by proactively thinning juniper and pinyon before it creates a dense canopy that eliminates the sagebrush and native forbs and grasses from the area. Please refer to **Section 3.2.4**, Vegetation for a discussion of the phases of pinyon-juniper expansion. Intact sagebrush communities are expected to continue decreasing in size and occurrence. In addition, the intact communities are expected to have less proximity to each other, creating habitat fragmentation for sagebrush dependent species. It is also expected that the remaining sagebrush systems will burn at some point in the future. With the lack of resiliency that is present in the planning area, these sagebrush systems are not expected to have the native vegetation present required to naturally stabilize and restore the system. Many of these systems are expected to convert to annual grasslands.

Intermountain Cold Desert Scrub

It is expected there will continue to be type conversions throughout this vegetation type. Wildfire remains a significant threat as invasive annual species have the potential to increase wildfire frequency and extent. This vegetative community receives the least attention for restoration, since such low success rates are associated with this vegetative community. However, continued research may allow for currently unknown treatments to yield restoration success in the scrublands, at which time these areas may receive more effort and funding for restoration.

Forests/Woodlands

In absence of active management of the forest and woodlands in the planning area, the aforementioned trends of higher tree densities, expansion/ reforestation of pinyon-juniper, contraction of aspen and riparian deciduous stands, and drought/insect/disease-related mortality are expected to continue. These will be accelerated during drought periods and will also be subject to increasing fire intensities during fire seasons that are particularly active. At this time, the effects of climate change on forest and woodlands within the planning area are largely unknown, but management recommendations should focus on building resilience to disturbance and retaining stand and landscape diversity into the future.

Riparian Systems

Stream and river systems will continue providing a movement corridor for nonnative seed sources.

Although springs and springbrooks will continue to be a resource under high demand in the desert, the importance of these systems has also become better understood by land managers and land users, facilitating the use of alternatives such as troughs with overflows back into the original system or fenced systems.

The cumulative effects of over grazing and trampling, recreational use, and other surface-disturbing activities degrade optimal soil properties and reduce species diversity and structure. The forecast for riparian areas is one of continued downward trends, inadequate protection, and an increase in invasive species number, density, and extent. In areas with headcuts, entrenchment and lowering of groundwater levels will continue unabated with xeric native species and nonnative species dominating the sites.

Special Assemblages

There is no management plan in place for these unique species, so they do not receive any more concentrated management than the lands surrounding them. It is possible that if species within these communities do experience significant declines the unique/rare vegetation present on these sites could potentially be added to the BLM special status lists or they could be federally listed by the US Fish and Wildlife Service (USFWS).

Impacts from climate change could alter the plant community dynamics and could result in species replacements with native or nonnative species. The greatest long-term threat to the survival of these unique habitats would be the alteration or destruction of the natural process that created these unique habitats in the first place. Without these intact natural processes, it is highly likely that the unique habitats would cease to exist and could lead to a listing of species as BLM sensitive or federal listings by the USFWS.

Other

There is potential, through reclamation, to return some of these lands to their previous vegetative community.

Noxious Weeds

Without an integrated weed management approach, damaged or degraded areas are not revegetated allowing noxious weeds to persist and increase on the landscape and overtime will allow the succession of other nonnative invasive species to migrate to the area, establish and gain dominance. The increasing urbanization of western Nevada and eastern California will bring additional disturbances to native vegetation communities and will facilitate the spread of noxious weeds by means of increased human-caused fires, and damage of native plant communities and spread of weeds by motorized use.

Forecast

Land acquired along the Truckee River corridor (see **Section 3.3.6**, Lands and Realty) provides very unique opportunities for managing a river ecosystem for functionality, habitat, and the multitude of associated values such as recreation and education. These acquired lands (Mustang and 102 Ranch) are along the Truckee River Corridor approximately 7 miles to the east of Reno, and provide habitat for diverse riparian vegetation, such as cottonwoods (*Populus* spp.), willows (*Salix* sp.), silver sage (*Artemisia cana*), dogwood (*Cornus sericea*), rushes (*Juncus* sp.), and sedges (*Carex* sp.), as well as perennial grasses and a very

diverse forb component. If not actively managed, tall whitetop (*Lepidium latifolium*) will likely overtake the site in time, as it is the dominant vegetation on other lands upstream and downstream as well as being present in both parcels.

Due to the importance of riparian deciduous and aspen stands for providing water and habitat to 80 percent of vertebrates (see **Section 3.2.5**, Fish and Wildlife), these areas should be prioritized for restoration and protection. These areas also provide scenic values, landscape diversity, and contain higher within stand species diversity that isn't present in the adjacent uplands.

Pinyon-juniper expansion into sagebrush habitats is another important issue that needs to be addressed. There needs to be a strategic approach to locating existing sage-grouse occupied habitat, assessing vegetation conditions in these areas, minimizing threats to the habitat, and identifying areas of Phase I and II pinyon-juniper stands that can removed to expand current habitat for the sage-grouse (Wisdom and Chambers 2009).

Phase III pinyon-juniper woodlands that have lost their understory grass, forb, and shrub component should be assessed carefully prior to treatment. These stands are highly susceptible to stand-replacing fire and, if left untreated post-fire rehabilitation without a native seed bank, often experience invasion by nonnative species (e.g. cheatgrass and noxious weeds). This invasion is also possible if the trees are completely removed without restoration seeding of native species. Therefore, variable density thinning coupled with restoration seeding may be the best option for protecting these stands from being lost to fire and nonnative species. A strategic approach to thinning these stands should be developed by considering location, extent, vulnerability, health condition, and age. The thinning prescriptions should also retain old-growth trees as much as operationally possible, as well as taking into account the stand dynamic needs of migratory birds. Some bird species need Phase III stands for nesting success.

The fuel hazard reduction and forest health thinning that have occurred in Jeffrey pine stands in Alpine County should be maintained over time. These treatments also need to be expanded to adjacent stands that contain high tree densities and high fuel loads so that fire in these areas doesn't spread into treated areas. An integrated landscape approach needs to be developed for forests and woodlands in Alpine County due to the importance of these areas to recreational, scenic, and landscape diversity values.

Mountain mahogany and true fir stands are fairly static systems that need to be protected from fire from adjacent areas. There is also a limited need to treat surface and ladder fuels within these stands to prevent fire from getting into the canopy. The other special stand type that needs to be maintained on the landscape is soft pine. These should be a high priority for assessment and restoration due to their limited extent within the planning area.

Areas of intact ecological systems need to be given a higher priority for protection and proactive management. Areas in close proximity to intact areas, or that would create/provide movement corridors between intact areas, should be given priority for treatments. Active management is required to ensure that the healthy areas remain healthy and do not experience degradation.

Areas that have already undergone the type conversion from native vegetation to invasive annual grassland should be treated differently. Treatments may include fuel breaks on the perimeter that would halt a fire before it entered adjacent intact habitat. If money allows, progressive treatments on these annual grasslands may help restore ecosystem functionality. These progressive treatments often include a succession of treatments including fine fuel removal, herbicide, and reseeding with native vegetation.

Systems that are not entirely intact but have not undergone a transition to another vegetative state should be viewed as opportunities to proactively manage land before wholesale restoration is required.

3.2.5 Fish and Wildlife

The planning area encompasses two Level III ecoregions: 97 percent within the Central Basin and Range and 3 percent within the Sierra Nevada (EPA 2012b). The Central Basin and Range ecoregion is internally drained and is characterized by a mosaic of dry basins, scattered low and high mountains, and salt flats that support of diverse array of species including native and nonnative fish, birds, small mammals, big game, carnivores, amphibians, and reptiles. Some species are specialists that use a narrow or restricted range of habitats, while others are generalists that can occur across a broad range of habitat types. Depending on species requirements, animals may be present seasonally or year-round; with some distributions being restricted by altitude, scarce water, and habitat islands within or between mountain ranges. The Sierra Nevada Ecoregion is a deeply dissected block fault that rises sharply from the arid basin and range ecoregions on the east and slopes gently toward the Central California Valley to the west. The eastern portion has been strongly glaciated. Much of the central and southern parts of the region are underlain by granite. The vegetation is mixed conifer and in Nevada is predominately white fir and lodgepole pine on the west side and Jeffery pine and lodgepole pine on the east side.

Among states, Nevada ranks eleventh in overall biological diversity but fifth in species extinctions (NDOW 2013). Nevada is also the driest state in the nation, with precipitation increasing with elevation. The sagebrush biome consists of approximately 120 million acres across 14 western states and 3 Canadian provinces. It is the largest semi-arid ecosystem in the West. Over 70 percent of this biome is publically managed. Over 350 different plant and animal species are dependent wholly or in part on sagebrush. It is estimated that only about 10 percent of this ecosystem is unaltered and potentially 20 percent of all species dependent on this ecological system may be at risk of extinction (Center for

Science, 2002). One of the most far-reaching problems in the sagebrush ecosystem has been the substantial and continuing decline in habitats and populations of greater sage-grouse (Connelly 1997; Schroeder 1999), discussed in more detail in **Section 3.2.6**, Special Status Species. Despite the accelerating loss and degradation of sagebrush habitats across western North America, Nevada, Utah, and California encompass one of the largest areas of sagebrush cover types that remain today. An ecoregional assessment is currently in progress for the Central Basin and Range ecoregion, which contains much of this ecosystem.

The Partners in Flight North American Landbird Conservation Plan identified Stewardship Species that represent all major biogeographic regions in North America. Bird Conservation Regions were then identified and associated with Avifaunal Biomes. Bird Conservation Regions are essentially a workable geographic scale for bird conservation that has been adopted by the USFWS and Partners in Flight and endorsed by the North American Bird Conservation Initiative. The planning area is primarily within the Great Basin Bird Conservation Region, which is part of the Intermountain West avifaunal biome that also contains Bird Conservation Regions 9, 10, and 16. The planning area along the border with California is within Bird Conservation Region 15, which is within the eastern edge of the Pacific avifaunal biome that also contains Bird Conservation Regions 5, 15, and 32. Seventy-five percent of arid land species are in decline range-wide. Conservation concern is high for about 50 percent of all grassland-breeding birds. Conservation issues stem from habitat loss in spring/summer breeding grounds as well as loss in wintering habitat that can be thousands of miles away from breeding habitat. Therefore, effective conservation of migratory birds transcends national and international jurisdictions and involves many partnerships.

The Lahontan Audubon Society initiated the Nevada Important Bird Areas Program beginning in June 2001. Ten Nevada Important Bird Areas have been identified in the planning area. However, BLM-administered lands are only a small fraction of the acreage on three of them. The BLM's management responsibility lies in protecting the habitat from indirect effects stemming from actions on BLM-administered lands.

Finally, the Nevada Department of Wildlife and California Fish and Wildlife manage big and small game hunting in their respective states. The BLM has a responsibility to manage habitat that will benefit populations of hunted species as well as local economies stemming from hunting. Hunt units cross federal and local jurisdictions. Issues with populations are not the same for all species. For instance, while desert bighorn sheep are rebounding in Nevada due to efforts by Nevada Department of Wildlife (NDOW), mule deer have realized a 50 percent decline since the 1980s.

Current Conditions

Threats to fish and wildlife in the planning area include habitat loss or fragmentation stemming from fire, energy development, mining, overgrazing of upland and riparian areas (livestock and wild horses), unrestricted off-road vehicle use, invasive species, and drought. Predation and disease are also natural threats that can be intensified for species inhabiting degraded ecosystems.

Based on the Southwest Regional Gap Analysis Project, the NDOW's Wildlife Action Plan (NDOW 2013) characterized Nevada's vegetative land cover into 8 broad ecological system groups and linked those with key habitat types, which are further refined into ecological systems characterized by plant communities or associations (USGS 2005). The primary key habitat types found in the planning area are Intermountain Cold Desert Scrub, Lower Montane Woodlands, Sagebrush, Springs and Springbrooks. Other key habitats are sparsely distributed in small acreages throughout the planning area and include; Aspen Woodland, Barren Landscapes, Cliffs and Canyon, Desert Playas and Ephemeral Pools, Grasslands and Meadows, Intermountain Rivers and Streams, Sand Dunes, and Badlands.

Vegetation communities vary based on precipitation, elevation, topography, slope, aspect, geology, soils, and other environmental variables. Habitat type is further distinguished by site-specific attributes such as vegetation cover, composition, and structure. Vegetation community composition and distribution across the planning area are described in detail in **Section 3.2.4**, Vegetation.

Wildlife is generally not found in great densities within the intermountain cold desert scrub key habitat, which encompasses about 41 percent of the planning area. Lizards are the most diverse and abundant assemblage of species and serve as prey for various raptors and medium sized mammals. This key habitat supports pronghorn, winter range for mule deer and elk, and birds such as horned larks and Swainson's hawks. Also, many species move between cold desert scrub and sagebrush habitats for various life requirements such as foraging and nesting. For instance, kit fox use the sandy soils for denning in cold desert scrub habitat but also forage for prey in sagebrush plant communities.

The sagebrush key habitat encompasses approximately 28 percent of the planning area (33 percent of BLM-administered lands) and provides important habitat for mule deer, sage-grouse, and other sagebrush dependent species such as the sage sparrow and Brewer's sparrow. Many sagebrush-dependent species are also dependent upon the Lower Montane Woodlands key habitat for some life requisites, which supports bats, big game, small game, ravens, and a variety of songbirds. It also provides thermal cover for ungulates during harsh winter storms. This key habitat makes up around 15 percent of the planning area (14 percent of BLM-administered lands).

The Cliffs and Canyons key habitat supports nesting swallows, swifts, golden eagles, and prairie falcons, along with many other bird species. These areas also

provide important cover for large mammals such as bighorn sheep, mountain lions, and bobcats, and for small mammals such as ground squirrels, rabbits, and marmots. Numerous bat species roost, hibernate, and reproduce in rock crevices, caves, and mines across the planning area.

Nevada has the most known springs of any state in the US with over 4,000 mapped within the springs and springbrooks key habitat (NDOW 2013). They vary greatly in temperature and flow and are extremely important in maintaining Nevada's wildlife diversity. Springbrooks are areas of flowing water linked to the spring source. Even small springs and/or flows can support important endemic gastropods and other aquatic invertebrates as well as a diverse plant community including various species of forbs, sedges, and rushes (NDOW 2013). While the actual amount of riparian/spring habitat is small in Nevada (less than 5 percent), about 80 percent of all vertebrate species require this habitat (NDOW 2013). Consequently, maintaining health and resiliency in this key habitat is especially critical for wildlife.

Stream aquatic habitats within the Intermountain Rivers and Streams key habitat are highly variable and are subdivided into montane and sub-montane aquatic habitats. Depending on the vegetation structure, various species of birds, fish, raptors, amphibians, and aquatic invertebrates can be supported. The actual miles of this habitat in the planning area is short. Nonetheless, healthy riparian corridors are crucial to many species in Nevada and are the hub of species diversity on the larger landscape. Several perennial creeks within the planning area are designated by NDOW as fishable streams and support nonnative rainbow trout, nonnative brook trout and nonnative brown trout.

Prominent Fish and Wildlife Species

Table 3-9, Prominent Fish and Wildlife Species Known or Potentially Found in the Planning Area, lists species of prominent status (excludes special status species) regarding BLM management efforts due to their economic value, regulatory status, high public interest, or other qualities. Special status species are discussed in **Section 3.2.6**, Special Status Species.

Table 3-9
Prominent Fish and Wildlife Species Known or Potentially Found in the Planning Area

Species or Group	Rationale for Key Designation
Birds	
Migratory birds	High interest and protected by law
Raptors	High interest, protected by law, top of food chain
Upland game birds	Economic and recreational value
Waterfowl and shorebirds (most habitat not on BLM-administered lands)	Economic and recreational value
Mammals	
Bats	High interest because of unique ecological role and susceptibility to disease
Mule deer	High economic and recreational value

Table 3-9
Prominent Fish and Wildlife Species Known or Potentially Found in the Planning Area

Species or Group	Rationale for Key Designation
Pronghorn	High economic and recreational value
Fish	
Rainbow and brook trout	High interest, economic, recreational value

Big Game

Big game species in the planning area include black bear, mule deer, pronghorn, Rocky Mountain elk (part of Desatoya Mountains only), and 2 subspecies of bighorn sheep (BLM sensitive species; **Table 3-10**, Big Game Species Distribution as Delineated by the Nevada Department of Wildlife GIS Data within the Planning Area). These animals are considered prominent species due to the public's interest for hunting and aesthetic enjoyment.

Table 3-10
Big Game Species Distribution as Delineated by the Nevada Department of Wildlife GIS Data within the Planning Area

Species	Distribution in Planning Area (Acres)	Distribution on BLM-administered lands (Acres)	Primary Key Habitat(s)
Black Bear	2,896,868 (66%)	984,800 (34% of planning area distribution on BLM administered lands)	Intermountain Rivers and Streams, Lakes and Reservoirs, Sierra Conifer Forests and Woodlands
Mule Deer	4,169,026 (48%)	1,747,100 (42% of planning area distribution on BLM-administered lands)	Sagebrush & Lower Montane Woodland
Desert Bighorn Sheep	1,176,030 (13%) (Another 1,283,134 acres of potential habitat has been delineated by NDOW on BLM administered lands)	1,025,600 (87% of planning area distribution on BLM-administered lands)	Cliffs and Canyons
Pronghorn	4,570,659 (51%)	3,316,200 (72% of planning area distribution on BLM-administered lands)	Sagebrush & Cold Desert Scrub
Rocky Mountain Elk (just winter range)	7,787 (0.08%)	7,200 (92.5% of planning area distribution on BLM-administered lands)	Grasslands

Birds

Waterfowl. Streams, rivers, reservoirs, ponds, playas, canals, and associated riparian vegetation provide habitat for waterfowl and shorebirds. Most of this habitat is not administered by the BLM, but the CCD has cumulative responsibility to protect these habitats. Canada goose (*Branta canadensis*), northern shoveler (*Anas clypeata*), ruddy duck (*Oxyura jamaicensis*), redhead (*Aythya americana*), American coot (*Fulica americana*), green-winged teal (*Anas crecca*), northern pintail (*Anas acuta*), and gadwall (*Anas strepera*) are a few of the more common game waterfowl species found in the area. Great blue herons (*Ardea herodias*), egrets, white-faced ibis (*Plegadis chihi*), and other wading and shorebirds typically occur along major rivers, valleys, and irrigated fields, as well as some playas where permanent water sources exist or in years when water is maintained. When playas contain water for extended periods of time, lush vegetation can grow in addition to producing many aquatic invertebrates that provide forage for shorebirds, waterfowl, and small water birds. For instance, Dixie Meadows hot spring and other cold springs provide the playa with a permanent water source. Therefore, numbers and abundance of species in any given year is less variable here than for playas without a permanent water source.

Upland Game Birds. The quality of upland game bird habitat depends on the availability of mixed shrubby and herbaceous vegetation for nesting, brood rearing, foraging, and thermal cover. Riparian habitat plays an important role as a source of food, water, and cover for most upland birds. Chukar partridges (*Alectoris chukar*), a nonnative species, are the most broadly distributed across the planning area while California and mountain quail *(Callipepla californica* and *Oreortyx pictus*, respectively), wild turkey, and blue grouse (*Dendragapus obscurus*) have more limited distribution. Mourning doves (*Zenaida macroura*) also occupy a variety of habitats across the planning area.

Raptors. Raptors in the planning area include eagles, falcons, hawks, and owls. Golden eagles (*Aquila chrysaetos*), red-tailed (*Buteo jamaicensis*), ferruginous (*Buteo regalis*), Swainson's (*Buteo swainsoni*), and Cooper's hawks (*Buteo swainsoni*), peregrine (*Falco peregrinus*) and prairie falcons (*Falco mexicanus*), and American kestrel (*Falco sparverius*) are the most common diurnal species observed, while the nocturnal great horned owl (*Bubo virginianus*) occupies a variety of habitats in the planning area. Cliffs, rocky outcrops, and large trees provide suitable nesting habitat for many of these species. Because they are top (or apex) predators on the food chain, raptors are an important indicator of overall ecosystem health.

Migratory Birds

The Partners in Flight North American Landbird Conservation Plan identified Stewardship Species that represent all major biogeographic regions in North America. Bird Conservation Regions were then identified and associated with

Avifaunal Biomes. Bird Conservation Regions are essentially a workable geographic scale for bird conservation that has been adopted by the USFWS and Partners in Flight and endorsed by the North American Bird Conservation Initiative. The planning area is primarily within the Great Basin Bird Conservation Region that is part of the Intermountain West avifaunal biome (contains 3 Bird Conservation Regions). The planning area along the border with California is within Bird Conservation Region 15 that is within the eastern edge of the Pacific avifaunal biome (contains 3 Bird Conservation Regions).

The Lahontan Audubon Society initiated the Nevada Important Bird Area Program beginning in June of 2001. Ten Nevada Important Bird Areas have been identified in the planning area. However, BLM-administered lands are only a small fraction of the acreage on three of the Nevada Important Bird Areas. The BLM's management responsibility lies in protecting the habitat from indirect effects stemming from actions on BLM-administered lands.

Common migratory birds include common raven (*Corvus corax*), American crow (*Corvus brachyrhynchos*), Virginia warbler (*Oreothlypis virginiae*), mountain bluebird (*Sialia currucoides*), green-tailed towhee (*Pipilo chlorurus*), sage sparrow (*Artemisiospiza belli*), horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), western scrub-jay (*Aphelocoma californica*), pinyon jay (*Gymnorhinus cyanocephalus*), bushtit (*Psaltriparus minimus*), and Brewer's sparrow (*Spizella breweri*). **Table 3-11**, Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area, lists Birds of Conservation Concern and Game Birds potentially found in the planning area. It is based on the USFWS Birds of Conservation Concern 2008 List for Bird Conservation Regions 9 and 15 (USFWS 2008). Birds listed for these Bird Conservation Regions but not known to occur in the planning area are not displayed in the table (Note: several species of concern displayed in the table are also addressed under special status species in **Section 3.2.6**, Special Status Species).

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
Bald eagle (b) *Haliaeetus leucocephalus*	X	X		Only 3 known breeding locations. Winters in low numbers. Trend	Intermountain Rivers and Streams, Lakes and Reservoirs, Sierra Conifer

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
				is stable or increasing with recent winter increases in Carson Valley.	Forests and Woodlands
Band-tailed pigeon *Patagioenas fasciata*			X	Year-round in the Carson and Pine Nut ranges with migration stopovers or wintering in the Lahontan Valley.	Sierra Conifer Forests and Woodlands
Black swift *Cypseloides niger*	X	X		Potentially breeds in Alpine County and forages in Douglas County. Trends unknown.	Cliffs and Canyons
Brewer's sparrow *Spizella breweri*	X			Breeds across the planning area. Declining across range.	Sagebrush (but other key habitats in proximity to sagebrush are also used)
Calliope hummingbird *Selasphorus calliope*	X	X		Known to breed in the Carson Range and other suitable habitat in planning area. Poor data but trend may be stable.	Sierra Conifer Forests and Woodlands, Aspen Woodlands & Intermountain Rivers and Streams
Cassin's finch *Haemorhous cassinii*		X		Widespread and abundant in suitable habitat across the planning area. Trends unknown in Nevada.	Sierra Conifer Forests and Woodlands & Lower Montane Woodland

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
Eared grebe (nb) *Podiceps nigricollis*	X			Year-round distribution with key conservation areas being the Lahanton Valley, Walker Lake, and Pyramid Lake. Stable or increasing trend.	Lakes and Reservoirs & Marshes
Ferruginous hawk *Buteo regalis*	X			Winters in the Lahontan Valley and scattered year round elsewhere. Trend is stable.	Intermountain Rivers and Streams, Sagebrush, Lower Montane Woodlands
Flammulated owl *Otus flammeolus*	X	X		Known breeding distribution in the Carson Range, unknown elsewhere. Trend is unknown.	Sierra Conifer Forests and Woodlands
Golden eagle *Aquila chrysaetos*	X			Wide year round distribution. Trend is declining regionally and in Nevada.	Cliffs and Canyons, Sagebrush, and Lower Montane Woodland
Green-tailed towhee *Pipilo chlorurus*	X			Breeding distribution in appropriate habitat. Trend is thought to be stable.	Sagebrush, Lower Montane Woodland, & Aspen Woodland.
Lewis's woodpecker *Melanerpes lewis*	X	X		Known breeding in the Carson Range and migration in the Lahontan Valley and near Pyramid Lake. Trend is	Aspen Woodland & Sierra Conifer Forests and Woodlands

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
				thought to be declining.	
Lesser scaup *Aythya affinis*			X	Known to breed at Washoe Lake, along Truckee River, and rarely in Lahontan Valley. Information is poor but the planning area is likely used during migration as well.	Lakes and Reservoirs & Marshes
Loggerhead shrike *Lanius ludovicianus*	X			Year round distribution. Trend is declining.	Cold Desert Scrub & Sagebrush
Long-billed curlew *Numenius americanus*	X			Known breeding distribution in the Lahontan Valley, Walker River Basin, Washoe Lake, and Carson Valley and presumed to migrate through the planning area. Trend is stable or increasing.	Agricultural Lands & Wet Meadows
Marbled godwit (nb) *Limosa fedoa*	X			A stopover migrant in the Lahontan Valley and Walker River basin. Probable declines in Nevada.	Marshes

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
Mourning dove *Zenaida macroura*			X	Year-round distribution with trend in Nevada has been increasing but decreasing in the west.	Multiple open and semi-open habitats.
Northern pintail *Anas acuta*			X	Year-round in appropriate habitat and trend is declining range-wide.	Lakes and Reservoirs & Marshes
Olive-sided flycatcher *Contopus cooperi*		X		Confirmed breeder in the Carson Range with the Pine Nut Range considered a key conservation area. The Pine Nut Mountains, the western side of Pyramid Lake, and Lahontan Valley are important for migration.	Sierra Conifer Forests and Woodlands
Peregrine falcon (b) *Falco peregrinus*	X	X		Migration and or wintering in the Lahontan Valley, Lake Tahoe Basin, & Walker River floodplain. Trend is increasing outside of the Great Basin; therefore recolonization of	Cliffs and Canyons & Marshes

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
				breeding territories in the planning area may occur in the near future.	
Pinyon jay *Gymnorhinus cyanocephalus*	X			Year round distribution with trend in decline. Age profile and structural features of pinyon-juniper woodlands is thought to be a primary reason for declining trend.	Lower Montane Woodlands
Redhead *Aythya americana*			X	Year-round in Lahontan Valley and along Carson and Walker rivers. Recent trend is stable or increasing.	Lakes and Reservoirs & Marshes
Sage sparrow *Amphispiza belli*	X			Known breeding distribution throughout the planning area. Historical declines but assumed stable.	Sagebrush & Cold Desert Scrub
Sage thrasher *Oreoscoptes montanus*	X			Distribution is breeding only. Trend is thought to be stable or in slight decline	Sagebrush & intermountain cold desert scrub primarily where contiguous or interspersed with sagebrush

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
Snowy plover (c) *Charadrius nivosus*	X			Known to breed at the Stillwater National Wildlife Refuge and Carson Lake in the Lahontan Valley, Walker Lake, and Pyramid Lake. Trend is declining regionally but not well quantified in the Great Basin.	Desert Playa and Ephemeral Pools
Spotted owl *Strix occidentalis* (c)		X		Year-round distribution in the Carson Range but not on BLM-administered lands. Trend is in decline range wide.	Sierra Conifer Forests and Woodlands
Tricolored blackbird *Agelaius tricolor*	X			Only one population regularly breeds in the planning area in a private marsh in Douglas County with periodic reports in the Carson Valley, which is also an assumed migration route. Trend is uncertain in Nevada.	Marshes

Table 3-11
Migratory Birds of Conservation Concern and Game Birds Below Desired Condition Known or Potentially Found in the Planning Area

Species	USFWS Birds of Conservation Concern		GBBDC	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Bird Conservation Region 9 (Great Basin)	Bird Conservation Region 15 (Sierra Nevada)			
Virginia's warbler *Oreothlypis virginiae*	X			Sparse breeding distribution in the planning area. Limited data suggests stable trend range-wide but uncertain in Nevada.	Lower Montane Woodland (mountain mahogany appears very important)
White-headed woodpecker *Picoides albolarvatus*	X			Year-round distribution is restricted to the Carson Range. Trend is stable.	Sierra Conifer Forests and Woodlands
Williamson's sapsucker *Sphyrapicus thyroideus*	X	X		Year-round distribution in the Carson Range and migration stopovers or wintering in the Lahontan Valley. Historic declines occurred but current trends unclear.	Sierra Conifer Forests and Woodlands & Aspen Woodlands
Wood duck *Aix sponsa*			X	Year-round distribution along the Truckee, Carson, and potentially the Walkers rivers. Overall trend is increasing.	Intermountain Rivers and Streams with adjacent large trees with cavities for nesting

(a) ESA candidate, (b) ESA delisted, (c) nonlisted subspecies or population of Threatened or Endangered species, (d) MBTA protection uncertain or lacking, (nb) nonbreeding in this Bird Conservation Region.

Key Features

The BLM will continue to focus management and protection efforts on prominent wildlife and fish species, migratory birds, and their habitats (See **Tables 3-8** through **3-13**). The NDOW has identified several crucial habitats for bighorn sheep, deer, and other big game species in the planning area, including production areas, movement corridors, and summer and crucial winter range. Changes to these habitats, such as loss or degradation, fragmentation, or disturbance during crucial seasons, could have a disproportionate effect on populations by reducing carrying capacity during critical periods. Data on raptor nest locations and status in the planning area are limited, although efforts are being made to improve this knowledge base. Nests and crucial habitat for raptors will continue to be priority areas for conservation. Furthermore, migratory birds and, in particular, species of conservation concern will continue to be monitored across the planning area, and protection measures will be implemented as necessary for compliance with the MBTA and BLM policies. Key habitats identified for restoration and protection will include sagebrush, lower montane woodland, cold desert scrub, springs and spring brooks, aspen woodlands, and cliff and cave features as well as other unique habitats.

Swan Lake Nature Study Area

Dedicated in April 1999, Swan Lake Nature Study Area protects an important wildlife habitat in a wetland amidst development in the northern section of Reno. Depending on annual precipitation, the wetland varies from 100 acres to 1,000 acres. Surrounded by sagebrush, greasewood, and other desert vegetation, this large, shallow lake has a marshy habitat on the west side and adjacent sewage treatment ponds on the east. Over 150 species of wildlife have been recorded here. Burrowing owls often nest in man-made boxes located at the west and north edges of the nature study area. Swan Lake Nature Study Area is an Nevada Important Bird Area.

Resource Changes

Trends

Quantitative data to inform trends within the planning area is not consistent among taxa and is mostly lacking. Game species tend to have the most localized data. Migratory bird trends tend to be assessed at larger geographic scales such as Bird Conservation Regions. For instance, recent studies and monitoring suggest that some migratory species populations dependent on large intact expanses of sagebrush are declining, due in part to land use and management practices and habitat loss and degradation. Bighorn sheep are increasing from historic lows due to reintroductions and augmentations of existing herds. Mule deer are in decline and pronghorn are stable. **Table 3-11** shows known trends for some migratory birds.

Wildlife diversity and abundance typically reflects the diversity, quality, and quantity of habitat. In general, key habitats have degraded over time, in

particular sagebrush, aspen woodlands, and springs and springbrooks. Possible causes include conversion of native vegetation to agricultural uses, overgrazing, noxious weed infestations, pinyon-juniper encroachment into sagebrush and riparian areas, and increased recreational use of BLM-administered lands. The effects of habitat decline vary for each species. Degraded habitat is less resistant and resilient to climate fluctuations, fire recovery, and subsequent vulnerability to invasive, nonnative and noxious species.

Forecast

With improved management and time, areas currently not meeting standards are expected to improve. However, some degraded areas, such as those dominated by cheatgrass or other weeds, may continue in their present condition, or become worse. These vegetation changes will in turn affect the composition and size of wildlife communities. The effects of habitat degradation or elimination vary for each species. The population and habitat of more common wildlife and fish species are expected to remain relatively stable, while some generalist species may increase. Migratory birds have a multitude of factors beyond the scope of the planning area that can affect population abundance over time. Small or rare species and habitats are at higher risk for declines. As demand for resource values increases, these trends are likely to continue into the future.

3.2.6 Special Status Species

Special status species are those plant and animals species with populations that have suffered significant declines. These declines may result from habitat loss, habitat modification, and from changes in competition, predation, or disease. Habitat loss and modification from human activities are the primary causes of declining populations, particularly of species that are highly adapted to specific ecological niches. Such species may or may not be legally protected by federal or state agencies. BLM land management practices are intended to sustain and promote species that are legally protected and prevent species that are not yet legally protected from needing such protection.

Current Conditions

Threats to BLM special status species in the planning area include habitat loss or fragmentation stemming from fire, energy development, mining, overgrazing of upland and riparian areas by livestock and wild horses, unrestricted off-road vehicle use, invasive species, and drought. Predation and disease are also natural threats that can be intensified for species inhabiting degraded ecosystems. Based on the Southwest Regional Gap Analysis Project (USGS 2005), the Nevada Department of Wildlife's Wildlife Action Plan (NDOW 2013) characterized Nevada's vegetative land cover into 8 broad ecological system groups and linked those with key habitat types, which are further refined into ecological systems that are characterized by plant communities or associations (USGS 2005). Key habitat types in the planning area that support special status species are

summarized under Current Conditions in **Section 3.2.5**, Fish and Wildlife, and detailed under Current Conditions in **Section 3.2.4**, Vegetation.

Federally Listed Species

Six federally listed species currently inhabit the planning area, but there are no designated critical habitats (See **Table 3-12**, Federally Listed Animal and Plant Species in the Planning Area).

The Carson wandering skipper (*Pseudocopaeodes eunus obscurus*) is a small butterfly in the subfamily *Hesperiinae* (grass skippers). The subspecies was federally listed as endangered on November 29, 2001. At the time of listing, only two extant populations were known, one in Washoe County, Nevada, and one in Lassen County, California (adjacent to planning area). A third known population of the subspecies, from Carson City, Nevada, is considered extirpated as of 1998. In 2004, one additional population was located south of Carson City in Douglas County, Nevada, along the Carson River. In 2005, a second population in Washoe County, Nevada, was confirmed. Currently, there are four extant populations of the Carson wandering skipper (USFWS 2007). The Winnemucca Ranch Road site was designated as an ACEC in 2001 and was subsequently fenced for habitat protection.

Table 3-12
Federally Listed Animal and Plant Species in the Planning Area

Taxa	Species	Federal Designation	Designated Critical Habitat in Planning Area
Invertebrate	Carson wandering skipper *Pseudocopaeodes eunus obscurus*	Endangered	No
Fish	Cui-ui *Chasmistes cujus*	Endangered	No
Fish	Hiko White River Springfish *Crenichthys baileyi grandis*	Endangered	No
Fish	Lahontan cutthroat trout *Oncorhynchus clarkii henshawi*	Threatened	No
Fish	Railroad Valley Springfish *Crenichthys nevadae*	Threatened	No. Only population in planning area is on private land.
Plant	Steamboat buckwheat *Eriogonum ovalifolium* var. *williamsiae*	Endangered	No, but 51.4 acres of occupied habitat have been identified in the planning area.

Carson wandering skipper habitat is characterized as lowland grassland habitats on alkaline substrates. Occupied areas are located in a small region east of the Sierra Nevada in northwestern Nevada and northeastern California, and are characterized by an elevation of less than 1,524 meters (5,000 feet), the presence of saltgrass (*Distichlis spicata*) and nectar sources in open areas near springs or water, and possible association with geothermal activity (USFWS 2007 and references therein).

Threats to the subspecies include habitat destruction, degradation, and fragmentation due to urban and residential development; wetland habitat modification; agricultural practices; oil, gas, and geothermal development; and nonnative plant invasion. Other threats include collecting, excessive livestock trampling/grazing, water exportation projects, road construction, recreation, pesticide drift, and inadequate regulatory mechanisms. This subspecies is also especially vulnerable to chance environmental or demographic events as a small population. The combination of only four known populations (three in the planning area), small range, and restricted habitat makes the subspecies highly susceptible to extinction or extirpation from a significant portion of its range due to stochastic events such as fire, drought, disease, or other random occurrences (USFWS 2007 and references therein).

Cui-ui (*Chasmistes cujus*) is found in the planning area but the BLM does not have direct management responsibilities. Cui-ui is endemic to Pyramid Lake and spawning occurs in the Truckee River over gravel beds in relatively shallow water (21 to 140 centimeters) where flow is rapid. When low water levels disturb runs, spawning may occur at the river mouth. Spawning is unlikely to occur in Pyramid Lake because of extreme alkalinity and elevated salinity that preclude successful reproduction. Diet includes mainly bottom-oriented zooplankton and macroinvertebrates such as ostracods, Cyclops, and chironomid larvae and pupae. Feeding occurs somewhat above the bottom in water 10 to 30 meters deep (Scoppettone 1991; Sigler 1987).

Hiko White River Springfish (*Crenichthys baileyi grandis*) was introduced into Blue Link spring reservoir by the Nevada Department of Wildlife in 1984 to serve as a refuge population (USFWS 1998). However, this is not their type locality or native range. The fish live in a very small warm water reservoir. Many years ago, a mining operation punched into a warm water layer, tapping an underground water source that rose to the surface as a spring. Instead of capping the water, the small reservoir was built and the fish stocked. Filamentous algae are the most important food, and habitat changes associated with cattle and wild horse presence may negatively impact populations by creating turbid water from increased sediment deposits.

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) are a subspecies of cutthroat trout (*Oncorhynchus clarkii*) and historically occupied large freshwater and alkaline lakes, small mountain streams and lakes, small tributary streams, and major rivers of the Lahontan Basin of northern Nevada, eastern California, and southern Oregon, including the Truckee, Carson, Walker, Susan, Humboldt, Quinn, Summit Lake/Black Rock Desert, and Coyote Lake watersheds. In the planning area, the Truckee, Carson, and Walker River watersheds, as well as several streams in the Desatoya Mountains in Churchill County support Lahontan cutthroat trout. They require relatively clear, cold waters to maintain viable populations. Lahontan cutthroat trout reproduce in the spring and are obligatory stream spawners, sometimes migrating large distances to find

adequate spawning areas. Unlike most freshwater fish species, Lahontan cutthroat trout tolerate relatively high alkalinity and total dissolved solid levels found in some lake environments. Lahontan cutthroat trout evolved in the absence of other trout and they are highly susceptible to hybridization and competition from introduced trout species (USFWS 1995).

Railroad Valley Springfish (*Crenichthys nevadae*) was introduced outside of their historical range in private ponds at Sodaville and are thought to no longer exist. Habitat requirements are similar to the Hiko White River springfish.

Steamboat buckwheat, (*Eriogonum ovalifolium var. williamsiae;* Polygonaceae), was listed as endangered in 1986 and is on the Nevada Natural Heritage Program List of Critically Endangered Plants. Natural occurrence of this plant is limited to the area of Steamboat Hot Springs in Washoe County. It grows in young, shallow, poorly developed, light-colored soils. This plant is often found in association with shadscale saltbush, greasewood, and rubber rabbitbrush. It is dependent on wetland margin areas. The Steamboat buckwheat is located within an ACEC (see **Section 3.4.1**, Areas of Critical Environmental Concern). The main threat is geothermal drilling, but other threats include highway construction and maintenance, private development, competition with tall whitetop and other invasive weeds, and alteration of spring flows via regional groundwater pumping and other water diversions.

BLM Sensitive Species (Plants and Animals)

In 2011, the Nevada list of BLM Sensitive Species was revised. **Table 3-13**, Current BLM Designated Sensitive Plant Species Known or Potentially Found in the Planning Area, lists all of the BLM sensitive plant species within the planning area. There is one federal candidate animal species, greater sage-grouse (*Centrocercus urophasianus*), and two candidate plant species within the planning area, Churchill Narrows buckwheat (*Eriogonum diatomaceum*) and Webber's ivesia (*Ivesia webberi*). Both candidate plant species are currently under review by the USFWS for possible federal listing. Candidate species are managed as BLM sensitive species.

Table 3-13
Current BLM Designated Sensitive Plant Species Known or Potentially Found in the Planning Area

Common Name	Scientific Name	Known Acres of Habitat [1]
Altered andesite buckwheat	*Eriogonum robustum*	813
Altered andesite popcornflower	*Plagiobothrys glomeratus*	unknown
Ames milkvetch	*Astragalus pulsiferae* var. *pulsiferae*	unknown
Beatley buckwheat	*Eriogonum rosense* var. *beatleyae*	2.8+
Bodie Hills rockcress	*Boechera bodiensis*	54.1
Bodie Hills draba	*Cusickiella quadricostata*	unknown
Churchill Narrows buckwheat	*Eriogonum diatomaceum*	17.9 (based on 2011 survey)
Eastwood milkweed	*Asclepias eastwoodiana*	unknown

Table 3-13
Current BLM Designated Sensitive Plant Species Known or Potentially Found in the Planning Area

Common Name	Scientific Name	Known Acres of Habitat [1]
Lahontan beardtongue	*Penstemon palmeri* var. *macranthus*	unknown
Lavin milkvetch	*Astragalus oophorus* var. *lavinii*	93.7
Margaret rushy milkvetch	*Astragalus convallarius* var. *margaretiae*	unknown
Masonic Mountain jewelflower	*Streptanthus oliganthus*	41.8
Mono County Phacelia	*Phacelia monoensis*	52.1
Nevada dune beardtongue	*Penstemon arenarius*	554+
Oryctes	*Oryctes nevadensis*	146+
Pine Nut Mountains mousetails	*Ivesia pityocharis*	104
Playa phacelia	*Phacelia inundata*	unknown
Sagebrush pygmyleaf	*Loeflingia squarrosa* ssp. *Artemisiarum*	5+
Sand cholla	*Grusonia pulchella*	7.2+
Shevock bristlemoss	*Orthotrichum shevockii*	unknown
Sierra Valley mousetails	*Ivesia aperta* var. *aperta*	11.1
Sodaville milkvetch	*Astragalus lentiginosus* var. *sesquimetralis*	10.1
Steamboat buckwheat	*Eriogonum ovalifolium* var. *williamsiae*	51.4
Tiehm blazingstar	*Mentzelia tiehmii*	unknown
Tiehm peppercress	*Stroganowia tiehmii*	635
Tonopah milkvetch	*Astragalus pseudiodanthus*	unknown
Washoe pine	*Pinus ponderosa* ssp. *washoensis*	30.1+
Wassuk beardtongue	*Penstemon rubicundus*	unknown
Webber ivesia	*Ivesia webberi*	32.1
Williams Combleaf	*Polyctenium williamsiae*	457+
Windloving buckwheat	*Eriogonum anemophilum*	108+

[1] Acres calculated with on the ground surveys incorporated into GIS calculated acreages.

Many sensitive species, in particular plants, occupy unique and generally small habitat niches surrounded by a larger vegetation assemblage. All BLM sensitive plant species have a draft conservation plan completed, which are awaiting management review and approval. Threats are similar in most cases.

Disturbances to natural processes that support quality or niche habitats are the greatest long-term threat. Grazing by livestock, wildlife, and wild horses are a concern, as is off-highway vehicle impacts on sensitive plant species and on the habitat. Noxious and invasive plants species are known threats to all BLM-administered sensitive species habitats.

Plants

The range of altered andesite buckwheat (*Eriogonum robustum*; Polygonaceae) consists of the mountains and foothills surrounding Reno-Sparks and Virginia City in southern Washoe and western Storey Counties. Nearly all known populations occur on dry, shallow, highly acidic gravelly clay soils. These areas support sparse vegetation, mostly consisting of stunted woodlands of ponderosa

pine (*Pinus ponderosa*) and/or Jeffrey pine (*Pinus jeffreyi*). While native fauna seem to have nominal impacts, this plant is negatively affected by substrate disturbance from cattle and wild horses. Additionally, open soils or ridgelines and the close proximity to human populations make their habitat attractive for road development. Currently, roads and OHV use impact about half of the known sites.

Altered andesite popcornflower (*Plagiobothrys glomeratus*; Boraginaceae) is an annual herb found in Washoe County, Storey County, and Carson City. Altered andesite popcornflower grows in dry, shallow, mostly acidic, gravelly, clay soils of smallcone series, derived from weathering of hydrothermal sulfide deposits formed in andesite, or sometimes in rhyolitic or granitoid rocks; mostly in barren yellowish to orange brown patches on ridges, knolls, and steep slopes. Threats to the popcornflower are urbanization impacts in the Reno area.

Ames milkvetch (*Astragalus pulsiferae var. pulsiferae*; Fabaceae) is a perennial herb found in Washoe County, Nevada closer to the California-Nevada state border at an elevation between 4,625 and 5,200 feet. Ames milkvetch grows in granitic and sandy soil on small hillsides in sagebrush scrub plant communities. Threats include OHV activity and trampling by hikers and animals.

Beatley buckwheat (*Eriogonum beatleyae*; Polygonaceae) is a low, matted perennial that is endemic to Nevada in Churchill, Esmeralda, Eureka, Mineral, and Nye Counties. Beatley buckwheat may be found in low elevations around 5,600 feet in Great Basin scrub habitats, and also at higher elevations around 8,745 feet only in the Humboldt-Toiyabe Mountains. The soil that Beatley buckwheat can be found in is volcanic ash deposited with high concentrations of tuff. There are no recorded threats, but possible threats may still include trampling and grazing by animals plus possible mining exploration and development.

Bodie Hills rockcress (*Boechera bodiensis*; Brassicaceae) is a perennial herb that is restricted to the Bodie Hills area of Mono County, California and the Wassuk Range in Mineral County, Nevada. Bodie Hills rockcress is typically found in dry, open, rocky soil, as well as exposed surfaces or crevices of granite or rhyolitic (volcanic) mountain summits at an elevation range of 6,720-9,970 feet. According to the State of Nevada, it is threatened by mining operations and/or road construction and maintenance.

Bodie Hills draba (*Cusickiella quadricostata*; Brassicaceae) has been documented in Douglas, Lyon, and Mineral Counties, Nevada within the Humboldt-Toiyabe National Forest plus Mono County, California in the Bodie Hills area at elevations of 6,200 to 8,500 feet. The typical habitat is shrub steppe (low sagebrush habitats) or occasionally pinyon and juniper forests, but excessive tree cover can inhibit its growth. Bodie Hills draba grows in soils that are typically rocky (tertiary volcanic) or have moderate clay content.

Churchill Narrows buckwheat (*Eriogonum diatomaceum*; Polyganaceae) has only been documented in the Churchill Narrows portion of the Pine Nut Mountain Range within Lyon County, Nevada, specifically Clifton Flat, Fort Churchill and Adriance Valley. A possible population may be present at the Truckee River Canyon near the Celetom Mine in the Clark District, Storey County, Nevada, but this has yet to be verified. Churchill Narrows buckwheat grows in diatomaceous soil (soft and off-white soil created from fossilized remains of diatoms), at an elevation of 4,300 to 4,600 feet, with neighboring plant species including shadscale saltbush (*Atriplex confertifolia*), ephedra (*Ephedra nevadensis*), spineless horsebrush (*Tetradymia glabrata*), burrobrush (*Hymenoclea salsola*), desert prince's plume (*Stanleya pinnata*), whitestem blazingstar (*Mentzelia albicaulis*), volcanic buckwheat (*Eriogonum lemmonii*), flatbrown buckwheat (*Eriogonum deflexum*), and squirreltail (*Elymus elymoides*). The Churchill Narrows buckwheat population is isolated but considered at risk due to mining and some presence of grazing livestock. It is listed as Critically Endangered by Nevada's Division of Forestry, and is protected by Nevada Revised Statues 527.050, 527.260-527.300, and 472.043 as of 2005.

Eastwood milkweed (*Asclepias eastwoodiana*; Asclepiadaceae) is a long-lived perennial that is endemic to Nevada in Esmeralda, Lander, and Nye Counties. Eastwood milkweed grows at an elevation of 4,680 to 7,080 feet in barren, moisture-accumulating microsites with little competition from surrounding plants in many types of basic soils (pH greater than 8) like calcareous clay hills, carbonate or basaltic gravels, sand, or shale outcrops. It is currently threatened by mining, road construction, trampling by cattle, and predation by animals and insects.

Lahontan beardtongue (*Penstemon palmeri var. macranthus*; Scrophulariaceae) is a Nevada endemic found in four occurrences in Churchill, Lander, Nye, Humboldt, and Pershing Counties. The Lahontan beardtongue grows in washes, roadsides, and canyon floors, particularly on carbonate containing substrates. It is generally found where subsurface moisture is available throughout most of summer and it may be restricted to calcareous substrates. The primary threat is a loss of this endemic variety through hybridization with the widely planted *P. palmeri var. palmeri*, a species found in seed mixes used in revegetation and erosion control. Other threats may include grazing since it is desirable forage for wildlife, but little cattle grazing occurs within this species' range.

Lavin's milkvetch (*Astragalus oophorus var. lavinii*; Fabaceae) is a perennial herb that has been found in Douglas, Lyon, and Mineral Counties, Nevada at elevations of 5,700 to 7,467 feet. Lavin's milkvetch grows in soil typically on northeast to southeast facing slopes, badlands, small hills, or slopes that are dry, open, and barren containing gravel with clay originating from volcanic ash or carbonate. Its populations are currently threatened by mining exploration and development, rangeland management/treatments of pinyon-juniper and sagebrush ecosystems, plus road maintenance and construction.

Margaret rushy milkvetch (*Astragalus convallarius var. margaretiae*; Fabaceae) is endemic to the Pine Nut and Virginia Mountain Ranges in Carson City, Douglas, Lyon, and Storey Counties, Nevada. It typically grows at an elevation of 4,700 to 7,800 feet in rocky soils on slopes and flats in mixed pinyon-juniper and sagebrush landscapes. Margaret rushy milkvetch has no documented threats, but the plant populations are located primarily on BLM-administered land, which may involve OHV, hiking, and animal activities that may cause a threat of trampling.

Masonic Mountain jewelflower (*Streptanthus oliganthus*; Brassicaceae) can be found in both California and Nevada in Mineral, Lyon, Esmeralda, and Mono Counties, including the Sweetwater Mountains, Masonic Hills, Aurora Canyon, White Mountains, Inyo Mountains, and Sierra Nevada East bioregion. It grows in volcanic or granitic rocky slopes or andesite soil in Pinyon-Juniper woodland, high elevation sagebrush-grass zones, and Jeffrey pine-white fir forests and in elevations of 6,500 to 8,500 feet with 1,508+ estimated individuals in nine mapped occurrences. Major threats to Masonic Mountain jewelflower include mining, grazing (although occurrences in Aurora Canyon appear to maintain stable populations despite grazing), woodcutting, and off highway vehicles.

Mono County Phacelia (*Phacelia monoensis;* Hydrophyllaceae) is a small annual plant found in Esmeralda, Lyon, and Mineral Counties in Nevada as well as locations in California. It grows in alkaline, barren or sparsely vegetated grayish, brownish, or reddish shrink-swell clays of mostly andesitic origin in pinyon-juniper and mountain sagebrush zones. Mono County Phacelia grows in low intensity artificial or natural disturbances including road berms that cross its soil type and, less frequently, naturally eroding badlands or apparently undisturbed soil. Although it grows in low intensity disturbances including road cuts, due to its rarity, it is threatened by intense disturbances to these areas that could cause permanent impacts. These threats include activity by road construction/ maintenance and mineral exploration or development.

Nevada dune beardtongue (*Penstemon arenarius*; Scrophulariaceae) grows in the sandy soils of valley bottoms, sometimes on road banks and other recovering disturbances. It is often found in association with Indian ricegrass, fourwing saltbush, greasewood, and rubber rabbitbrush. This species is dependent on sand dunes or deep sand. Threats to the Nevada dune beardtongue are grazing and trampling by cattle, as well as geothermal development. While it has a wide distribution, it is not abundant at any one site.

Oryctes (*Oryctes nevadensis*; Solanaceae) is a small annual found only in deep loose sand of stabilized dunes, washes, and valley flats between 3,900 and 5,960 feet in elevation in western Nevada. This species appears only in years with optimal rainfall and temperature. The primary threats include grazing, trampling, and vehicle use in its sandy habitat.

Pine Nut Mountains mousetails (*Ivesia pityocharis*; Rosaceae) is listed as endemic on the Nevada National Heritage's Douglas County Rare Species List. A known population exists on the upper north and east slopes of Mount Siegel in the Pine Nut Mountains at elevations between 6,990 and 8,550 feet, most often on northwest to northeast facing slopes between 0 and 5 degrees. It is wetland-dependent, restricted to periodically wet areas or where the water table and/or bedrock are close to the surface in decomposed granite or sod of meadow margins. This species is associated with features such as springs, riparian corridors, and ephemeral ponds. Accompanying vegetation includes dry rush/forb meadow, adjacent surrounding sagebrush scrub, and occasionally surrounding pinyon/juniper/mountain mahogany woodlands. The most significant threats to the mousetails are lowering or redistribution of the water table, disturbance of meadow margins due to livestock, invasion of exotic weeds, and extensive ground disturbance due to mineral extraction.

Playa phacelia (*Phacelia inundata*; Hydrophyllaceae/Boraginaceae) is found in parts of California, Oregon, and Nevada. In Nevada, it is only found in Washoe and Humboldt Counties. Playa phacelia grows in alkali playas and seasonally inundated areas with clay soils. In Nevada, *P. inundata* is dependent upon wetlands for habitat. Threats are destruction from cattle grazing and trampling (particularly because of its proximity to standing water), OHV use, and any other activities that disrupts alkaline flats.

Sagebrush pygmyleaf (*Loeflingia squarrosa* ssp. *artemisiarum*; Caryophyllaceae) is a diminutive annual herb, branched at the base with green flowers. This species grows in sandy soils and gravel of exposed areas on dunes, flats, and disturbed areas, in sagebrush scrub and Mojave Desert scrub 2,300 to 7,000 feet in elevation. In Nevada, it is present in Washoe County though not well documented; this subspecies is less understood than ssp. *squarrosa* (*California loeflingia*). Major threats to this species include grazing, vehicles, and residential development.

Sand cholla (*Grusonia pulchella*; Cactaceae) is a stem-succulent, spiny shrub with magenta flowers. It grows in sand on dunes, well-drained slopes, flats, and borders of dry lakes and washes in desert or sagebrush scrub from 3,950 to 6,300 feet in elevation in western and central Nevada. Its harvest is regulated by the State of Nevada. Threats include grazing, off-road vehicles and recreation, and further drying of the habitat.

Shevock bristlemoss (*Orthotrichum shevockii*; Orthotrichaceae) is a rare moss with small, dark green to blackish tufts to 1.5 cm high. Shevock bristlemoss grows in the driest habitats of North America on dry granitic boulders or ceilings of recesses in boulder piles in very dry areas. This species is found between 2,460 and 6,890 feet in pinyon-juniper woodland mostly in California and in Nevada near Lake Tahoe and in Voltaire Canyon near Carson City. Fire is a threat to this species, especially if fuel reduction efforts result in piling or

burning brush next to granite boulders, and as with many bryophytes, this species is sensitive to air and water pollutants.

Sierra Valley mousetails (*Ivesia aperta var. aperta*; Rosaceae) is found in the Sierra Valley in California and the Carson and Virginia ranges in Nevada on flats and benches between 4,870 and 7,300 feet in elevation. It is restricted to shallow, rocky to sandy soils derived from volcanic rock or alluvium. These soils have shallow clayey sub-soils that result in slow drainage and/or vernal saturation; thus, the depth of the local perched water table and spring dry-down rate may be crucial to the distribution of this species. This species is dependent upon Nevada wetland margins in the yellowpine, mountain sagebrush, and mountain mahogany zones. Changes to natural hydrology and drainage of wetlands are threats to this species. Most of the populations occur near dirt roads; as a result, further road development, off-road vehicle use, and fire suppression activities on flats represent significant threats to this species. Additionally, the wet habitat preferred by *the* Sierra Valley mousetails indicates that the highly invasive tall white top (*Lepidium latifolium*) may pose a threat in the future.

Sodaville milkvetch (*Astragalus lentiginosus var. sesquimetralis*; Fabaceae) is fully protected by the State of Nevada and may be found in moist, alkaline, aquatic/wetland areas like drainages near cool springs co-existing with saltgrass (*Distichlis spicata*), greasewood (*Sarcobatus vermiculatus*), and alkali sacaton (*Sporobolus airoides*). The Sodaville milkvetch has been reported in Mineral and Nye Counties, Nevada at low elevations of 4,150 to 4,705 feet and is threatened by animal grazing and trampling, OHV use, private or commercial habitat development, dredging, competition from invasive plants, and impacts on pollinator populations.

Tiehm blazingstar (*Mentzelia tiehmii*; Loasaceae) is a subshrub with only seven known populations in Nye and Lincoln Counties. It grows in areas of sparse vegetation, co-occurring with *Frasera gypsicola* on gypsum spring mounds, the tops of hills of white soil, and rock outcrops in the white river valley. Threats to this species include road development, livestock trampling, and off-highway vehicles.

Tiehm peppercress (*Stroganowia tiehmiil*; Brassicaceae) occurs in the foothill and low mountain regions of the Virginia and Pine Nut ranges including Table Mountain in Lyon County, Nevada. Populations occur in both high and low elevation in basaltic or sedimentary rocks and at the fringes of rocky scree or talus piles, clay soil, and the base of rock outcrops. It grows in association with shadscale, bitterbrush, sagebrush, and rarely, Utah Juniper. Threats and potential impacts include loss of habitat from activities such as widening of main roads and relay towers at Talapoosa Peak due to mining activity and potential impact of grazing by livestock and feral horses, mule deer, and rodents, although there are implications that *S. tiehmii* may be unpalatable by certain vertebrate grazers.

Tonopah milkvetch (*Astragalus pseudiodanthus*; Fabaceae) is a perennial herb from a buried root crown restricted to Churchill, Esmeralda, Lyon, Mineral, and Nye Counties, Nevada at elevations 4,535 to 6,000 feet. It is often misidentified as *Astragalus iodanthus*, but the Tonopah milkvetch has longer hairs encompassing the plant. Tonopah Milkvetch grows in sand dunes, old beaches, valley floors, or drainages with deep loose sandy soil often with *Sarcobatus vermiculatus* (greasewood). Current threats are early season grazing from surrounding animals.

Washoe pine (*Pinus ponderosa* var. *washoensis*; Pinaceae) is listed as a harvest regulated species by the State of Nevada. This long-lived seral species is important to wildlife, houses birds unique to the area, and is found in small stands on the eastern slope of Mt. Rose in Washoe County. It is found in white fir communities growing in dry montane forest areas and volcanic ridges at elevations of 5,500 to 8,500 feet (1,650 to 2,550 meters). Because of its low seed output and reproductive potential, logging is one of the major threats to *P. washoensis*. In addition to logging, the Washoe pine is negatively affected by buildup of fuel and grazing activities that change the community structure leading to increases in white firs (and consequently, a decrease in Washoe pine) as well as changes to the understory species.

Wassuk beardtongue (*Penstemon rubicundus*; Scrophulariaceae) is a robust perennial herb with 12 reported occurrences in Douglas, Mineral, and Esmeralda Counties. It generally grows in areas with mild disturbance including steep decomposed granite slopes, rocky drainage bottoms, roadsides or other recovery disturbances with enhanced runoff in open, rocky to gravelly soils on perched tufa shores. The Wassuk beardtongue is locally abundant on recent burns in the pinyon-juniper, sagebrush, and upper mixed-shrub shadscale zones. The major threats are concerns about hybridization with *P. palmeri var. palmeri*, a species used regularly in revegetation seed mixes, and the potential for damage by trampling and grazing.

Webber ivesia (*Ivesia webberi*; Rosaceae) is listed as critically endangered by the State of Nevada. The USFWS has listed this species as a proposed species with a priority of 5 and has recently proposed listing this species as threatened. The four occurrences of this species in Nevada are in the Peavine and Carson Range on mid-elevation terraces, on the west slope of the Pine Nut Mountains in Douglas County, and in Humboldt-Toiyabe National Forest. There are two known occurrences on BLM-administered land. One occurrence is north of Reno and the other occurrence is in Douglas County. All other occurrences overlap with active grazing allotments and Native American allotment land. It has very specific soil requirements including a shallow shrink-swell clay soil with a gravel surface layer over volcanic, generally andesitic bedrock, on mid-elevation benches and flats. Threats include grazing by high concentrations of livestock, competition with aggressive nonnative grasses and noxious weeds,

high-use disturbances created by OHV, dozer lines used in fire suppression, urban development, and widening of adjacent roads.

Webber's ivesia is found on clay soils within the pinyon juniper forest. At present the species occupies 32.1 acres on BLM-administered land. Much of the habitat is on private land and is under consideration for future development. The USFWS has listed this species as a proposed species with a priority of 5. Given that most of the habitat is on private lands that USFWS has stated that occurrences of Webber's ivesia on BLM-administered lands are crucial for the survival of this species. Little is known of the condition of this species on BLM-administered land. Limited monitoring and surveying of this species has been conducted.

Williams combleaf (*Polyctenium williamsiae*; Brassicaceae) is a small perennial aquatic or aquatic dependent herb in Washoe, Lyon, Douglas, Mineral and Nye Counties as well as California and Oregon. It grows in relatively barren sandy to clay or mud margins and at bottoms of nonalkaline seasonal lakes perched over volcanic bedrock in sagebrush, pinyon-juniper, and mountain sagebrush zones. Williams combleaf is fully protected by the State of Nevada and is protected in an ACEC in the planning area. Threats include trampling by livestock and feral horses, water diversions and development, and off-highway vehicles.

Windloving buckwheat (*Eriogonum anemophilum*; Polyganaceae) has been documented in Churchill, Washoe, Pershing, Humboldt, and Lander Counties, Nevada. It has an elevation range of 4,750 to 9,836 feet, and can become established in a variety of soil types. Most common habitat types documented are high elevation mountain ridges and slopes in gravel or volcanic outcrops co-occurring with low sagebrush (*Artemisia arbuscula*), green rabbitbrush (*Chrysothamnus viscidiflorus*), sandberg bluegrass (*Poa secunda*), squirreltail (*Elymus elymoides*), and King's Sandwort (*Arenaria kingii)*, as well as, low elevation populations in dry, barren, undisturbed hillsides with light-colored clay soils co-occurring with spineless horsebrush (*Tetradymia canescens)*, rubber rabbitbrush (*Ericameria nauseosa*), green rabbitbrush (*Chrysothamnus viscidiflorus*), shadscale (*Atriplex confertifolia*), bottlebrush squirreltail (*Elymus elymoides*), basin wildrye (*Elymus cinereus*), and Torrey's milkvetch (*Astragalus calycosus*).

Wildlife. The primary key habitat types that support BLM sensitive animal species found in the planning area are intermountain cold desert scrub, lower montane woodlands, sagebrush, and springs and springbrooks. Other key habitats are sparsely distributed in small acreages throughout the planning area and include; Aspen Woodland, Barren Landscapes, Cliffs and Canyon, Desert Playas and Ephemeral Pools, Grasslands And Meadows, Intermountain Rivers and Streams, Lakes and Reservoirs, Sand Dunes And Badlands, Sierra Conifer Forests and Woodlands, and Wet Meadows. Details of key habitats, as well as unique and specialized habitats, are described under **Section 3.2.4**, Vegetation.

The distribution, trend, and status for each species listed in **Table 3-14**, BLM Designated Sensitive Wildlife Species Known or Potentially Found in the Planning Area, is based on the NatureServe Explorer website, 2006 Revised Nevada Bat Conservation Plan, 2013 Nevada Wildlife Action Plan, 2007 Atlas of the Breeding Birds of Nevada, and 2010 Nevada Comprehensive Bird Conservation Plan (NatureServe 2011; Great Basin Bird Observatory 2010; Floyd 2007; Bradley 2006; NDOW 2013).

Table 3-14
BLM Designated Sensitive Wildlife Species Known or Potentially Found in the Planning Area

Wildlife	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Birds	
Bald eagle *Haliaeetus leucocephalus*	Only 3 known breeding locations. Winters in low numbers. Trend is stable or increasing with recent winter increases in Carson Valley.	Intermountain Rivers and Streams, Lakes and Reservoirs, Sierra Conifer Forests and Woodlands
Brewer's sparrow *Spizella breweri*	Breeds in planning area. Declining across the west.	Sagebrush and Cold Desert Scrub
Ferruginous hawk *Buteo regalis*	Winters in the Lahontan Valley and scattered year-round elsewhere. Trend is stable.	Intermountain Rivers and Streams, Sagebrush, Lower Montane Woodlands
Golden eagle *Aquila chrysaetos*	Wide year-round distribution. Trend is declining regionally and in Nevada.	Cliffs and Canyons, Sagebrush, and Lower Montane Woodland
Greater sage-grouse *Centrocercus urophasianus*	See **Figure 2-6** for distribution of Bi-state and Great Basin populations. Trend is declining.	Sagebrush, Springs and Springbrooks, & Wet Meadows
Lewis woodpecker *Melanerpes lewis*	Known breeding in the Carson Range and migration in the Lahontan Valley and near Pyramid Lake. Trend is thought to be declining.	Aspen Woodland & Sierra Conifer Forests and Woodlands
Loggerhead shrike *Lanius ludovicianus*	Year-round distribution. Trend is declining.	Cold Desert Scrub & Sagebrush
Northern goshawk *Accipiter gentilis*	Year-round distribution. Have been documented in the Carson, Wassuk, Pine Nut, Clan Alpine, & Desatoya Mountain Ranges	Aspen Woodland
Peregrine falcon *Falco peregrinus*	Migration and or wintering in the Lahontan Valley, Lake Tahoe Basin, & Walker River floodplain. Trend is increasing outside of the Great Basin; therefore recolonization of breeding territories in the planning area may occur in the near future.	Cliffs and Canyons & Marshes

Table 3-14
BLM Designated Sensitive Wildlife Species Known or Potentially Found in the Planning Area

Wildlife	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
Pinyon jay *Gymnorhinus cyanocephalus*	Year-round distribution with trend in decline. Age profile and structural features of pinyon-juniper woodlands is thought to be a primary reason for declining trend.	Lower Montane Woodlands
Sage thrasher *Oreoscoptes montanus*	Distribution is breeding only. Trend is thought to be stable or in slight decline	Sagebrush & intermountain cold desert scrub primarily where contiguous or interspersed with sagebrush
Snowy plover *Charadrius alexandrinus*	Known to breed at the Stillwater National Wildlife Refuge and Carson Lake in the Lahontan Valley, Walker Lake, and Pyramid Lake. Trend is declining regionally but not well quantified in the Great Basin.	Desert Playa and Ephemeral Pools
Swainson's hawk *Buteo swainsoni*	Breeding distribution primarily where agricultural lands exist in proximity to nesting trees and open shrublands. Trend is declining range wide but currently unknown for the planning area.	Agricultural Lands and Intermountain Rivers and Streams
Western burrowing owl *Athene cunicularia hypugaea*	Breeding distribution. Trend in the planning area is currently unknown.	intermountain cold desert scrub & Sagebrush
	Mammals	
Big brown bat *Eptesicus fuscus*	Widespread year-round distribution. Considered secure but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Hibernates in winter but locations unknown. Multiple habitats used. Caves, trees, buildings, mines, and bridges used as roost sites.
Desert bighorn sheep *Ovis canadensis nelsoni*	Year-round distribution. Trend is increasing in planning area due to reintroductions and augmentations by NDOW.	Cliffs and Canyons
Brazilian free-tailed bat *Tadarida brasiliensis*	Summer resident. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include cliff faces, mines, caves, buildings, bridges, and hollow trees. Colonies number from a few hundred to several thousand in Nevada.

Table 3-14
BLM Designated Sensitive Wildlife Species Known or Potentially Found in the Planning Area

Wildlife	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
California myotis *Myotis californicus*	Widespread year-round distribution but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Multiple habitats used. Roosts include cliff faces, mines, caves, buildings, bridges, and hollow trees.
Dark kangaroo mouse *Microdipodops megacephalus*	Year-round but hibernates in winter. Trend is in decline in Nevada but apparently secure globally.	Intermountain Cold Desert Scrub & Sagebrush
Fringed myotis *Myotis thysanodes*	Year-round resident but mostly hibernates in winter. Considered imperiled in Nevada.	Multiple habitats used. Roosts include mines, caves, buildings, and trees.
Hoary bat *Lasiurus cinereus*	Summer resident but spatial distribution data is limited. Trend in Nevada unknown but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Tree roost sites are most important.
Little brown myotis *Myotis lucifugus*	Year-round resident but mostly hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include mines, caves, buildings, and trees.
Long-eared myotis *Myotis evotis*	Year-round resident but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Multiple habitats used. Roosts include crevices, mines, caves, buildings, bridges, and hollow trees.
Long-legged myotis *Myotis volans*	Year-round resident but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Multiple habitats used. Roosts include crevices, mines, caves, buildings, bridges, and hollow trees.
Pale kangaroo mouse *Microdipodops pallidus*	Year-round resident with some populations considered to be in decline. Considered to be imperiled in Nevada.	Cold Desert Scrub

Table 3-14
BLM Designated Sensitive Wildlife Species Known or Potentially Found in the Planning Area

Wildlife	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
pallid bat *Antrozous pallidus*	Year-round resident but mostly hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include rock outcrops, mines, caves, buildings, bridges, and hollow trees.
Pika *Ochotona princeps*	Only known locations are in the Carson and Desatoya mountain ranges. Populations may exist in the Pilot Table mountains. Trend for pikas in the Great Basin is declining.	Cliffs and Canyons & Grasslands and Meadows
Pygmy rabbit *Brachylagus idahoensis*	Distribution poorly understood. No good estimates regarding their trends.	Sagebrush
Silver-haired bat *Lasionycteris noctivagans*	Distribution poorly understood. Considered vulnerable in Nevada.	Lower Montane woodland, Aspen Woodland & Sierra Conifer Forests and Woodlands
Spotted bat *Euderma maculatum*	Year-round resident but mostly hibernates in winter. Considered imperiled in Nevada. Information lacking for this species.	Rocky cliffs most important.
Townsend's big-eared bat *Corynorhinus townsendii*	Year-round resident but mostly hibernates in winter. Considered imperiled in Nevada. Information lacking for this species.	Multiple habitats used, but caves and mines most important.
Western pipistrelle *Parastrellus hesperus*	Year-round resident but mostly hibernates in winter. Considered secure in Nevada but listed as special status species because of high concern over the unknown potential of white-nose syndrome moving to the western states.	Cliffs and Canyons
Western red bat *Lasiurus blossevillii*	Distribution largely unknown but thought to just be a migrant. Very rare in Nevada.	Various wooded habitats.
Western small-footed myotis *Myotis ciliolabrum*	Year-round resident but mostly hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include cliff faces, mines, caves, buildings, bridges, and hollow trees.
Yuma myotis *Myotis yumanensis*	Year-round resident but hibernates in winter. Considered vulnerable in Nevada.	Multiple habitats used. Roosts include crevices, mines, caves, buildings, bridges, and hollow trees.

Table 3-14
BLM Designated Sensitive Wildlife Species Known or Potentially Found in the Planning Area

Wildlife	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
	Reptiles and Amphibians	
Dixie Valley toad *Anaxyrus boreas ssp.*	Only found in vicinity of Dixie Valley hot springs. Trend unknown.	Playas and Ephemeral Pools
Northern leopard frog *Lithobates pipiens*	Permanent year-round resident with historic known records from Churchill, Douglas, Lyon, Storey, and Washoe Counties within the planning area. Considered imperiled in Nevada with a global population trend down.	Springs and Springbrooks, & Wet Meadows
Shasta alligator lizard *Elgaria coerulea shastaensis*	Trend, distribution and status unknown in the Planning area.	Conifer Forests and Woodlands
	Invertebrates	
Bee *Anthophora sp. nov. 1*	Unknown	Sand Dunes and Badlands
Bee *Hesperapis sp. nov. 2*	Unknown	Sand Dunes and Badlands
Bee *Perdita haigi*	Unknown	Sand Dunes and Badlands
Bee *Perdita sp. nov. 3*	Unknown	Sand Dunes and Badlands
Click beetle *Cardiophorus ssp. nov.*	Unknown	Sand Dunes and Badlands
Carson Valley silverspot *Speyeria nokomis carsonensis*	Current distribution unknown. Historic records from Alpine, Carson City, Douglas, Lyon, and Washoe Counties. Considered critically imperiled in Nevada.	Grasslands and Meadows
Early blue or Dotted blue butterfly *Euphilotes enoptes primavera*	Records only exist from Mineral County in the Wassuk Range. Trend unknown considered critically imperiled in Nevada.	Unknown
Great Basin small blue butterfly *Philotiella speciosa septentrionalis*	Distribution unknown but type locality is from Fort Churchill Road in Lyon County. Trend unknown considered critically imperiled in Nevada.	Unknown
Hardy's Aegialian scarab *Aegialia hardyi*		Sand Dunes and Badlands
Sand Mountain Aphodius scarab *Aphodius sp. 3*	Distribution restricted to Sand Mountain dune area	Sand Dunes and Badlands

Table 3-14
BLM Designated Sensitive Wildlife Species Known or Potentially Found in the Planning Area

Wildlife	Seasonal Distribution & Trend in Planning Area	Dominant and/or Relevant Key Habitat Type (s)
Sand Mountain blue butterfly *Euphilotes pallescens arenamontana*	Only found at Sand Mountain dune. Trend thought to be in decline	Sand Dunes and Badlands supporting Kearney buckwheat
Sand Mountain Pygmy scarab Beetle *Coenonycha pygmaea*	Only found at Sand Mountain dune.	Sand Dunes and Badlands
	Molluscs	
Ovate Cain Spring pyrg *Pyrgulopsis pictilis*	Unknown distribution and trend	Springs and Springbrooks
Wongs pyrg *Pyrgulopsis wongi*	Records for Douglas and Mineral Counties. Trend unknown.	Springs and Springbrooks

Greater sage-grouse are a sagebrush-obligate species, requiring large, intact, interconnected expanses of sagebrush for nesting, brooding, fall and winter cover and forage. Sage-grouse are ground-nesters and their key habitat components include adequate understory cover of tall grasses and medium-height shrubs for nesting, abundant forbs and insects for brood rearing, and availability of herbaceous riparian species for late growing-season foraging. Courtship displays are conducted on leks, which are open sites, often surrounded by denser sagebrush cover, used year after year. Lekking periods for greater sage-grouse generally occurs between early March and mid-May. Greater sage-grouse were historically found throughout the Great Basin but populations have declined and fragmented throughout much of their range. Within the CCD, greater sage-grouse are found in the Central Nevada/Southern Great Basin population area, as well as in the Bi-State Distinct Population Segment, which is geographically and genetically isolated from other populations of greater sage-grouse. The Bi-State Distinct Population Segment is located near Mono Lake and the White Mountains and threatened by fragmentation and loss of habitat to infrastructure and human development. The Central Nevada GRSG population is larger and threatened primarily by pinyon-juniper encroachment into sagebrush and spread of cheatgrass, discussed above in **Section 3.2.4**, Vegetation. Over-grazing, urbanization, infrastructure such as roads and power lines, and wildfire are also considered threats to the sagebrush ecosystem that greater sage-grouse depend upon (Federal Register Vol.75, No.55. pp. 13910-14014). The current distribution of greater sage-grouse in the CCD is shown in **Figure 2-6**, Alternative A: Greater and Bi-state Sage-Grouse Habitat

According to Hagen et al. (2007), ideal greater sage-grouse nesting and brood-rearing habitat contains taller sagebrush (greater than 20 inches) with 15 to 25 percent canopy cover, at least 10 percent forb cover, and greater than 15

percent grass cover (Hagen et al. 2007). Also, Sveum et al. (1998) observed higher nesting success for structures placed in sagebrush steppe habitat with grasses taller than 18 centimeters (7.1 in) due to decreased predation than in sagebrush steppe areas with lower grasses. In nesting habitat with high raven populations, however, Coates and Delehanty (2010) suggest that sagebrush cover from 20 to 30 percent with total shrub cover greater than or equal to 40 percent is the most ideal at preventing ravens from predating on greater sage-grouse nests. As the summer progresses, hens with broods relocate to wet meadows and riparian areas abundant with forbs and grasses that are near sagebrush (Connelly et al. 2000).

Snow depth determines the areas available to greater sage-grouse during the winter. In general, ideal winter habitat contains tall, vigorous sagebrush that extends above the snow and exhibits sufficient canopy coverage (Connelly et al. 2000).

Standards and Guidelines for Rangeland Health

There are five standards in the 2007 Standards and Guidelines for Rangeland Health (BLM 2007a). Standard 5: Special Status Species Habitat is listed below. **Appendix D** contains a full description of the standards and guidelines.

Standard 5: Special Status Species Habitat. Habitat conditions meet the life cycle requirements of special status species, as indicated by:

- Habitat areas are large enough to support viable populations of special status species.
- Special status plant and wildlife numbers and ages appear to ensure stable populations.
- Good diversity of height, size, and distributions of plants
- Number of wood stalks, seed stalks, and seed production are adequate for stand maintenance.
- Vegetative mosaic, vegetation corridors for wildlife, and minimal habitat fragmentation.

In 2003 to 2012, 38 allotments within the planning area were assessed for adherence to Standard 5: Special Status Species Habitat (see **Section 3.2.4**, Vegetation, for more information on the Rangeland Health Assessments done for the planning area):

- 1 percent (28,786 acres) did not require this standard.
- 53 percent (1,105,187 acres) was rated as fully meeting the standard.
- 46 percent (979,798 acres) had problems of enough significance to not meet the standard.

Key Features (Plants and Animals)

The BLM will continue to focus management and protection efforts on special status species and their habitats (See **Tables 3-12** thru **3-14** and **Section 3.2.4**, Vegetation). Key features and areas include core populations, historic habitats, occupied and suitable habitats (particularly those near known populations), and important landscape connectivity features such as movement corridors. In addition to Key habitats, other rare, unique, or diverse habitats are important. The BLM will continue to improve its knowledge base of the distribution and status of these species across the planning area and will develop and apply standardized protection measures to enhance the conservation and recovery of these species.

Resource Changes

Trends

Special Status Plant Species

The future of most special status plant species within the planning area depends on the degree to which threats can be eliminated or ameliorated, and populations and their habitat can be restored and protected. With time and improved management practices, areas currently not meeting land health standards are expected to improve. However, some degraded areas, such as those dominated by cheatgrass or other weeds, may continue in their present condition, or possibly become worse. As demand for resource values increases, these trends are likely to continue into the future.

Noxious weeds within the area of Steamboat buckwheat will increase if major efforts are not undertaken to prevent its spread. Herbicides are the only known effective treatment against perennial pepperweed, but the proximity of an endangered plant makes herbicide application extremely difficult and potentially hazardous to the buckwheat unless great care is exercised in herbicide application. According to the Steamboat buckwheat Recovery Plan the alteration of the natural processes in the area will mean that the soil will not be replenished with sinter, an element present in the geothermal hot springs that was formerly brought to the surface by active geysers. The Steamboat buckwheat is dependent on sinter as a nutrient. The buckwheat will continue to survive on sinter already in the soil, however there is concern that the existing sinter, at some point in the future, will be depleted and the buckwheat will be unable to survive. Based on these projections, the species will never leave the endangered species list and will, at some point in the future, become extinct.

The limited monitoring of the Churchill Narrows buckwheat shows a downward trend. There are only 11 acres of occupied habitat known on a global scale. Using the NatureServe ranking system (NatureServe 2011) the species would be considered extremely endangered. The diatomaceous earth deposits are a nonrenewable resource and limited in size and extent. Continued mining in the

region would further diminish available habitat for the species. Rodent predation on the root system kills individual plants and grazing by wildlife, wild horses, and cattle are further threats. Currently there are limited impacts by off highway vehicles. Given the continued strong interest in mining of diatomaceous earth deposits in the area, there is potential for further threats.

Special Status Wildlife Species

By definition, the populations, and often habitats, of all special status wildlife species have historically suffered downward trends. However, due to protection and recovery efforts, some populations (such as peregrine falcon and bald eagle) are stabilizing range-wide while others are in decline (such as golden eagle, pinyon jay). While management efforts by the USFWS, NDOW, BLM, and others have reversed the downward trend for some special status species populations, none are thought to be near their historic levels, and most remain biologically insecure, regardless of their legal status.

Current and future threats include habitat loss and fragmentation, poaching, predation, disease, invasive species, and others. Both historic and current over grazing by livestock and horses have contributed to the loss of habitat for special status species (current livestock grazing impacts should decrease as rangeland health assessments are completed for each allotment when it is time to renew permits). Habitat fragmentation leading to degradation and loss are caused by, or exacerbated by, historic overgrazing, energy development, mining, water diversions, recreation, agriculture, residential development, and other human activities. Natural processes such as fire, drought, vegetation type conversions- especially pinyon/juniper encroachment into sagebrush- and increased density, and climate change may also contribute to landscape changes over time. It is not known which species will be able to adapt to these changes and persist over time. Pinyon-juniper, riparian, sagebrush, and salt desert scrub have been determined to be at-risk habitats and harbor many of our special status and rare species. Vegetation type conversion from sagebrush or aspen to pinyon-juniper would expand habitat for pinyon-juniper dependent species but reduce habitat for species dependent on sagebrush or other habitat they were replacing. BLM management is designed to promote a mix of habitats to support special status species.

Rangeland Health Observations

Healthy plant communities typically translate into healthy habitats for fish and wildlife. Therefore, most sites that meet Standard 4 (for Healthy Native Plant and Animal Communities) also meet Standard 5 (for Special Status Species). However, because special status species are typically restricted in their range and have narrower habitat requirements, achieving Standard 4 does not necessarily guarantee that Standard 5 will be met. Conversely, an area may have failed to meet Standard 4 but met Standard 5 simply because no special status species or habitat occurs in an area. Where a site failed to meet, or fell short, of land health standards, the problems entailed one or more of those identified for

common fish and wildlife. (Refer to the *Trends* subsection of **Section 3.2.5**, Fish and Wildlife for a list of the most common land health problems observed across the planning area and a description of causal factors.)

Forecast

Special Status Plant Species

For Steamboat buckwheat, noxious weeds within the area are likely to increase and the species will never leave the endangered species list and will, at some point in the future, become extinct for reasons described under the trends subheading.

The limited monitoring of the Churchill Narrows buckwheat shows a downward trend. There are only 11 acres of occupied habitat known on a global scale. Using the NatureServe ranking system (NatureServe 2011) the species would be considered extremely endangered. The diatomaceous earth deposits are a nonrenewable resource and limited in size and extent. Continued mining in the region would further diminish available habitat for the species. Rodent predation on the root system kills individual plants and grazing by wildlife, wild horses, and cattle are further threats. Currently there are limited impacts by off highway vehicles. Given the continued strong interest in mining of diatomaceous earth deposits in the area the forecast for the species is not good and it is likely that the USFWS will list the species as endangered.

In general, the forecast for BLM sensitive plants under current management may decline because of inadequate consistent protections from energy development, wild horses, grazing and unrestricted OHV use.

Special Status Wildlife Species

The future of most special status wildlife species within the planning area depends on the degree to which threats can be eliminated or ameliorated, and populations and their habitat can be restored and protected. With time and improved management practices, areas currently not meeting land health standards are expected to improve. However, some degraded areas, such as those dominated by cheatgrass or other weeds, may continue in their present condition, or possibly become worse. As demand for resource values increases, these trends are likely to continue into the future.

Renewable energy-related projects have the potential to adversely impact wildlife habitat and populations. Other uses such as livestock grazing, wild horses, mining, water use, realty actions, and recreation may also have negative impacts. Streams could potentially be affected by development activities, resulting in increased sedimentation and adverse changes in water quality and aquatic habitat. Springs and wet meadows are especially vulnerable from anthropogenic and natural factors and when negatively impacted have a far greater impact on special status wildlife species. This is because this key habitat makes up only about 5 percent of the acreage but 80 percent of all wildlife

species depend on these systems. To a degree, some trends are a result of natural factors, such as drought and disease, and may be beyond management's control. In light of this, restoring and maintaining key habitats that can be resistant and resilient to natural disturbances such as climate fluctuations, fire, and disease is very important. Conservation efforts can be improved by obtaining more complete information on the biology and distribution of special status wildlife species within the planning area, as well as by monitoring these populations.

3.2.7 Wild Horse and Burros

Wild horse and burro management within BLM-administered lands of the CCD follows the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) and 43 CFR Part 4700 – Protection, Management and Control of Wild and Free-Roaming Horses and Burros.

The general management objectives for wild horses and burros are to protect, maintain, and control viable, healthy herds while retaining their free-roaming nature; provide adequate habitat through the principles of multiple use and environmental protection; maintain a thriving natural ecological balance with other resources; provide opportunities for the public to view wild horses and burros; and protect wild horses and burros from unauthorized capture, branding, harassment, or death.

The 53.8 million acres across the Western US where wild horses or burros were found roaming at the time the 1971 Wild Free-Roaming Horses and Burros Act was passed are known as herd areas (HAs). A subset of these areas (approximately 31.6 million acres nationwide in 2012) have been determined suitable for long-term management of wild horses and burros and are known as herd management areas (HMAs). Wild horses and burros within HMAs are managed with the goal of maintaining sustainable ecological conditions and multiple use and sustained yield relationships on federal lands. Both HAs and HMAs can include private or state lands, but BLM has management authority only over BLM-administered lands.

Wild horse and burro populations are managed within AMLs, the point at which wild horse and burro herd populations are consistent with the land's capacity to support them. The AML is a range of low to maximum levels that allows for population growth over a 4- to 5-year period. Each HMA has its own AML.

In Nevada, AML of wild horses and burros are generally determined through the multiple-use decision process. This process begins with an evaluation of range conditions; the evaluation assesses whether or not management and stocking levels for livestock, wild horses and burros, and wildlife are achieving rangeland objectives per the Sierra Front-Northwestern Great Basin Standards and Guidelines for Rangeland Health (BLM 2007a) as outlined in **Appendix D**. If rangeland health objectives are not being met, changes in management or stocking levels are proposed. Proposed changes to AMLs are analyzed in an

environmental assessment. AML decisions may be documented in a Proposed or Final Multiple-Use Decision or a Wild Horse Decision. In addition, Herd Management Area Plans are developed to establish short- and long-term management and monitoring objectives for wild horse or burro herds and their habitat. Herd Management Area Plans include herd and habitat objectives, monitoring methods and schedules, the upper and lower limit of the population range, and criteria for selective removal animals, if any. Herd Management Area Plans may also address the method of population control and any restrictions on other resource uses or users. Methods of herd population control include periodic gathers and removal to short-term holding and adoption or long-term holding, as well as methods of population growth suppression, including treatment with fertility control drugs where approved. The initiation of gathering or other population growth suppression is based on inventory data, herd health, rangeland health, climatic conditions, and occurrence of catastrophic events such as wildland fire and drought.

Current Conditions

Within California and Nevada, the BLM and Forest Service manage approximately 130 HMAs and herd territories, the Forest Service equivalent of an HMA. These HMAs and territories comprise approximately 20 million acres. The Forest Service has not established AMLs but has estimated that an AML of approximately 2,000 horses and burros could be established on their herd territories. The BLM has established a combined total AML for horses in California and Nevada of approximately 13,800 horses and 1,300 burros.

Twenty-one HAs were originally identified within the planning area. Of these areas, two (Pah Rah and Horse Springs) are classified as HAs, while the remaining areas are managed as HMAs. Geographic locations are displayed in **Figure 2-8**, Alternative A: Wild Horse and Burro Herd Areas and Herd Management Areas.

Currently the Pah Rah Mountains and Horse Springs HAs, as well as the southern portion of the Pine Nut Mountains HA, are not managed for wild horses due to a checkerboard pattern of public and private land that makes management unfeasible in these areas. All wild horses were removed from the Pah Rah Mountain Range in 1984. Since 1984, however, some horses have moved over from the Pyramid Lake Indian Reservation. Substantial areas of the Pah Rah Mountains consist of steep terrain with limited road access, so capture attempts have not kept up with immigration and reproduction; therefore, a population of horses currently occupies the Pah Rah Mountains. These horses are classified as stray animals under Nevada State Laws and are not wild horses under the Wild Horse and Burro Act; therefore, they are not managed by the BLM.

There are 17 HMAs in the planning area supporting wild horses or burros on an area comprising 1,367,685 million acres. Horse Mountain (52,222 acres) and

Tule Ridge/ Mahogany Flat (4,009 acres) do not support any wild horses or burros but are still classified as HMAs at this time. The only burros found in the planning area are in the Marietta Wild Burro Range, with a current estimate of 172 burros. The total horse AML for the CCD is 2,508, with a current estimate of 2,571 horses.

The planning area has seven HMAs that extend beyond the CCD boundary. These HMAs have each been assigned a lead district. The CCD is the lead district for the Desatoya and Pilot Mountain HMAs, which share a boundary with the Battle Mountain District. The Fort Sage HMA is shared with the Susanville District, which has the lead. The North Stillwater and Augusta Mountains HMAs are shared with the Winnemucca District, which has the lead. The New Pass-Ravenswood HMA is shared with the Battle Mountain District, which has the lead. The Montgomery Pass HMA is shared with the Humboldt-Toiyabe Forest Service, which has the lead.

More detailed information on individual HAs/HMAs is listed in the descriptions for individual areas, below, and in **Table 3-15**, CCD Wild Horse and Burro Management Areas.

Augusta Mountains HMA is located in the Augusta Mountains northeast of Fallon, Nevada. The HMA is situated within three districts, with the BLM Winnemucca District having lead responsibilities. The CCD portion of the HMA is rolling hills and mountainous terrain, with substantial portions covered with pinyon juniper.

Clan Alpine HMA is centered in the Clan Alpine Mountains northeast of Fallon, Nevada and south of the Augusta Mountains HMA. The HMA is mostly mountainous terrain. Due to several large fires within the HMA, the majority of the wild horse population was removed to allow the vegetation community to become reestablished. This population is increasing at a low rate, possibly due to mountain lion predation. Substantial areas of this HMA that were not burned are covered with pinyon juniper.

Desatoya HMA is east of the Clan Alpine HMA and centered in the Desatoya Mountains. The HMA lies within two BLM districts; the CCD has the lead responsibilities. The Desatoya HMA is mostly covered in pinyon juniper, and there is currently overuse of the upland grasses. A gather conducted in August 2012 captured 429 animals. Twenty-four stallions were re- released into the HMA, and the remaining animals were sent to adoption facilities/long-term pastures.

Dogskin Mountain HMA is north of Reno, Nevada, and centered in the Dogskin Mountain Range. This area receives substantial OHV use. During January 2012 the majority of the horses would not respond to helicopter herding techniques, possibly due to harassment from motorcycle riders, making capture difficult.

Table 3-15
CCD Wild Horse and Burro Management Areas

Management Area	Status	AML	Current No. of Horses (August 2013)	BLM Acres Carson City	Acres Entire HMA	HMA Plan Date	Lead District
Augusta Mountains	HMA	42–71[1] 185-308[2]		90,347	178,929		Winnemucca
Clan Alpine	HMA	612-979	503	313,122	304,763	1993	Carson City
Desatoya	HMA	73-98[1] 127-180[2]	174	23,110	162,962	2003	Carson City[3]
Dogskin Mountains	HMA	10-15	29	6,871	6,605	2005	Carson City
Flanigan	HMA	80-124	119	16,181	17,362	1990	Carson City
Fort Sage	HMA	36[4]	67	2,043	16,138		Susanville
Garfield Flat	HMA	83-125	99	135,974	144,118	2004	Carson City
Granite Peak	HMA	11-18	18	3,862	4,052	1993	Carson City
Horse Mountain	HMA	60-118	0	52,222	50,319	1991	Carson City
Horse Spring	HA	NA	0	28,676	25,691	n/a	Carson City
Lahontan	HMA	7-10	36	10,446	9,686	2004	Carson City
Marietta	HMA	78-104	144	66,500	66,694	1987	Carson City
Montgomery Pass	HMA	NA	286[5]	38,615	207,921	FS	Forest Service has lead
New Pass-Ravenswood	HMA	69-90		24,699	287,948	1993	Battle Mt.
North Stillwater	HMA	49	58	45,773	180,444		Winnemucca
Pah Rah Mountains	HA	NA	0	7,164	23,514	n/a	Carson City
Pilot Mountain	HMA	228-346[1] 249-415[2]	402	255,040	481,391		Carson City[3]
Pine Nut Mountains	HMA	119-179	293	90,900[6]	105,594		Carson City
South Stillwater	HMA	16	9	9,940	9,864	1995	Carson City
Tule Ridge/ Mahogany Flat	HMA	NA	0	4,009	4,401		Carson City
Wassuk	HMA	109-165	139	51,742	52,309		Carson City

1-AML for the Carson City portion of the HMA
2-AML for the entire HMA
3-A portion of the HMA is located outside of the CCD, however the CCD is the lead district
4- Susanville has lead AML probably has not been set through and analysis of monitoring data
5-All but 35 head were in CA, most of the 35 head were on land administered by the Forest Service.
6-The HMA is 90,000 BLM acres the HA is 182,668 acres. The southern portion of this HMA was reverted back to HA status due to checker board land pattern.

Flanigan HMA is north of Reno, Nevada, and partially borders the Pyramid Lake Indian Reservation. The HMA is mostly mountainous terrain within the Virginia Mountains. A gather conducted in January 2012 in the Flanigan, Dogskin Mountain, and Granite Peak HMAs captured 308 animals; 58 were returned to

home range after treatment with PZP (porcine zona pellucida), as appropriate, and 250 were shipped to adoption facilities/long-term pastures.

Fort Sage HMA is located in both Nevada and California. The BLM Northern California District has lead responsibilities for the HMA. The HMA is north of Reno, Nevada, and west of the Flanigan HMA. The CCD portion of the HMA is 2,043 acres.

Garfield Flat HMA is south of Hawthorne, Nevada. The HMA consists of flat to rolling terrain. Only two permanent water sources exist within this HMA; both are located on private land. In February 2012, a gather was conducted in which 84 animals were gathered, 24 were re-released to home range, and 60 were sent to adoption facilities/long-term pastures.

Granite Peak HMA is north of Reno, Nevada, and west of the Dogskin Mountains HMA. The HMA consists of rolling terrain. There is no permanent water within the HMA. When livestock are present and their associated water troughs are supplied with water, wild horses will use the water troughs. When livestock are absent, the water is turned off at the troughs and wild horses use water sources outside of the HMA. This area receives substantial OHV use. During a recent gather the majority of the horses would not respond to helicopter herding techniques, possibly due to harassment from motorcycle riders, making capture difficult.

The Granite Peak HMA is relatively close to homes along Red Rock Road and the Rancho Haven area. The CCD receives complaints regarding wild horses damaging landscaping or causing problems with domestic horses. Usually the conflicts with domestic horses involve fighting through fences or mating attempts. If a breach of a fence enclosing a mare or mares occurs, the mares are very difficult to recapture. The CCD has received complaints of aggressive stallions approaching horseback riders and residents caring for their domestic horses. These encounters have the potential for serious injury.

Horse Mountain HMA is south of Fallon, Nevada. The HMA consists of rolling to mountainous terrain. The HMA currently has no wild horses. In the past, wild horses in this HMA relied on an irrigation return ditch on private land as their sole source of water. In 2000, changing irrigation practices led to the abandonment of this ditch, and all horses were removed to prevent death from dehydration.

Lahontan HMA is between Carson City and Fallon, Nevada, south of the Lahontan Reservoir. The HMA consists of flat terrain. The sole source of water for this HMA is the Lahontan Reservoir within the Lahontan State Park. In November 2010, 117 wild horses were gathered, 7 were re-released and the remainder shipped to adoption facilities/long-term pastures.

Marietta Wild Burro Range is a designated wild burro range. It is the only designated wild burro range and the only HMA with burros in the planning area. The HMA consists of 66,500 acres of flat to mountainous terrain south of Hawthorne, Nevada. Overuse of native bunch grass by wild burros is occurring. The portion of the range that is within a grazing allotment has not been grazed by domestic livestock for the past several years. The majority of the range is closed to domestic livestock grazing.

Montgomery Pass HMA is within both Nevada and California southwest of Hawthorne, Nevada. The Forest Service has lead responsibilities for management of this HMA, which consists of rolling to mountainous terrain.

New Pass HMA is within the Carson City and Battle Mountain Districts, with Battle Mountain having lead management responsibilities. The HMA is east of Fallon, Nevada, and consists of flat to mountainous terrain. Substantial portions of the Carson City area of the HMA are covered in pinyon juniper.

North Stillwater HMA is within the Carson City and Winnemucca Districts, with Winnemucca having lead management responsibilities. The HMA is northeast of Fallon, Nevada, and consists of mountainous terrain. An AML has only been established for one of three grazing allotments on the CCD portion. An AML of 49 was established for the Copper Kettle Allotment, which comprises approximately half of the CCD portion of the HMA. A range was not set, only the upper limit of 49 horses.

Pilot Mountain HMA is within the Carson City and Battle Mountain Districts. The CCD has lead responsibilities for this HMA. The HMA is south of Hawthorne, Nevada and is comprised of flat to mountainous terrain.

Pine Nut Mountains HMA is south of Carson City, Nevada. Only the northern portion is an HMA. The southern portion is not managed for wild horses, due to blocks of private lands that create access issues for the BLM.

The western edge of the Pine Nut Mountains HMA overlaps homes along and off of Deer Run Road. The CCD receives complaints regarding wild horses damaging landscaping or causing problems with domestic horses. Usually the conflicts with domestic horses involve fighting through fences or mating attempts. To a lesser degree CCD receives complaints in the Dayton, Nevada-area from home owners north of the HMA. This portion of the HMA is fenced, although there are many weak sections of this fence. Wild horses also migrate into the Fish Springs residential area, causing similar problems. In November 2010, a gather was conducted in which 150 horses were gathered. Approximately 109 horses were re-released to the home range, and 41 were shipped to adoption facilities/long-term pastures.

South Stillwater HMA is east of Fallon, Nevada, and consists of mountainous terrain. Accessibility to this HMA is limited. There has never been a gather within this HMA.

Tule Ridge/Mahogany Flats HMA is identified as an HMA; however, wild horses have never been present. Previous inventories identified only domestic horses, and it is assumed the owner removed them. During subsequent inventory flights of the area, no wild horses have ever been observed.

Wassuk HMA is south of Yerington, Nevada, and consists of flat to mountainous terrain with substantial areas of pinyon juniper cover. Livestock have not been placed within this HMA for at least the past several years due to excessive vegetation use by wild horses.

Table 3-16, Wild Horse and Burros Gather Summary, identifies the dates and number of wild horse and burros counted during gathers within the planning area.

Table 3-16
Wild Horse and Burros Gather Summary

Management Area	Status	AML	Census Date	Number Counted	Gather Date	Number Counted/ Gathered	Notes
Augusta Mts	HMA	42-71[1] 185-308[2]	14Nov90 7Mar95	609 125	Feb91 Aug99	497 122	CCD portion The CCD portion Winnemucca District has lead responsibility and complete gather records.
Clan Alpine	HMA	612-979	Aug80 Nov81 Sep86 Sep89 Jul98 Dec05	1,920 1,258 1,489 1,267 1,067 442	Fall80 Fall81 Sep86 Nov92 Aug93 Feb00 Oct06	565 663 798 58 61 233 88	Only had one day to inventory; it takes two days for a complete inventory.
Desatoya	HMA	73-98[1] 127-180[2]	Jun86 Sep92 Mar95 Jan02 5Jul11	106 237 126 435* 543*	Oct89 Nov92 Jan96 Jul03 Feb04 22Aug12	118 124 26 207* 95 405*	*includes horses within Battle Mountain District

[1] AML for the Carson City portion of the HMA
[2] AML for the entire HMA
[3] Susanville manages the HMA

Table 3-16
Wild Horse and Burros Gather Summary

Management Area	Status	AML	Census Date	Number Counted	Gather Date	Number Counted/ Gathered	Notes
Dogskin Mts	HMA	10-15	Aug91 Jul03 Nov05 Jul12	101 59 46 7	Oct91 Aug94 Dec05 Jan12	62 14 36 20	Horses move between Dogskin and Granite Peak HMA; a census and removals could be combined for a more complete picture.
Flanigan	HMA	80-124	1975 Dec79 Jun85 27Aug91 12Jul93 Jul98 Sep99 6Jul11	130 243 704 550 213 157 64 314	1976 1982 1985 Oct91 Aug93 Oct/Nov99 Mar/Aug01 Jan12	59 41 351 402 188 191 30 211	Horses move between the HMA and the Pyramid Lake Reservation when breaks occur in the fence, making counts unreliable. BLM wild horses are indistinguishable from tribal horses.
Fort Sage	HMA	36					California BLM has lead responsibility and complete gather records.
Garfield Flat	HMA	83-125	1975 1979 1996 1998 Oct02 Sep08 Jun11	253 245 264 148 142 200 155	1977 1985 1997 1999 2004 Oct09 Feb12	183 380 174 12 127 135 60	
Granite Peak	HMA	11-18	Aug91 Jul93 Jul98 Jan02 Apr07 Apr10 Jul11 May12	101 72 39 31 22 31 35 18	Oct91 Aug94 Dec00 Mar01 Jan02 Oct/Nov01 Sep/Oct07 Sep09 Dec10 Jul11 Dec11 Jan12 Jul/Nov/Dec13	62 65 7 27r 13 15 6 2 3 1 3 20 7	Horses move between Dogskin and Granite Peak HMA; a census and removals could be combined for a more complete picture.

Table 3-16
Wild Horse and Burros Gather Summary

Management Area	Status	AML	Census Date	Number Counted	Gather Date	Number Counted/ Gathered	Notes
Horse Mt	HMA	60-118	Aug91 Jul98 Aug01 Nov03	153 123 0 0	10Aug92 Jul00 Aug01	153 95 107 3	All horses were removed in 2000.
Horse Spring	HA	-----	1975 Sep82	42 25	Jun77 Sep82 Jan83	12 8 20*	Not managed for horses. *declared wild horse free after the Jan83 gather.
Lahontan	HMA	7-10	Aug91 Apr93 Mar95 Nov03 Apr10	233 112 71 261 104	Nov91 Jan94 Jan96 Mar01 Jan04 Nov10	146 69 29 1 269 110	
Marietta	HMA	78-104	May83 May87 Aug97 2007	298 163 111 102	1983 1987 1997 2009	398 357 163 94 111 18 102 15*	*6 burros captured, 9 reported struck and killed by vehicles along highways. The 6 burros were captured because they were habitually sighted on or near U.S. 95.
Montgomery Pass	HMA	-----					Forest Service manages horse populations.
New Pass-Ravenswood	HMA	69-90					Battle Mountain District has lead responsibility and complete gather records.
No. Stillwater	HMA	49					Winnemucca District has lead responsibility and complete gather records.
Pah Rah Mts	HA	-----	1975 Sep84 Feb85	119 1,075 107	1976 Jan85 Aug85	69 1,139 174	All horses removed in 1984. Declared wild horse free on Aug85.
Pilot Mt	HMA	228-346[1] 249-415[2]	1987 1993 2003 2005	1,158 891 526 327	1987 1995 2005 2006	652 429 154 99	

Table 3-16
Wild Horse and Burros Gather Summary

Management Area	Status	AML	Census Date	Number Counted	Gather Date	Number Counted/ Gathered	Notes
Pine Nut Mts	HMA	119-179	1975 1978 1981 Sep84 Jun86 Sep86 Nov86 Sep89 Dec90 Jul92 Jul93 Dec94 Jun95 Jul98 Nov00 Nov03 Sep08 Sep10 May12	315 639 820 664 466 437 273 278 351 467 491 486 735 358 329 118 117 206 293	1977 1978 1979 1980 1981 1983 Sep84 Jul85 Dec85 Jul86 Oct86 24Nov86 Sep/Nov89 Oct90 Oct/Nov91 Jan/Aug92 Nov/Dec92 Oct93 Sep/Oct/Dec94 Feb95 Dec95 Feb00 Nov00 Nov03 Nov/Dec06 Mar/Oct07 Sep08 Jan/Sep09 Nov10 Jun/Aug11 Aug/Sep/Nov/Dec12 Jan/Feb/Dec13 Jun/Apr14	104 82 19 110 30 16 664 235 10 325 12 208 13 18 21 22 23 49 3 21 46 410 40 40 232 25 14 2 10 206 46 4 10 20 7	During the small removals, less than 50 were nuisance horses removed from the urban interface.
So. Stillwater	HMA	16				0	No removals; population has always been less than 20
Tull Ridge-Mahogany Flat	HMA	-----					No wild horses have been observed.
Wassuk	HMA	109-165	Jan11	519	Nov12	458	

Resource Changes

Due to various constraints, wild horse and burro gathers are not conducted as frequently as needed to maintain a thriving natural ecological balance among wild horse and burro populations, domestic livestock, wildlife, and vegetation. This trend is expected to continue and has become exacerbated by the current drought. The drought impacted some HMAs more than others, which has resulted in the need to remove horses from the impacted HMAs. These drought emergency gathers have resulted in the reprioritizing of the planned gathers, which has resulted in a delay of some gathers.

As the wild horse and burro populations exceed the AMLs, a thriving natural ecological balance among wild horse and burro populations, domestic livestock, wildlife, and vegetation will not be maintained. Initially, the plant and wildlife communities will show signs of deteriorating condition, which is followed by deteriorating conditions of the wild horses and burros. For example, desirable forage plants may become stressed and replaced by more competitive weedy or invasive species.

3.2.8 Wildland Fire Ecology and Management

Local and National Management Guidance

Wildland fire management activities within the planning area are guided by the 2001 Consolidated RMP (BLM 2001c). The Consolidated RMP specifies desired outcomes, land use allocations, special designations, administrative actions, and standard operating procedures. Management actions and objectives in the 2001 Consolidated RMP have been amended by updated national fire management policy and the Carson City Field Office Fire Management Plan (BLM 2004a). Current management direction allows fire to be restored as an integral part of ecosystems to meet resource management objectives. It also identifies activities to improve protection of human life and property through aggressive fire protection, reduction of hazardous fuels, and restoration of fire-damaged ecosystems.

National policy influencing fire management in the planning area includes the Federal Wildland Fire Management Policy. The intent of the Federal Wildland Fire Management Policy is to solidify the full range of strategic and tactical options available and considered in response to every wildland fire. These options are used to achieve objectives as described in Land and Resource Management Plans and/or Fire Management Plans, subject to clear processes defined to manage fires that cross jurisdictional boundaries. The Federal Wildland Fire Management Policy also calls for increased dialogue and collaboration between federal, tribal, local, and state agencies as plans are updated and implemented to manage wildfires in order to accomplish resource and protection objectives.

Under the Federal Wildland Fire Management Policy, federal land management agencies with vegetation capable of sustaining wildland fire are required to prepare Fire Management Plans. The Fire Management Plan is a strategic plan that defines wildland fire management and prescriptive vegetation treatments. The foundation of the Fire Management Plan is the agency's land use plan. Fire Management Plans are dynamic documents that are reviewed annually and updated whenever better information is available. The plan is supplemented by operational plans, such as preparedness plans, dispatch plans, prescribed fire plans, and prevention plans.

The Carson City Field Office Fire Management Plan (BLM 2004a) addresses fire suppression, prescribed fire, nonfire fuel treatments, and community assistance and education for all portions of the Western Nevada Fire Planning Unit with burnable vegetation under BLM administrative jurisdiction.

Fire Management Units (FMUs)

The CCD is currently divided into 15 Fire Management Units (FMUs) (**Table 3-17**, Fire Management Units for the Carson City District). The FMUs are scaled to best define the fire management objectives, physical characteristics, resource values, and fire planning attributes. Each of the FMUs are also somewhat unique, as evidenced by management strategies, objectives, values, and fire planning attributes that set it apart from the management characteristics of an adjacent FMU. Each FMU is assigned a classification type to define its primary resource management strategy. The general FMU category types are listed below:

- Wildland Urban Interface (WUI)
- Special Management Areas (SMA)
- High Value Habitat (HVH)
- Cultural/Historic (CHP)
- Vegetation (VEG)
- Wilderness (WLD) and Wilderness Study Areas (WSA)

Fire Regime Condition Class (FRCC)

National and state BLM fire policy require current and desired resource conditions related to fire management to be described in terms of three condition classes. The Fire Regime Condition Classification (FRCC) System measures the extent to which current vegetation conditions differ from a particular reference condition. Departures from reference condition could be a result of changes to key ecosystem components such as vegetation characteristics, fuel composition, fire frequency, fire severity, and pattern, as well as other associated disturbances, such as insects and disease mortality. The classification system is used to categorize existing ecosystem conditions and to determine priority areas for treatment (**Figure 3-4**, Fire Regime Condition Class).

Table 3-17
Fire Management Units for the Carson City District

FMU Name	FMU Number	FMU Type	Planning Area Acreage
Fish Springs	FMU-NV-030-01	HVH	162,776
Reno/Sparks	FMU-NV-030-02	WUI	482,146
Mustang	FMU-NV-030-03	VEG	290,633
Carson River	FMU-NV-030-04	WUI	529,562
Alpine	FMU-NV-030-05	WUI	29,271
Slinkard	FMU-NV-030-06	WSA	11,038
Como	FMU-NV-030-07	CHP	257,753
Lyon Basin	FMU-NV-030-08	VEG	466,821
Lahontan Basin	FMU-NV-030-09	VEG	1,019,955
Wassuk Range	FMU-NV-030-10	HVH	117,338
Churchill Ranges	FMU-NV-030-11	HVH	796,828
Churchill Basin	FMU-NV-030-12	VEG	688,195
Mineral Basin	FMU-NV-030-13	VEG	1,299,061
Gabbs Valley Range	FMU-NV-030-14	HVH	261,223
Excelsior Mountains	FMU-NV-030-15	HVH	92,924

FRCC 1. Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within a historical range. Where appropriate, these areas can be maintained within the historical fire regime by treatments such as managing fire for resource benefit. Approximately 391,300 acres (8 percent) of BLM-administered lands in the planning area are managed as FRCC 1.

FRCC 2. Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime. Approximately 4,042,200 acres (84 percent) of BLM-administered lands in the planning area are managed as FRCC 2.

FRCC 3. Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals, resulting in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime. Approximately 95,200 acres (2 percent) of BLM-administered lands in the planning area are managed as FRCC 3.

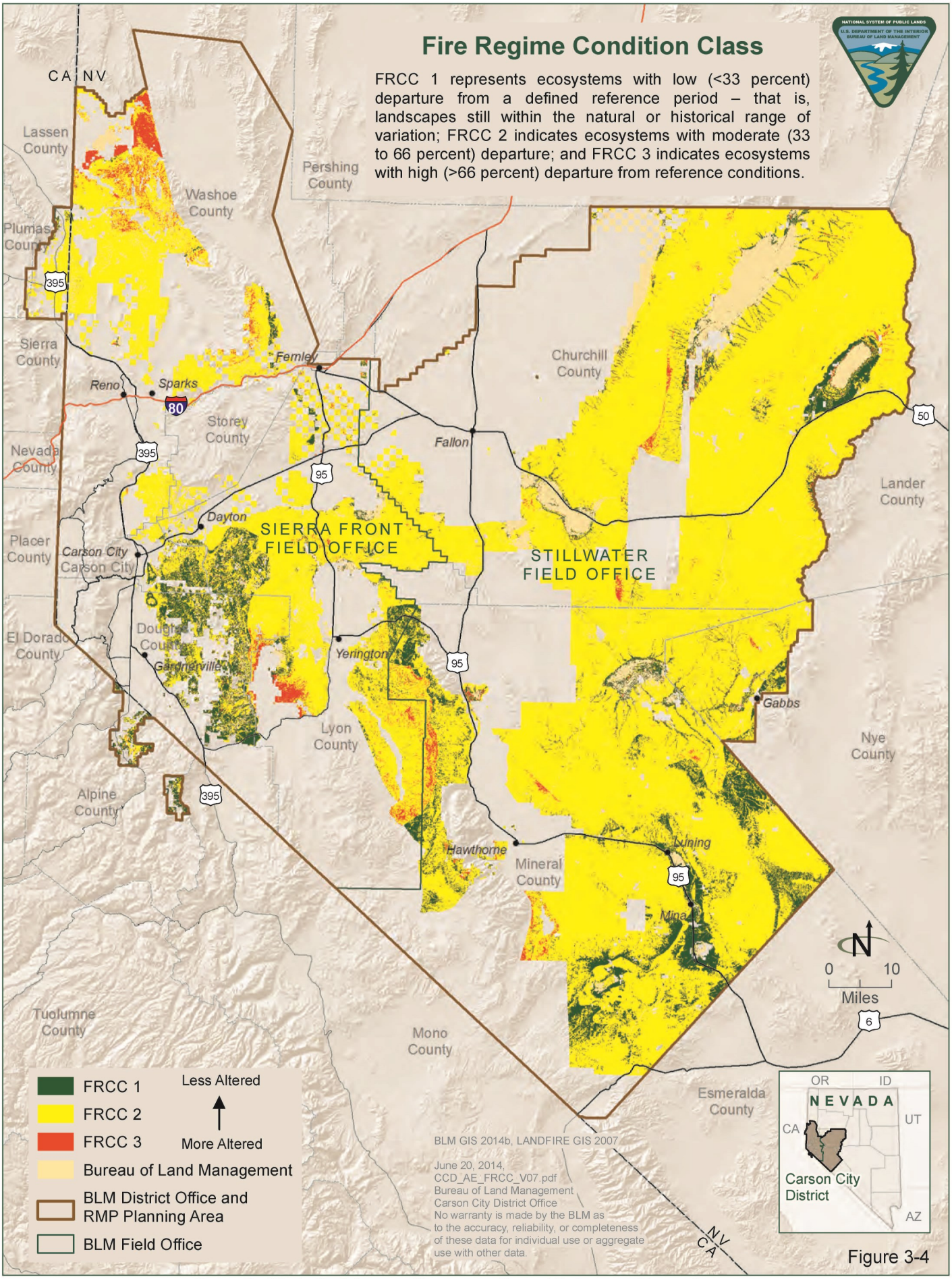

Fire Regime Condition Class
FRCC 1 represents ecosystems with low (<33 percent) departure from a defined reference period – that is, landscapes still within the natural or historical range of variation; FRCC 2 indicates ecosystems with moderate (33 to 66 percent) departure; and FRCC 3 indicates ecosystems with high (>66 percent) departure from reference conditions.
CA NV
Lassen County
Pershing County
Washoe County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Alpine County
Tuolumne County
Mono County
Lyon County
Mineral County
Esmeralda County
Nye County
Lander County
Churchill County
Storey County
Douglas County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Hawthorne
Luning
Mina
Gabbs
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
395
80
95
50
6
0 10
Miles
FRCC 1
FRCC 2
FRCC 3
Less Altered
More Altered
Bureau of Land Management
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, LANDFIRE GIS 2007
June 20, 2014,
CCD_AE_FRCC_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
OR
ID
NEVADA
UT
CA
AZ
Carson City District
NV
CA

Figure 3-4

Current Conditions

Wildland fires occur throughout the CCD, with the fire season generally lasting from May until October (**Figure 3-5**, Fire History). Based on fire occurrence data collected from 1980 to 2013 (**Table 3-18**, BLM Carson City District Fire Occurrence Summary, 1980-2013), on average less than 1 percent of the CCD is affected by wildfire each year.

Table 3-18
BLM Carson City District Fire Occurrence Summary, 1980-2013

Year	Number of Fires	BLM Acres	Control Acres*
1980	51	73	384
1981	51	3,677	12,436
1982	49	49	66
1983	117	28,135	46,522
1984	184	46,758	77,579
1985	158	52,398	105,567
1986	155	4,459	5,800
1987	171	305	371
1988	159	4,636	6,013
1989	29	103	103
1990	113	471	651
1991	74	60	82
1992	100	1,217	1,425
1993	42	612	624
1994	67	16,076	19,543
1995	56	376	826
1996	130	12,787	15,847
1997	89	1,045	1,321
1998	56	393	12,152
1999	135	139,485	170,228
2000	154	70,133	82,789
2001	105	19,534	31,687
2002	125	3,512	3,897
2003	88	1,749	2302
2004	114	2,269	3,519
2005	82	2,176	2,869
2006	91	23,649	28,064
2007	153	18,446	37,597
2008	51	5,198	6,364
2009	89	22,707	25,178
2010	53	1,557	2,920
2011	124	6,953	13,675
2012	100	31,644	39,652
2013	69	23,550	30,993
Average	99	16,064	23,207
Min	29 (1989)	49 (1982)	66 (1982)
Max	184 (1984)	139,485 (1999)	170,228 (1999)

*Control Acres represents total acreage burned regardless of ownership
BLM WFMI, Type 1 & 2 Fires, BLM Action & BLM Natural Out, as of 01.01.14 (BLM, 2011a)

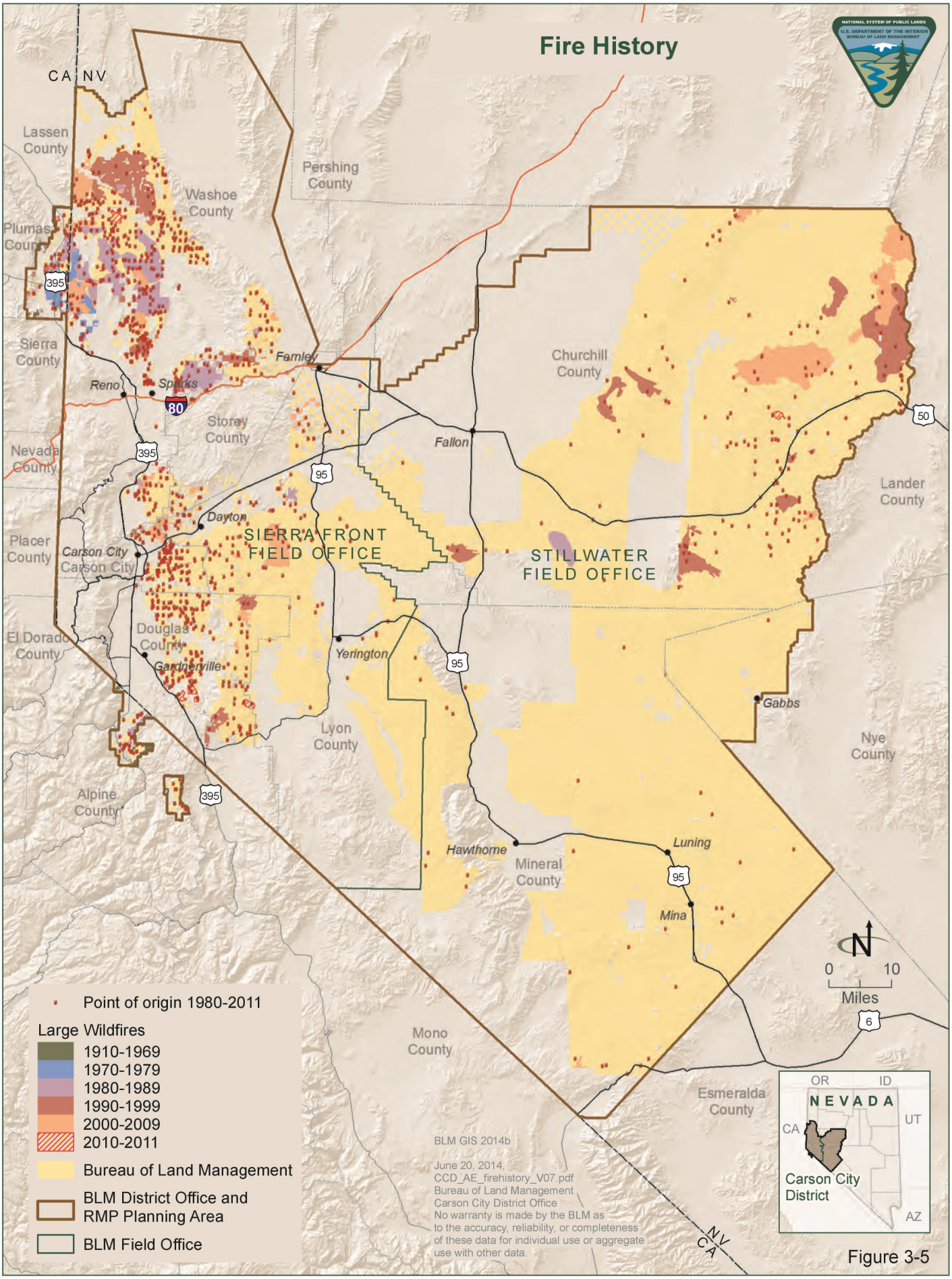

Fire History
CA NV
Lassen County
Washoe County
Pershing County
Plumas County
Sierra County
Reno
Sparks
Fernley
Churchill County
Storey County
Nevada County
Fallon
Lander County
Dayton
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
Placer County
Carson City
Carson City
El Dorado County
Douglas County
Gardnerville
Yerington
Gabbs
Lyon County
Nye County
Alpine County
Hawthorne
Mineral County
Luning
Mina
Mono County
Esmeralda County
0 10
Miles
Point of origin 1980-2011
Large Wildfires
1910-1969
1970-1979
1980-1989
1990-1999
2000-2009
2010-2011
Bureau of Land Management
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b
June 20, 2014, CCD_AE_firehistory_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
OR
ID
NEVADA
UT
CA
AZ
Carson City District
NV
CA

Figure 3-5

Prevention Program

The primary goal of the Carson City District Prevention Program is to eliminate all human-caused fires in the planning area. The fire prevention program is designed to educate the public and other users of BLM-administered lands on wildland fire prevention in order to reasonably reduce the threat of human-caused fires. Fire prevention and community education outreach is primarily promoted through activities at various community events and school programs.

Fuels Program

The fuels program strategy utilizes both nonfire treatments and prescribed fire to modify vegetation communities to create fire safe communities, protect private property, achieve resource management objectives, and restore ecosystem health. **Figure 3-6**, Emergency Stabilization and Rehabilitation and Fuels Treatment, displays the location of fuels and emergency stabilization and rehabilitation treatments.

Emergency Stabilization and Rehabilitation Program

The emergency stabilization and rehabilitation program mitigates adverse effects resulting from wildfire. Concerns taken into consideration when assessing stabilization needs include the proximity to urban areas and potential for erosion. Elevation and precipitation play major roles in the success of a rehabilitation treatment. Rehabilitation efforts are decided on a case-by-case basis, depending on the importance of the habitat or severity of burn.

Trends

Management trends for the wildland fire ecology program are expected to be influenced by three primary factors: the expanding WUI, the spread of invasive plants, and conifer expansion.

Wildland Urban Interface

The WUI has been increasing dramatically throughout the planning area over the past two decades. Development slowed during the economic downturn beginning in 2008, but WUI expansion is expected to increase over the life of the RMP. In addition to residential, commercial, and industrial development adjacent to BLM-administered lands, the WUI also includes power lines, pipelines, communication sites, recreation facilities, renewable energy, and military training areas. The CCD fuel management budget is being used to plan and implement fuels treatments within the WUI, with the objective of reducing risk to these values. Many of the intensive and costly fire suppression actions occur within and adjacent to the expanding WUI.

Invasive Plants

Exotic species are a growing concern for fire management, especially invasive annuals. The most significant, widespread, and persistent threat is the invasion of cheatgrass (*Bromus tectorum*) in disturbed areas. Cheatgrass cures earlier in the season than native perennial vegetation, resulting in a longer fire season and

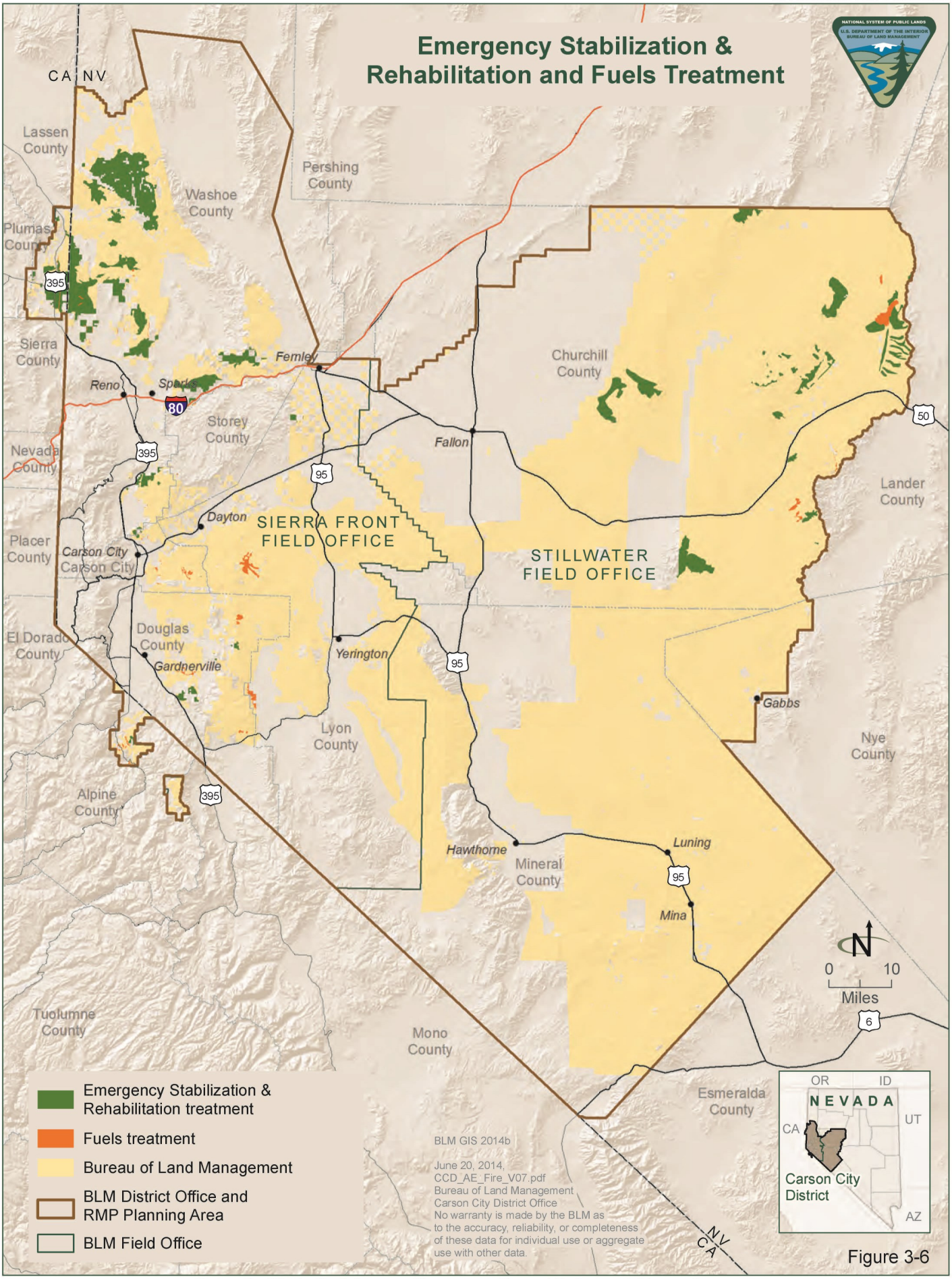

Emergency Stabilization & Rehabilitation and Fuels Treatment
CA NV
Lassen County
Washoe County
Pershing County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Douglas County
Alpine County
Tuolumne County
Mono County
Lyon County
Storey County
Churchill County
Lander County
Nye County
Mineral County
Esmeralda County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Hawthorne
Luning
Mina
Gabbs
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
395
80
95
50
6
0 10
Miles
Emergency Stabilization & Rehabilitation treatment
Fuels treatment
Bureau of Land Management
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b
June 20, 2014, CCD_AE_Fire_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
OR
ID
NEVADA
UT
CA
AZ
Carson City District
NV
CA

Figure 3-6

increased fire frequency and wildland fire management costs. See **Section 3.2.4**, Vegetation, for a detailed discussion of cheatgrass in the planning area.

Because most fire management activities are either surface- or vegetation-disturbing, they can result in increased susceptibility to exotic species that readily reestablish disturbed areas. Exotic species invasions, as well as mitigation measures that must be followed in order to reduce, or if possible, eliminate the risk they present, are carefully considered in planning for mechanical and prescribed burn treatments. Rehabilitation of the impacts from large wildfires is primarily aimed at quickly reestablishing native or nonnative vegetation that can compete with invasive species. Regular monitoring of treatments, as well as treating exotic species in and near treatments, is the key to maintaining healthy landscapes.

Conifer Expansion

Fire suppression policies generally lengthen fire return intervals in conifer-dominated habitats, allowing for increased cover densities. In some areas of the sagebrush biome, pinyon pine (*Pinus monophylla*) and juniper (*Juniperus* spp.) once existed as open, savannah-like woodlands that were maintained by relatively frequent fires. Since the 1880s, fire suppression has increased the stand density and distribution of conifer woodlands in many areas. As conifers expand into sagebrush communities, contiguous sagebrush stands are reduced in size and the diversity of grasses and forbs decreases.

Forecast

As the WUI expands, exotic species increase and invade new areas, and conifers expand, the cost and complexity of managing wildland fire and fuels within the planning area will continue to increase.

3.2.9 Cultural Resources

The term cultural resource refers to prehistoric, historic, or architectural objects, sites, structures, or places with potential public and scientific value, including locations of traditional cultural, ethnic, or religious significance to a specific social or cultural group. Cultural resources are located, classified, and managed through a system of identifying, protecting, and utilizing them for public benefit. Fragile and irreplaceable, cultural resources represent an integral part of American heritage. Cultural resources have a definite location of human activity, occupation, or use identified through field inventories, historical documentation, or oral evidence BLM Manual 8110 (BLM 2004b). Archaeological resources are a subset of cultural resources that include any material remains of human life or activities that are at least 50 years old, and are of archaeological interest (as defined in 43 CFR Part 7.3). Native American religious concerns, a critical element noted in Appendix 5 of the BLM NEPA handbook, are addressed in **Section 3.5.1**, Tribal Interests.

Prehistoric or historic cultural resource sites, structures, or objects listed in or eligible for listing in the National Register of Historic Places (NRHP or National

Register) are managed as directed by 36 CFR Part 800, Protection of Historic and Cultural Properties. These regulations stipulate that cultural resources must be assessed for integrity of location, design, setting, materials, workmanship, feeling, and association. A property may be considered eligible for listing on the National Register if it retains sufficient integrity of these elements and meets certain criteria outlined in National Register Bulletin 15 (National Park Service 1997). As listed in 36 CFR Part 60, historic properties (including prehistoric and historic archaeological sites and places considered important to Native Americans) must meet a specific set of criteria:

- The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
    - Are associated with events that have made a significant contribution to the broad patterns of our history
    - Are associated with the lives of persons significant in our past
    - Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
    - Have yielded, or may be likely to yield, information important in prehistory or history

The planning area contains archaeological evidence of habitation and use for at least the past 13,000 years. For most of this vast period of time, the ancestors of today's Native American tribes occupied the area that comprises the planning area. Only within the last 170 years have other cultures come to use this landscape, often in great numbers and for a variety of reasons. Whereas less than 10,000 people lived in the planning area in 1800, today's population totals more than 600,000. Throughout time, the range of human activities has been bound by the constraints of climate, weather, geology, hydrology, landform, and the plants and animals that adapt to the local conditions.

Prehistoric Period Cultural Resources

In very general terms, the Native Americans that lived in the planning area prior to the mid-1800s focused upon this expansive landscape to meet their economic and cultural needs. The margins of marshes, rivers, lakes, and springs provided much of the necessary plants and animals used for food, medicine, clothing, toys, and shelter. Uplands, away from water, were sparsely used for gathering toolstone and certain plants and animals. Anthropologists use the term "hunter/gatherer" to describe the subsistence practices of local peoples. Settlements were often temporary in order to take advantage of changes during

the seasons, and to avoid harsh winter snow and cold in the mountains, as well as the summer heat and lack of water in much of the lowlands. In anthropological terms, the native people of the region were generally nomadic within an annual cycle, but when conditions allowed, long-term camps were established.

Archaeological sites, evidence of prehistoric use of the planning area landscape, vary widely in complexity, type, environmental setting, and location. In addition to the vast depth of time represented by these resources, a wide range of behaviors are also indicated, including hunting, gathering, tool manufacture, trade and exchange, and spirituality. Site types include rock shelters, residential sites (often with buried, well-preserved remains), temporary camps, petroglyphs and pictographs, hunting blinds and fences, toolstone quarry sites, and scatters of stone tool-making debris. The BLM administers many important archaeological sites that have helped develop and continue to inform Great Basin archaeology.

Historic Period Cultural Resources

Historic period sites indicate a considerable amount of variation reflective of the activities and resources that attracted people to the region. Mining and mining-related sites; transportation trails and roads; ranches and ranching-related facilities; and towns are all represented within the area managed by the BLM.

Mining

The earliest known prospecting by Euro-Americans in the region was in 1849. Mormon settlers headed for California found placer gold at the mouth of Gold Canyon, along the present-day boundary of Lyon and Storey Counties. Gold was placer-mined in the Gold Canyon vicinity until the late 1850s when the blue-black clayey material clogging up the placer works was found to have a high silver content, far exceeding the value of the gold being sought. This discovery of silver ore in Virginia City ushered in the Comstock Era (1859 to 1899), a period characterized by much prospecting and even more speculating. Those led to the rapid construction of many mines, mills, and mining towns and ongoing boom-and-bust cycles based on the value of precious metals. It was the boom, or rapid success and expansion, of mining one of those metals—silver—that funded the Union efforts during the Civil War and led to Nevada's official statehood in 1864. A silver bust, or collapse of that market, followed the passing of the 1873 Coinage Act, when America went to a gold standard.

Mining districts sprang up all over the region through World War II as prospectors sought gold, silver, copper, salt, borax, and other valuable minerals. These historic mining districts still contain remnants of past activities, including prospects, shafts, adits, mining equipment, small structures, and foundations.

Transportation

Transportation-related historic resources in the planning area include railroads, stage routes, the California Emigrant and Pony Express National Historic Trails,

toll roads, and more formal roads such as the Lincoln Highway. The first routes of Euroamerican explorers often followed existing trails created and used by Native Americans. Early emigrants such as the Bidwell-Bartleson party in 1841, Joseph Walker's party in 1842, and the Stevens party in 1844 merely passed through: California was the destination.

The planning area retains evidence of historic transportation corridors for the various California National Historic Trail segments as well as later routes in the visible form of trail berms, ruts, and swales; railroad grades, culverts, cuts, and retaining walls; paved and unpaved road segments; ruins of associated buildings; and debris left by work camps, emigrants, and travelers.

Eventually, the local resources required freight and ore transport by horse, ox, and mule-drawn wagons, often travelling on privately owned toll roads of varying design and construction. Active regional routes include the Esmeralda Toll Road, built in 1861 and running south from Carson City to Aurora; the Wadsworth-Columbus Freighting Route, established in 1863 and operating until rendered obsolete by the railroad in 1882; the 1878 Aurora-Manhattan Toll Road; and the 1881 Hawthorne and Bodie Toll Road.

Often backed by wealthy investors, railroads quickly out-competed freight wagons with cheaper shipping rates for ore and supplies; the Central Pacific Railroad arrived in Reno on May 9, 1868. By February of the next year, construction began for the Virginia & Truckee Railroad to service the booming Comstock mines. Construction of other railroads followed, such as the Nevada-California-Oregon Railroad that began in Reno in 1880 and was replaced by the Western Pacific Railroad in 1918.

With increasing automobile use in the 20th century came a need for better roads. The Lincoln Highway, the first US transcontinental highway, was completed through Reno in 1927, signaling a national trend toward automobile use and the eventual creation of a national interstate system with passage of the Federal Aid Highway Act of 1956 during the Eisenhower presidency. Today, US 50 through the CCD closely follows the route of the Lincoln Highway.

Communication

One of the challenges of the Euro-American settlement of the west was the difficulty in communicating over long distances. Mail service from the eastern US took weeks or months, and faster methods were sought. Beginning in March of 1860, a new high-speed "Pony Express" mail service ran from St. Joseph, Missouri through Salt Lake City, across Nevada, and on to Sacramento, California. The route bisects the planning area. The Pony Express mail service was discontinued in October 1861, which coincided with completion of the transcontinental telegraph. Although active for only a short period of time in 1860 and 1861, the Pony Express remains emblematic of early settlement of the West. Remnants of the Pony Express National Historic Trail corridor in the

planning area are limited to the structures and artifact assemblages at stations, including those at Cold Springs and Sand Springs.

As telegraph and later telephone lines developed, mail transferred into a regular stagecoach, railroad, or road service. These communication corridors often followed and took advantage of routes and structures established by explorers and the Pony Express. One important World War II-era telephone line spans the planning area, and by 1942 it linked the large military and intelligence bases of Herlong, Stead, Hawthorne, and Las Vegas. Remains of telegraph and early telephone system buildings, poles, insulators, and wire lines are found throughout the planning area.

Ranching/Homesteading/Agriculture/Logging

Although several Alpine County sawmills and settlement at Mormon Station (Genoa) and Eagle Station (Carson City) pre-date the early 1850s, permanent settlements, farms, logging camps, and ranches boomed when mining successes in the Comstock and other districts created a growing market for meat, produce, mine timbers, and firewood. New settlers planted fields of grain and orchards in Eagle and Carson Valleys. Loggers denuded the Carson, Virginia, and Pine Nut ranges. Enterprising ranchers from California brought in sheep and cattle to meet the growing demand. One of the largest ranching operations in the area was run by N. H. A. "Hoc" Mason under the direction of Henry Miller of the Miller and Lux cattle empire. In 1859, Mason settled in the Lyon County valley that bears his name, and soon the Miller and Lux cattle ranges included lands as far away as Oregon. Other early ranchers included J. J. Cushman and David Wightman, who settled on the south branch of the Carson River around 1860, near the future town of Fallon.

Homesteaders followed the development of these ranches and the decline of mining. Some tried to farm lowlands, and others were agents for large ranching operations. Their traces remain as wood and stone houses, dugouts, foundations, irrigation systems, and fences scattered throughout the planning area. Some of these are still in use by modern ranching operations.

Nineteenth century agriculture was generally practiced on a small scale, with natural-flow water rights irrigating fields in the valleys of the Carson, Walker, and Truckee Rivers. The scale of development changed with the National Reclamation Act of 1902 that authorized the recently established Bureau of Reclamation to initiate large irrigation projects in 17 western states. The first was the Newlands Project, conceived as a development that transferred water from the Truckee River watershed to that of the Carson River. By the 1910s, the project included the Lahontan Dam, three diversion dams, two hydroelectric plants, and a dam at Lake Tahoe. The project also entailed construction of about 900 miles of canals, laterals, and drains. This massive public works project altered the settlement pattern of both river basins,

changing thousands of desert shrublands near Fallon into irrigated agriculture, and by 1962 turning the Winnemucca (Lake) National Wildlife Refuge dry.

Historic-Era Native Americans

Following the arrival of nonnative settlers in the region, Native Americans continued to hunt game, to gather plants for food and medicine, and to participate in the activities of their cultural and spiritual lives. However, mining, logging, ranching, farming, and commercial hunting and fishing increased the water used, cleared pinyon trees from the mountain ranges, and reduced the availability of wild game. Reduction of these resources and the establishment of private land made traditional subsistence difficult as the resource base was depleted or destroyed, or access was denied.

Native Americans adapted to these changes in many ways, including participation in the settlers' economy and maintaining sovereign governments and socioeconomic patterns on established reservations and colonies. The timing of the creation of tribal reservations and colonies varies throughout the region, with some reservations established by the federal government in the late 1800s for specific tribal groups. In most cases, the original area of reservations has been altered. The Reno-Sparks Indian Colony is unique in that it was established for urban-based Native Americans with a variety of tribal affiliations in addition to local tribes. For several tribes, land ownership and acquisition of reservation or trust lands remain ongoing issues that are at least partially unresolved relative to current needs.

The planning area lies within the traditional territory of Northern Paiute, Washoe, and Western Shoshone peoples. Although tribal people have been assimilating into a generalized modern American culture for decades, they maintain many of the traditions that defined their culture prior to the twentieth century. The 10 federally recognized tribal governments that have traditional, spiritual, and economic interests within the planning area are detailed in **Section 3.5.1**, Tribal Interests.

Current Conditions

Cultural Properties

Most of the recorded cultural resources on the BLM-administered land are archaeological sites. Less than 500,000 acres, or about 10 percent, of the BLM-administered land have been inventoried for cultural resources, although many older inventories do not meet modern Class III inventory standards. Cultural resources surveys have led to the documentation of approximately 9,000 prehistoric and historic archaeological sites. Only a few sites have been formally nominated for listing on the National Register, but many more have met the eligibility criteria or have not been evaluated for inclusion in the National Register. **Table 3-19**, Properties Listed on the National Register of Historic Places in the Planning Area, lists the resources that have been formally listed.

Table 3-19
Properties Listed on the National Register of Historic Places in the Planning Area

Listed on the National Register	General Location	County	Listed As:	Date Listed	Relationship to CCD
Cold Springs (Rock Creek Station)	51 miles west of Austin on US 50	Churchill	Site	02/23/72	In CCD
Cold Springs Pony Express Station	Frenchman vicinity	Churchill	Site	05/16/78	In CCD
Grimes Point	Fallon vicinity	Churchill	Site	02/23/72	In CCD
Sand Springs Pony Express Station	Fallon vicinity	Churchill	Site	11/21/80	In CCD
Lahontan Dam and Power Station	Southwest of Fallon	Churchill	Part of Newlands Rec. TR	03/25/81	In planning area (on Nevada state land)
East Walker River Petroglyphs	Yerington vicinity	Lyon	Site	07/24/80	In CCD
Virginia City Historic District	Virginia City and its environs	Storey/ Washoe/ Carson City/ Lyon	District	10/15/66	Partially in CCD
Marlette Lake Water System	Marlette Lake to Virginia City	Washoe/ Carson City/ Storey	District	09/16/92	Partially in CCD
Old Winters Ranch/Winters Mansion	US 395 north end of Washoe Valley	Washoe	Building	07/30/74	Adjacent to CCD
Fort Churchill	South of Silver Springs	Lyon	Site	10/15/66	Adjacent to CCD
Buckland Station	South of Silver Springs	Lyon	Site	12/29/97	Adjacent to CCD
Fort Churchill to Sand Springs Toll Road	Fallon vicinity	Churchill	Site	11/24/97	In CCD

Western Great Basin cultural resource sites are often exposed on eroded soils and geology that lack dense vegetation. Accretion of sediment is generally slow. Areas of exception, such as the floodplains of the perennial drainages and of the Truckee, Walker, and Carson Rivers, are not typically BLM-administered lands, but privately or tribally held. Therefore, as a result of desert climate conditions throughout the period of human use, prehistoric- and historic-era sites are typically visible on the surface. Because of their visibility, the distribution of known sites can be accurately gauged. Known site numbers, densities, and periods of use vary for historic-era and prehistoric sites, and the sites are unevenly distributed across the landscape.

Some regions are dominated by historical sites with remains that include collapsing buildings, structures, equipment, and other artifacts, and features that are visible on or above the present ground surface. These sites occur at and around the historic mines that are throughout the planning area. Between the initial boom of mining in the 1860s to the advent of automobiles, settlement generally occupied locations adjacent to the search for ore. Supporting towns, ranches, and agriculture followed a pattern that left cultural resource remains in specific valley landscapes and corridors. Therefore, the vast majority of historic-era sites and historic properties are in and around areas of modern or abandoned towns, mines, and ranches.

Additionally, development and resource use of BLM-administered lands continues to be driven by the relative location of recent human activities. These areas of mines, grazing allotment improvements, military use, and resource use of BLM-administered lands continue to be driven by the relative location of recent human activities and access. The areas tend to occupy specific positions on the landscape and do not occur evenly across the entire planning area. With cultural resources laws, regulations, and policies often requiring inventory prior to these actions being approved, looking for cultural resources in these areas will result in more sites being identified.

Cultural resources in the planning area can be adversely affected by two broad categories of agents of change: those that are caused by people, and those that are caused by nature. Examples of agents of change caused by people include actions permitted or authorized by the BLM such as mining, recreation, or energy development, as well as activities that are related to emergency fire suppression, casual use, or actions not authorized by the BLM such as illegal dumping. Examples of agents that are caused by nature include wildland fires (regardless of origin), river/stream and hillside erosion, inadvertent wildlife disturbance (such as burrowing rodents), and natural weathering.

Heritage Properties

Per the Carson City Consolidated RMP, the BLM has identified areas of significant heritage properties for protection, enhancement, complimentary use, and public enjoyment and designated high-value areas for special management action based upon criteria outlined in the resource protection planning process reports and cultural resource management guide for the resource area. **Table 3-20**, Heritage Areas Identified for Management in the Planning Area, identifies these resources in the planning area.

Table 3-20
Heritage Areas Identified for Management in the Planning Area

Site Name	County	Acres/ Miles	Interpretive Services in Place	Environmental Education/ Scientific Research	Description
Grimes Point Archaeological Area	Churchill	1,160 acres	Designated parking area, kiosk, trail system, other signage, restrooms, and picnic tables	Guided tours/rock art research by agreement with Nevada Rock Art Foundation	Grimes Point Petroglyph Site is listed on the NRHP in 1972 and managed by BLM as a recreation site with public facilities, trails, and passive interpretation. Grimes Point Archaeological Area is managed under a 1976 Memorandum of Agreement with Reclamation, with BLM designated as Lead Agency (560 acres Reclamation; 600 acres BLM).
Hidden Cave Interpretive Site	Churchill	(within Grimes Point Area)	Designated parking area, kiosk, trail system, restroom	Guided tours by BLM staff and by agreement with Churchill County Museum docents	Hidden Cave is an open archaeological excavation on BLM-administered lands within the Grimes Point Archaeological Area The cave site is locked and actively interpreted for the public by BLM and Churchill County Museum voluntary tour guides under a Cooperative Management Agreement (July 30, 2003).
Sand Springs Pony Express Station	Churchill	40 acres	Designated parking area, kiosk, trail system	None	The Sand Springs and Cold Springs Pony Express Stations have been excavated, stabilized, and developed as public interpretive sites. Included are self-guided interpretive trails and informational signs. The Rock Creek Stage and Telegraph Site are fenced. A few hundred yards to the west is a paved pullout and state historic marker, erected in 2011, describing the sites.
Cold Springs Pony Express Station	Churchill	80 acres	Designated parking area, kiosk, trail system, restroom	None	
Rock Creek Stage and Telegraph Site	Churchill	80 acres	Designated parking area	None	
Pah Rah High Basin (Dry Lakes) Petroglyph Area (ACEC)	Washoe	3,881 acres	None-high potential for interpretation	Rock art research by agreement with Nevada Rock Art Foundation	The Pah Rah High Basin (Dry Lakes) Petroglyph Area is designated as an ACEC in the 2001 Final Southern Washoe County Urban Interface Plan Amendment.

Table 3-20
Heritage Areas Identified for Management in the Planning Area

Site Name	County	Acres/ Miles	Interpretive Services in Place	Environmental Education/ Scientific Research	Description
Virginia City National Historic Landmark	Storey/ Washoe/ Carson City/ Lyon	ca. 16,000 acres	By county/private entities within Virginia City townsite	Commercial tours only/ no BLM programs (lands approximately 70 percent public)	Virginia City National Historic Landmark was originally listed in 1966, and is summarized by a 1978 NRHP inventory. The Virginia City Historic District (National Register District) includes the area of the National Historic Landmark and additional lands that are mostly nonfederal to the north, east, and, south of the National Historic Landmark. The National Register District was certified as official by the Nevada SHPO, Ronald M. James, on February 6, 1991.
Virginia City Historic District (National Register District)-includes all of the National Historic Landmark	Storey/ Washoe/ Carson City/ Lyon	ca. 33,000 acres	By county/private entities within Virginia City townsite	Commercial tours only/ no BLM programs (lands approximately 55 percent public)	
California Historic Trail	multiple	ca. 300 miles	Signage	None on CCD	There are no BLM interpretive sites on the portions of these trails within the planning area.
Pony Express National Historic Trail	Churchill/ Lyon/ Carson City/ Douglas	ca. 130 miles	Signage	None on CCD	
Lahontan Dam and Power Station and Carson River Diversion Dam					Lahontan Dam and Power Station and Carson River Diversion Dam are listed in the Consolidated RMP, but are on lands acquired by Reclamation and managed by the State of Nevada.

Resource Changes

Trends

The desired condition of cultural resources on federal lands is that they remain stabilized and not adversely affected by natural and cultural processes, and that they are used towards increased educational and interpretive use. As reviewed above, the current trend of the properties (NRHP-eligible or listed sites) in the planning area is that those near the urban interface are subject to greater potential for damage, removal, or alteration from agents caused by people and their equipment. Those resources farther from urban or developed areas are relatively stabilized and are not, in large measure, being adversely affected.

Based on historic trends, large-scale and intense wildland fires can and will occur in western Nevada. Such fires, if they sweep through specific portions of the planning area, such as the Virginia City National Historic Landmark, would have a severe effect on the significant cultural resources of that area. Interest in

mining gold and other minerals has gone up in recent years on both private and BLM-administered lands, as the value of these commodities has increased. Current federal law and BLM management, regulations, and policies permit mining wherever it is legally allowable and where it does not adversely affect critical resources. As a result, more mining on BLM-administered lands is occurring relative to only a few years ago when commodity prices were much lower. Whether this recent upsurge in mining activity is normal, or whether it forecasts the beginning of a larger trend, is not currently known.

Qualitative observation indicates a downward trend in condition for recorded and unrecorded cultural resources that are not associated with formal surface disturbing management proposals. Illegal removal of artifacts, ground disturbance associated with recreational activity, limited law enforcement, and intensive grazing practices all contribute to the downward trend.

Forecast

Based on current management practices, improved access to BLM-administered lands, and increased urbanization, the forecast would be to continue this downward trend of cultural resource conditions due to the following factors:

- Greater potential for cultural resources being illegally removed or damaged, due to increases in recreational and commercial usage, and limited law enforcement presence,
- A likelihood for continued large-scale wildfires in the planning area resulting in damage;
- Continued activities that result in damage or destruction of cultural resources on private, state, and non-BLM-administered lands; and
- Continued permitting of authorized actions by BLM including mining, grazing, and geothermal development that contributes to sites and artifacts being affected.

3.2.10 Paleontological Resources

Fossils are the remains, traces, or imprints of ancient organisms preserved in or on the earth's crust that provide information about the history of life on earth. Paleontological resources do not include any materials associated with archeological resources, which consist of material remains of past human life or activities that are over 100 years old (as defined in Section 3(1) of the Archeological Resources Protection Act of 1979, as amended (16 USC 470bb[1]).

Paleontological resources are a fragile and nonrenewable scientific record of the history of life on earth. BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect or mitigate these resources from adverse impacts. The BLM also manages paleontological resources in keeping with the Paleontological Resources Act of 2009 (Public

Law 111-011). To accomplish this goal, paleontological resources must be professionally identified and evaluated, and paleontological data should be considered as early as possible in the decision-making process. The BLM's four objectives for the management of fossil resources on BLM-administered lands are: 1) locating, evaluating, managing, and protecting fossil resources; 2) facilitating appropriate scientific, educational, and recreational uses of fossils; 3) ensuring that proposed land uses do not inadvertently damage or destroy important fossil resources; and 4) fostering public awareness of the Nation's rich paleontological heritage (BLM 1998a; BLM 1998b). The BLM considers vertebrate fossils, as a group, to be scientifically significant; invertebrate and plant fossils may be determined to be significant on a case-by-case basis. Petrified wood is treated as a mineral material and may be collected or purchased under the Material Sales Act of 1947 (as amended), but cannot be obtained under the General Mining Law of 1872.

Paleontological resources are managed according to the BLM Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management (BLM 1998a) and BLM Manual 8270, Paleontological Resources Management (BLM 1998b). BLM Instruction Manual 2008-009 (BLM 2007b), released October 15, 2007, updates the handbook to replace the tri-level classification system found in the 1998 handbook with the Potential Fossil Yield Classification system. The new classification system is meant to provide baseline guidance for predicting, assessing, and mitigating paleontological resources.

Current Conditions

Paleontological resources are known to occur throughout the planning area. Fossils are identified within the geological units in which they occur and are extensively distributed both vertically and horizontally.

In 1981, a district wide paleontological inventory was conducted to identify fossils and fossil-bearing sediment localities within and immediately adjacent to the CCD (Firby 1981). Based upon the inventory, 331 locations were identified comprising 225 vertebrates, 73 invertebrates, and 33 paleoflora fossils. Based upon the 1981 analysis, the paleontological timeframe ranges from the Triassic (approximately 230 million years before present) to the Quaternary/Rancho Labrean (1.5 million years before present) periods.

In the early 1980s paleontological inventories assisted BLM with consideration of the Stewart Valley Fossil Area for a proposed ACEC (Scudder 1986). The inventories confirmed the importance of the Stewart Valley area for future paleontological studies due to the diversity of fossils, and the Stewart Valley ACEC was officially designated in the BLM Walker Resource Management Plan (BLM 1986c). The BLM completed an ACEC Management Plan for the Stewart Valley Fossil Site in September 1990 (BLM 1990). The plan included 1,420 acres of mineral entry withdrawal (expired in 2010) for the most sensitive portion of the 16,000-acre ACEC.

Much like the Stewart Valley ACEC, the Pine Nut Range has been identified as an area of paleontological diversity and includes two specific areas, the Pine Nut Range Hemphillian/Early Blancan interface and the Ruhenstroth Paleontological Area. The Hemphillian/Early Blancan interface, dating to about 4.0 million years before present, is a specifically important resource. The dated sediments and fossils are used to correlate other fossil locations throughout North America (Lindsay, 2002). Although fossil-bearing sediments have been identified and some excavations have been conducted, the range of this area is not precisely mapped.

In the southwest area of the Pine Nut Range, large Pleistocene vertebrate faunal remains are primarily represented at Ruhenstroth. Due to continued pressure on resources from OHV use, the area was temporarily closed to OHV use (limited to designated routes) in 2008 under an emergency closure per Federal Register Notice (Volume 73, No. 20, p. 5584).

Table 3-21, Paleontological Areas Identified for Management, provides more information on the three paleontological resource areas described above. The locations of these areas are shown on **Figure 3-7**, Paleontological Areas Identified for Management.

Numerous additional localities of paleontological resources are known throughout the planning area. In the late 2000s, CCD personnel used the results of the 1981 inventory and created a GIS paleontological layer. This GIS layer identifies areas of sensitivity for known and unknown fossil locations throughout the planning area; this information is used during analysis for proposed projects. The analysis is used to recommend further paleontological inventories especially in areas of high sensitivity for vertebrates, such as a fossil locality at Ruhenstroth in the southern Pine Nut Mountains. The results of these inventories are used to continually update the paleontological GIS layer and the BLM's understanding of the deposition of paleontological resources within the planning area.

Table 3-21
Paleontological Areas Identified for Management

Site Name	County	Acres	Interpretive services in place	Environmental Education/ Scientific Research
Stewart Valley Fossil Site	Mineral	16,000 acres	Signage for travel management	Ongoing research and monitoring of sites
Pine Nut Range Hemphillian/Early Blancan interface	Douglas	3,000 acres	None	Of high scientific importance
Ruhenstroth Paleontological Area	Douglas	2,340 acres	Travel management signage and route designations	Ongoing research and monitoring of sites

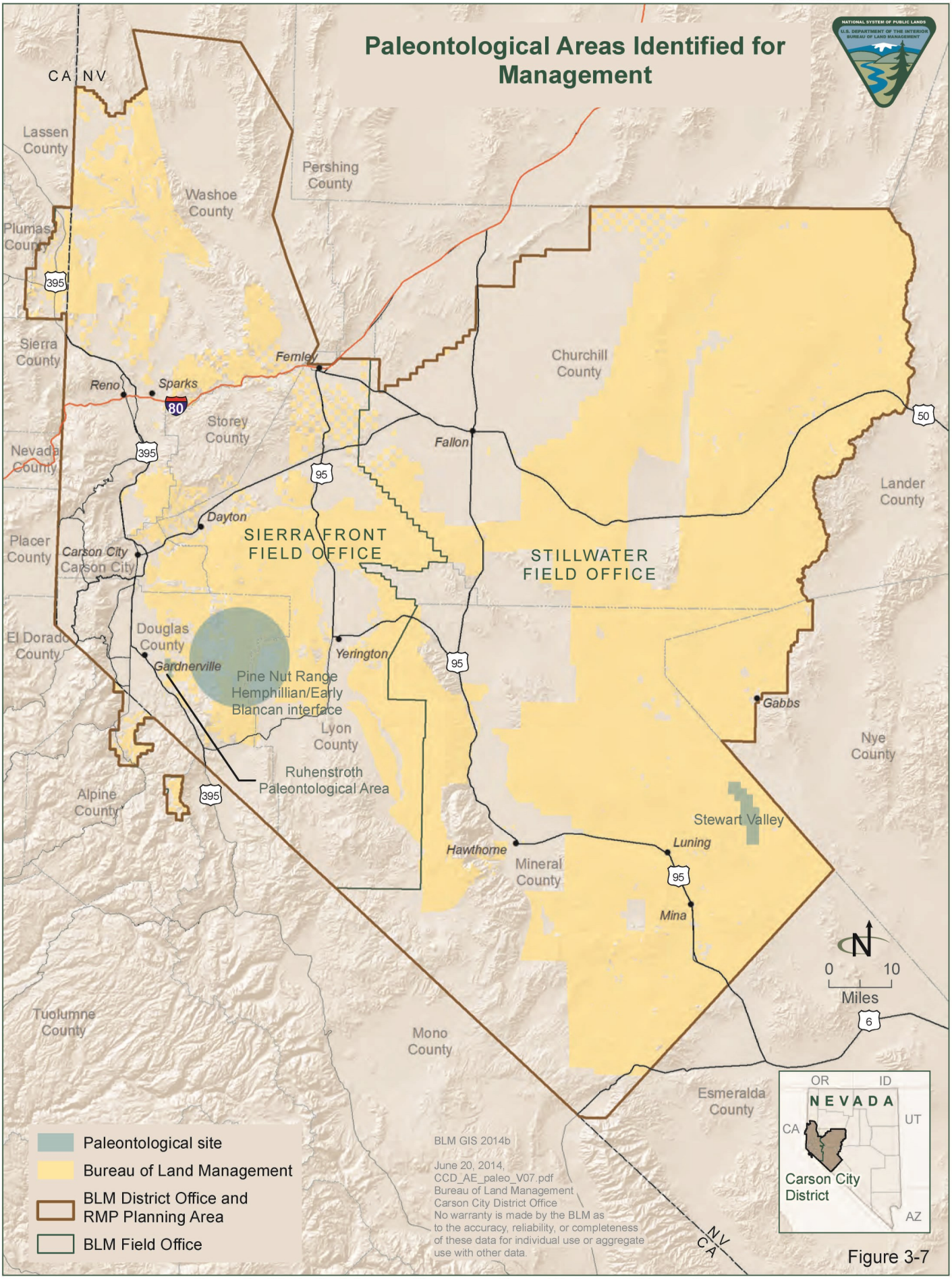

Paleontological Areas Identified for Management
CA NV
Lassen County
Washoe County
Pershing County
Plumas County
Sierra County
Reno
Sparks
Fernley
Churchill County
Storey County
Nevada County
Fallon
Lander County
Dayton
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
Placer County
Carson City
Carson City
El Dorado County
Douglas County
Gardnerville
Yerington
Pine Nut Range Hemphillian/Early Blancan interface
Lyon County
Gabbs
Nye County
Ruhenstroth Paleontological Area
Alpine County
Stewart Valley
Hawthorne
Luning
Mineral County
Mina
Tuolumne County
Mono County
Esmeralda County
0 10
Miles
OR
ID
NEVADA
CA
UT
AZ
Carson City District
Paleontological site
Bureau of Land Management
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b
June 20, 2014, CCD_AE_paleo_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
NV
CA

Figure 3-7

Resource Changes

The current management trend for the resources in the planning area is toward continued scientific research, additional monitoring and travel signage, and increased opportunities for environmental education and interpretive use. The proposed Ruhenstroth Paleontological Area is near the Douglas County Fairgrounds and at an urban interface. This is an area of increasing recreational use, resulting in greater erosion of fossil-bearing sediments and observed increase in the resource damage, removal, or alteration by people and their equipment. Resources farther from urban or developed areas are relatively stabilized and are not, in large measure, adversely affected by human activity. However, all areas of fossil-bearing sediments are trending toward increased recreational use and protection of paleontological resources are subject to the limits to the availability of resource staff and law enforcement monitoring.

Based on current management practices, improved access to BLM-administered lands, and increased urbanization, there is the potential for paleontological resources to be illegally removed or damaged in the future due to increases in recreational and commercial usage, and limited law enforcement presence.

3.2.11 Visual Resources

Visual resources refer to the visible features on a landscape (e.g., land, water, vegetation, animals, and structures). These features contribute to the scenic or visual quality and appeal of the landscape. Visual impact is the creation of an intrusion or perceptible contrast that affects the scenic quality of a landscape. A visual impact can be perceived by an individual or group as either positive or negative, depending on a variety of factors or conditions (e.g., personal experience, time of day, and weather or seasonal conditions; BLM 1984a).

Visual Resource Inventory

Visual resource inventory involves identifying the visual resources of an area and assigning them to inventory classes using the BLM's resource inventory process. The process involves 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. This process is described in detail in BLM Handbook H-8410-1, Visual Resource Inventory (BLM 1986a).

The results of the visual resource inventory become an important component of the RMP for the area. The RMP establishes how BLM-administered lands will be used and allocated for different purposes, and it is developed through public participation and collaboration. Visual values are considered throughout the RMP process, and the area's visual resources are then assigned to the management classes with established objectives.

Visual Resource Management

The objective of visual resource management (VRM) is to manage BLM-administered lands in a manner that will protect the quality of the scenic or visual values of those lands. Scenic values are identified through the visual

resource inventory process and are considered along with other resource values in the RMP process to establish VRM objectives. VRM objectives are established in conformance with land use allocations, are area specific, and provide visual standards for planning, designing, and evaluating proposed development projects or changes to the landscape. The VRM system also provides guidelines for timely evaluation of proposed surface-disturbing projects to ensure VRM objectives are met. The goal of VRM is to minimize the visual impacts of all surface-disturbing activities, regardless of the class to which an area is assigned.

The BLM categorizes visual resources into four distinctive classes that are based on scenic quality evaluations, sensitivity level analysis, manageability, and the delineation of distance zones. Proper implementation of VRM helps reduce visual degradation and maintain important visual resource values. Recreational opportunities as well as visitor experiences and benefits are heavily influenced by the scenic quality of the landscapes. Consideration for the public and nonfederal agency perception and concern for visual resources is also a critical element in the land use planning process.

Objectives for each of the four VRM classes are as follows:

Class I. The objective of this class is to *preserve* the existing character of the landscape. This class provides for natural ecological changes with very limited management activity. The level of change by the activity to the characteristic landscape should be very low and must not attract attention.

Class II. The objective of this class is to *retain* the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III. The objective of this class is to *partially retain* the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class IV. The objective of this class is to provide for management activities that require *major modification* of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

The analysis of a visual contrast rating process is used to resolve visual impacts. The process of a visual contrast rating, which involves comparing the project features with the existing landscape features using basic elements of form, line, color, and texture, is described in detail in BLM Handbook H-8431-1, Visual Resource Contrast Rating (BLM 1986b).

Current Conditions

The planning area falls within the Basin and Range Physiographic Province noted for its limited rainfall and arid conditions and the Sierra Nevada Physiographic Province along the eastern slopes of the Sierra Nevada Mountains. Topographic features in the planning area are representative of the basin and range and include a variety of landscapes such as the majestic snow-capped mountain ranges, low foothills, and wide flat basins. Scenic quality values are high and visual distance is usually great, hence the origin of the phrase "wide open Nevada."

Visual Resource Inventory

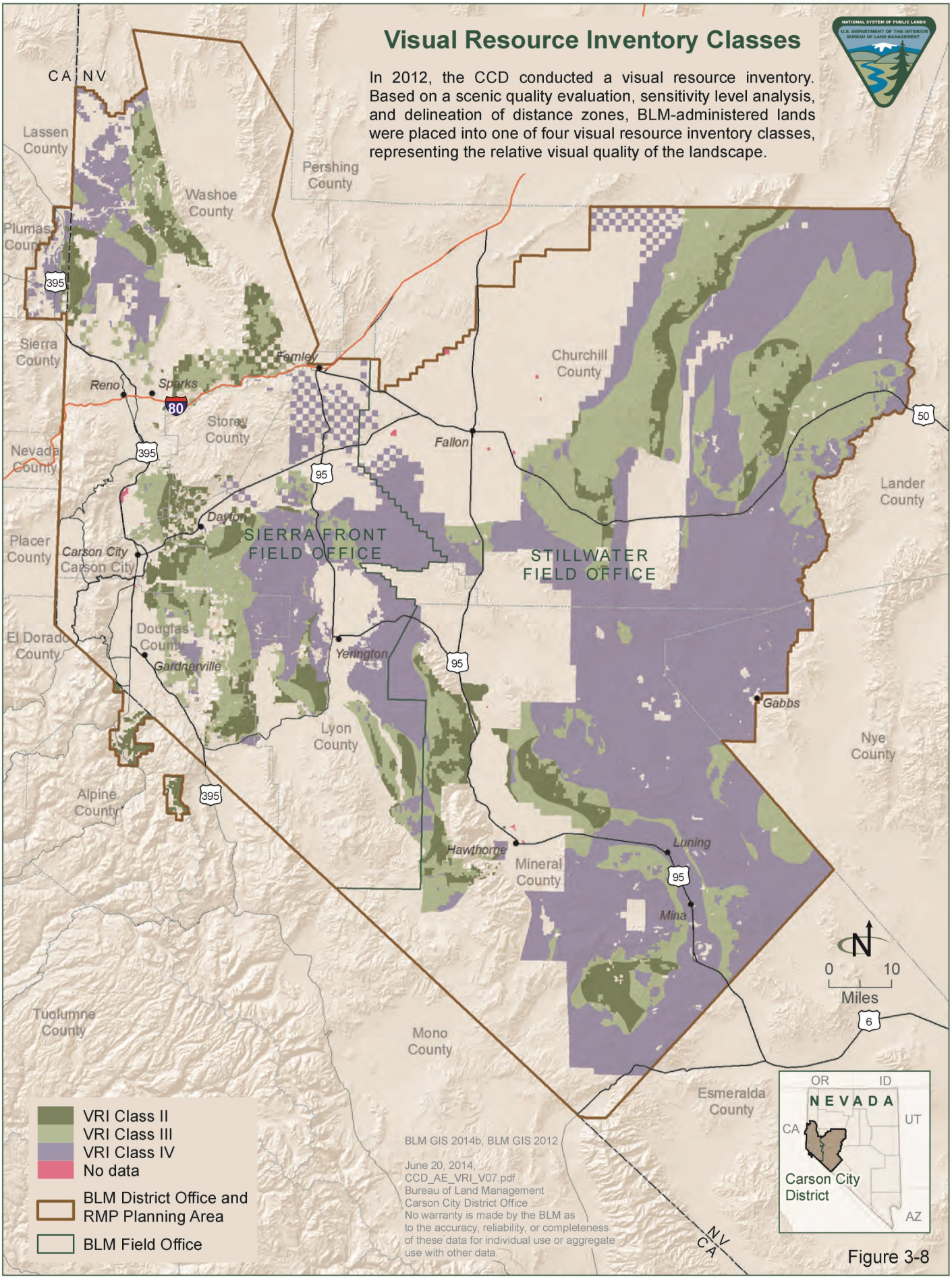
A visual resource inventory of the planning area was completed in January 2012 according to guidelines in BLM Manual Handbook H-8410-1, Visual Resource Inventory (BLM 1986a). The inventory consisted of three components: scenic quality evaluation, sensitivity level analysis, and delineation of distance zones.

Based on the three inventory components, lands in the planning area were placed into one of four visual resource inventory classes (as shown in **Figure 3-8**, Visual Resource Inventory Classes). These class assignments are informational and provide the basis for considering visual values during the RMP process. They do not establish management direction and are not used as a basis for constraining or limiting surface-disturbing activities but are considered a baseline for existing conditions. Visual Resource Inventory Class I is assigned to those areas where a Congressional or administrative decision has been previously made to preserve the natural landscape character and is currently designated as VRM Class I. An example of a Congressional decision that is managed as VRM Class I designated wilderness.

The scenic quality, sensitivity, distance zone, and resulting visual resource inventory distribution for the CCD is presented in **Table 3-22**, Visual Resource Inventory Component Distribution, and in **Figure 3-9**, Visual Resource Sensitivity Levels; **Figure 3-10**, Visual Resource Quality Rating; and **Figure 3-11**, Visual Resource Distance Zones.

Visual Resource Management

The majority of the decision area does not have an assigned VRM classification. A partial VRM classification was completed in the mid-1980s, mostly in the areas of public interface and greater population densities on lands that now fall within the Sierra Front Field Office. Lands on the eastern side of the planning area were, for the most part, never assigned a VRM classification. Currently, standard


Visual Resource Inventory Classes
In 2012, the CCD conducted a visual resource inventory. Based on a scenic quality evaluation, sensitivity level analysis, and delineation of distance zones, BLM-administered lands were placed into one of four visual resource inventory classes, representing the relative visual quality of the landscape.
CA NV
Lassen County
Pershing County
Washoe County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Douglas County
Alpine County
Tuolumne County
Mono County
Lyon County
Mineral County
Esmeralda County
Nye County
Lander County
Churchill County
Storey County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Hawthorne
Luning
Mina
Gabbs
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
VRI Class II
VRI Class III
VRI Class IV
No data
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, BLM GIS 2012
June 20, 2014, CCD_AE_VRI_V07.pdf
Bureau of Land Management
Carson City District Office
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Miles
OR ID
NEVADA
CA UT
AZ
Carson City District
NV
CA

Figure 3-8

Table 3-22
Visual Resource Inventory Component Distribution

Visual Resource Inventory Component	Acres	Percent of Decision Area
Scenic Quality		
A	45,100	1%
B	1,911,100	40%
C	2,843,100	59%
No Data	5,300	<1%
Sensitivity		
High	2,472,300	51%
Moderate	1,679,600	35%
Low	647,300	14%
No Data	5,300	<1%
Distance Zone		
Foreground/Middle ground	2,101,100	44%
Background	598,000	12%
Seldom Seen	2,100,100	44%
No Data	5,300	<1%
VRI Class		
Class I	0	0%
Class II	509,500	11%
Class III	1,460,000	30%
Class IV	2,827,700	59%
No Data	3,900	<1%

Source: BLM GIS 2012a

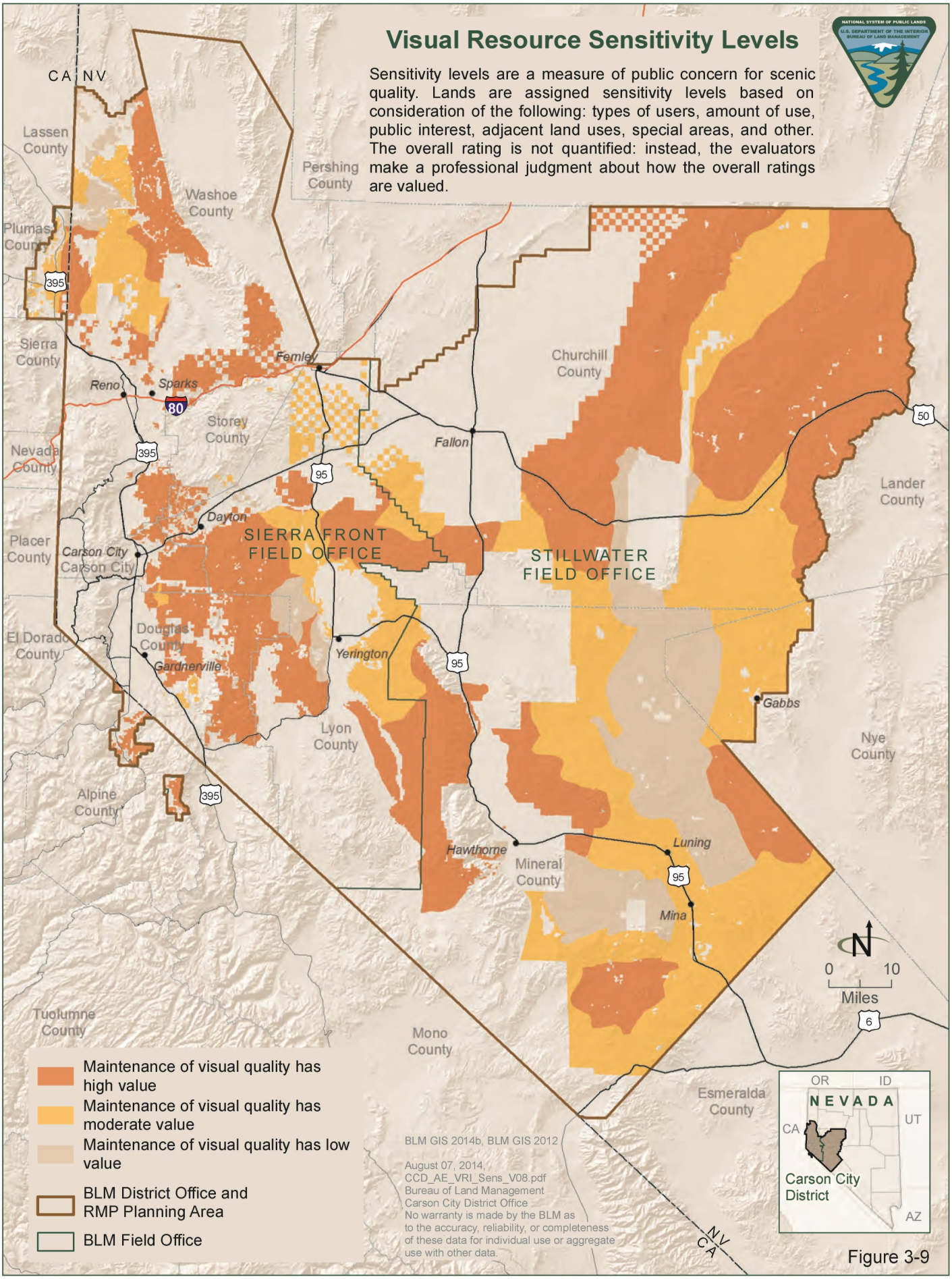
operating procedures in the Consolidated RMP call for the establishment of interim VRM objectives where a project is proposed and where there are no approved VRM objectives.

Current VRM classes are summarized in **Table 3-23**, Visual Resource Management Classes, and displayed in **Figure 2-14**, Alternative A: Visual Resource Management Classes.

Table 3-23
Visual Resource Management Classes

VRM Class	Acres
Class I	564,100
Class II	38,300
Class III	320,600
Class IV	385,700
Undesignated	3,494,900

Source: BLM GIS 2012a


Visual Resource Sensitivity Levels
Sensitivity levels are a measure of public concern for scenic quality. Lands are assigned sensitivity levels based on consideration of the following: types of users, amount of use, public interest, adjacent land uses, special areas, and other. The overall rating is not quantified: instead, the evaluators make a professional judgment about how the overall ratings are valued.
CA NV
Lassen County
Pershing County
Washoe County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Douglas County
Alpine County
Tuolumne County
Mono County
Lyon County
Churchill County
Lander County
Nye County
Mineral County
Esmeralda County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Hawthorne
Luning
Mina
Gabbs
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
395
80
95
50
6
0 10
Miles
Maintenance of visual quality has high value
Maintenance of visual quality has moderate value
Maintenance of visual quality has low value
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, BLM GIS 2012
August 07, 2014,
CCD_AE_VRI_Sens_V08.pdf
Bureau of Land Management
Carson City District Office
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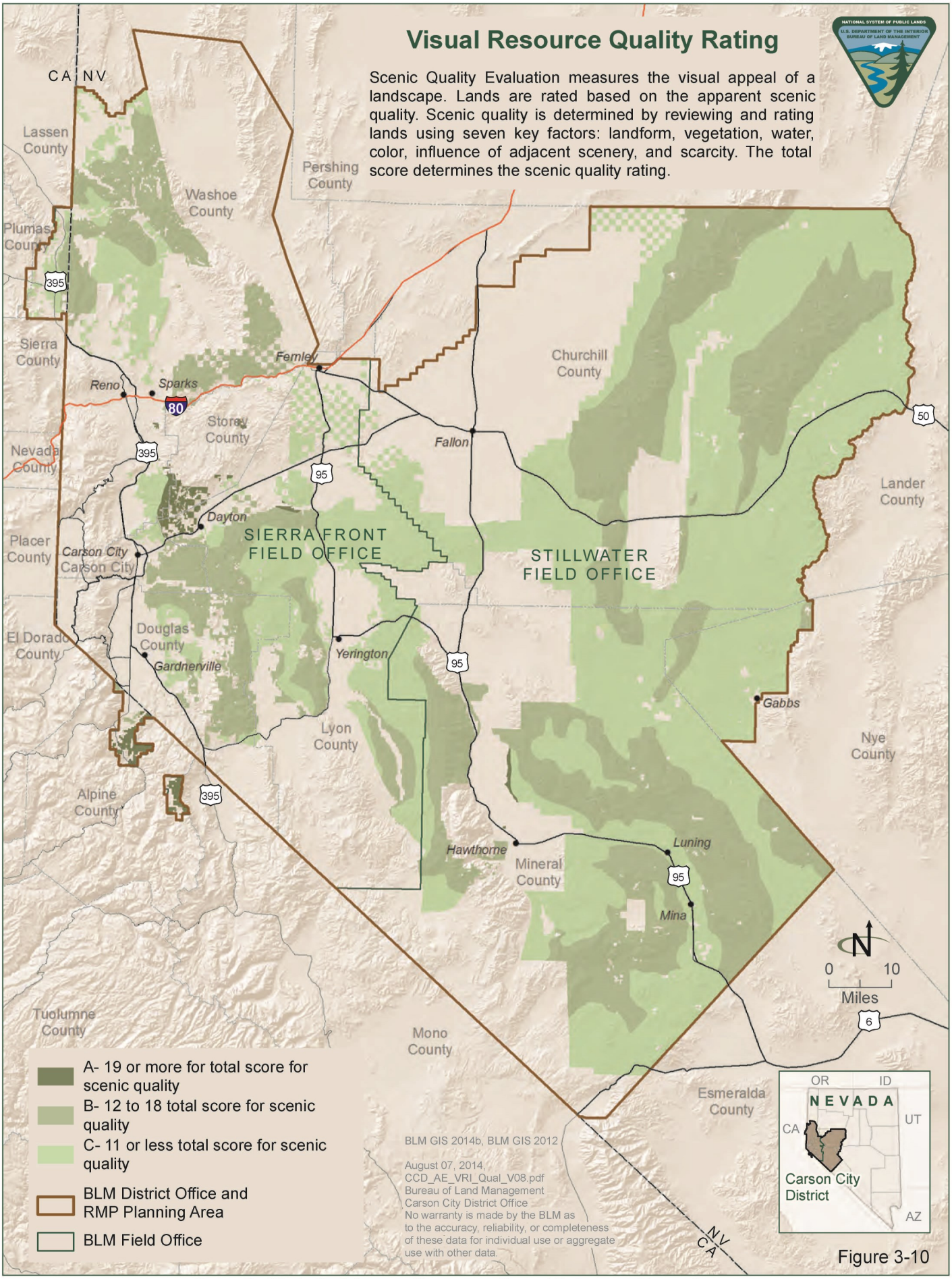
OR
ID
NEVADA
UT
CA
AZ
Carson City District
NV
CA

Figure 3-9


Visual Resource Quality Rating
Scenic Quality Evaluation measures the visual appeal of a landscape. Lands are rated based on the apparent scenic quality. Scenic quality is determined by reviewing and rating lands using seven key factors: landform, vegetation, water, color, influence of adjacent scenery, and scarcity. The total score determines the scenic quality rating.
CA NV
Lassen County
Washoe County
Pershing County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Douglas County
Alpine County
Lyon County
Churchill County
Lander County
Nye County
Mineral County
Esmeralda County
Mono County
Tuolumne County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Gabbs
Hawthorne
Luning
Mina
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
80
395
95
50
6
0 10
Miles
A- 19 or more for total score for scenic quality
B- 12 to 18 total score for scenic quality
C- 11 or less total score for scenic quality
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, BLM GIS 2012
August 07, 2014,
CCD_AE_VRI_Qual_V08.pdf
Bureau of Land Management
Carson City District Office
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OR
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NEVADA
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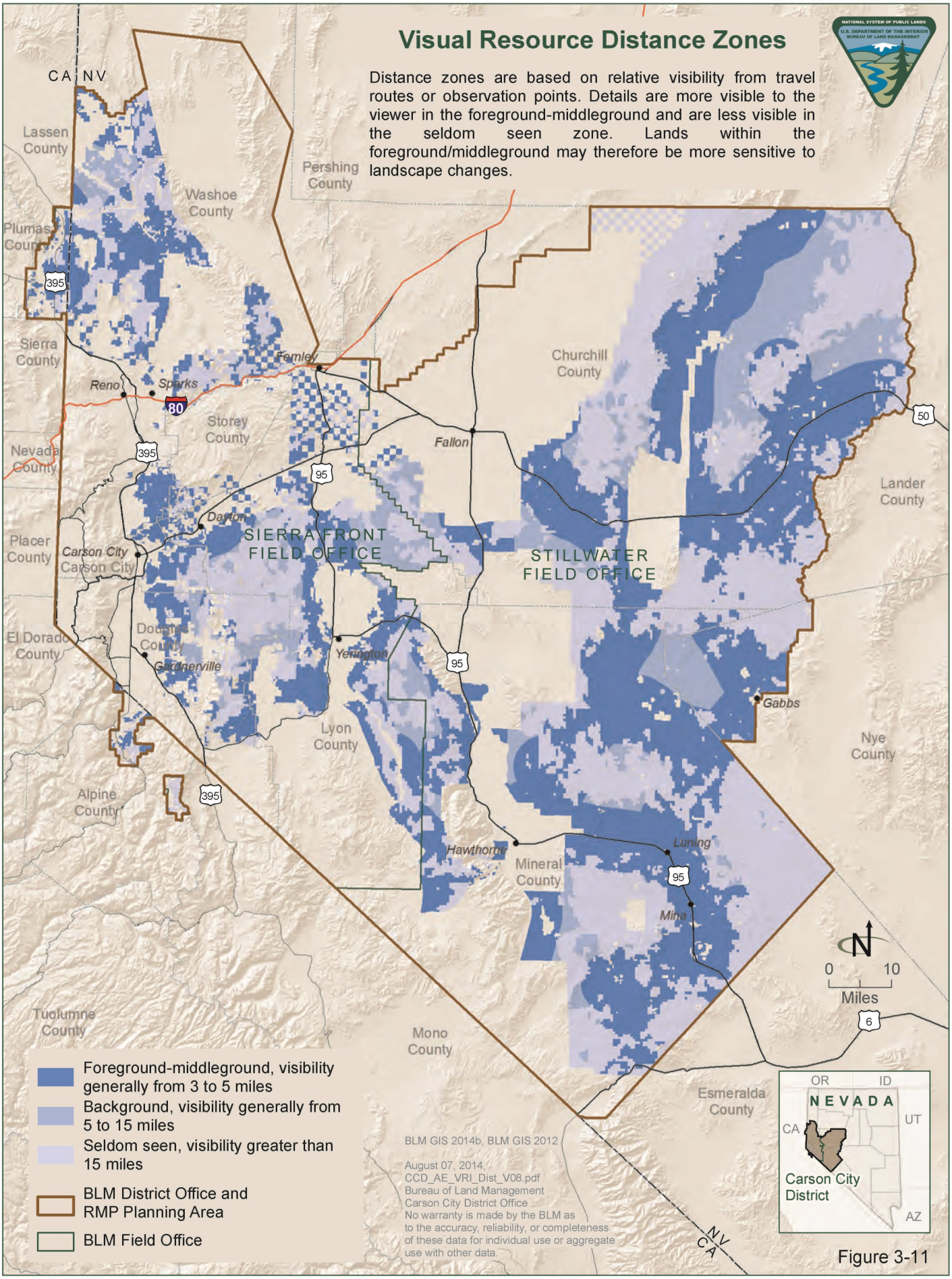
CA
AZ
Carson City District
NV
CA

Figure 3-10


Visual Resource Distance Zones
Distance zones are based on relative visibility from travel routes or observation points. Details are more visible to the viewer in the foreground-middleground and are less visible in the seldom seen zone. Lands within the foreground/middleground may therefore be more sensitive to landscape changes.
CA NV
Lassen County
Pershing County
Washoe County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Alpine County
Tuolumne County
Mono County
Lyon County
Churchill County
Lander County
Nye County
Mineral County
Esmeralda County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Hawthorne
Luning
Mina
Gabbs
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
395
80
95
50
6
0 10
Miles
Foreground-middleground, visibility generally from 3 to 5 miles
Background, visibility generally from 5 to 15 miles
Seldom seen, visibility greater than 15 miles
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b, BLM GIS 2012
August 07, 2014,
CCD_AE_VRI_Dist_V08.pdf
Bureau of Land Management
Carson City District Office
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OR
ID
NEVADA
UT
CA
AZ
Carson City District
NV
CA

Figure 3-11

Lands that fall within the VRM Class I areas are comprised solely of the wilderness study areas. VRM Class II objectives were applied to the special designations such as scenic areas. VRM Classes III and IV areas comprise the majority of the BLM-administered lands in the eastern half of the planning area. In general, areas on or near transportation routes in the lower portions of the basin, areas undergoing oil and gas or other development, and areas with less visual variety and scenic quality fall within VRM Class III and Class IV categories.

Key Features

Key features in the planning area include areas with unique landforms, impounded or flowing water, historic trails, scenic areas, and recreation sites. There are several areas that have been designated as scenic areas in the planning area. These areas were established to identify areas of outstanding visual quality and are managed to protect and enhance scenic qualities while allowing the maximum amount of recreational use as possible. Scenic areas are managed according to VRM Class II objectives. Designated scenic areas are the Burbank Canyons, East Walker, Incandescent Rocks Natural Scenic ACEC, and the Lassen Red Rocks. No additional scenic areas have been proposed for the planning area, but the land use planning process may identify additional areas suitable for this designation. During the RMP revision, areas that have been previously designated as scenic areas were evaluated for designation as areas of critical environmental concern with relevant and important values.

Other key features include WSAs, certain transportation corridors such as the East Fork of the Carson River, V&T Railroad, Fort Churchill to Wellington Back Country Byway, Highways 50 and 95, Sand Mountain, National Historic Trails, and special designation areas such as Grimes Point Archeological Area.

Designated scenic areas are described below.

Burbank Canyons Scenic Area. The Burbank Canyon Scenic Area is in Douglas and Lyon Counties 5 miles northwest of Wellington and 15 miles southeast of Gardnerville; the scenic area overlays the Burbank Canyon WSA. In the event the WSA is released from wilderness consideration by Congress, the scenic area designation would remain in effect. Further discussion of this area can be found in **Section 3.4.5**, Wilderness Study Areas.

East Walker Scenic Area. Under the Forest Enhancement Act of 1989, most of the 4,300 acres within the scenic area were transferred to the Forest Service, but approximately 53 acres within the scenic area remain on BLM-administered lands. The area is located west of Hawthorne along the California and Nevada border and is surrounded by National Forest and private lands.

Incandescent Rocks Natural Scenic ACEC. The Incandescent Rocks Natural Scenic ACEC (BLM 1988b) is a 1,072-acre site in southern Washoe County, 25 miles north of the Reno-Sparks area and 5 miles east of Pyramid Lake. The site is known for the rhyolitic outcrops and ridges that are characterized by red,

yellow, orange, and purple hues that appear to fluoresce or glow as light reflects off the walls. Further discussion can be found in **Section 3.4.1**, Areas of Critical Environmental Concern.

Lassen Red Rocks Scenic Area. The Lassen Red Rocks Scenic Area is an 804-acre site in Lassen County, California and Washoe County, Nevada off of Highway 395 on the southwest edge of Petersen Mountain. The area was designated via a Federal Register Notice (49 *Federal Register* No. 213, November 1, 1984). The scenic area designation is attributed to the unique and colorful geological features, including bright red, white, and grey pillars, pinnacles, crags, and canyons. Management objectives were to develop a day use/picnic area, limit OHV use to roads and trails, and protect the geologic features.

Trends

In any given year, the BLM authorizes a wide variety of activities that have the potential to impact scenic values. These activities range from vegetation and habitat improvement projects to large-scale geothermal energy, mineral, and mining operations or exploration. The increased demands for renewable energy and mineral development have increased the pressures on maintaining visual resources.

Current management practices, based on BLM Washington Office guidance, have led to a reduction of impacts on the visual resources in the planning area but fail to provide adequate guidance for on-site/off-site mitigation measures or design alternatives. Surface-disturbing activities have been mitigated to meet the objectives of the VRM Class according to which the BLM parcel is managed.

Resource Changes

Landscapes that suffer the greatest impacts from development without consideration of scenic values or the use of mitigation measures, or from unauthorized dispersed recreation uses, include areas with urban interface, travel corridors, popular recreation sites, and areas with multiple or conflicting resource use demands.

The present VRM classifications throughout the planning area do not adequately reflect the visual quality of the region, and mitigation standards and design alternatives are not sufficiently outlined in the Consolidated RMP or subsequent activity plans. Cumulative impacts from the lack of direction may reduce the visual quality in some areas due to short- and long-term impacts. Potential transportation or utility corridors, including interstate transmission and gas lines that traverse the planning area, could also negatively affect visual resources in the planning area without the proper planning.

3.2.12 Lands with Wilderness Characteristics

The BLM's authority to conduct wilderness reviews, including the establishment of new WSAs, expired on October 21, 1993, pursuant to Section 603 of the FLPMA. The BLM has retained authority under Sections 201 and 202 of the

FLPMA to inventory BLM-administered lands for wilderness characteristics and to consider such information during land use planning (BLM Manual 6320, Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process; BLM 2012c). Through this planning process, the BLM has discretion to determine which portions of BLM-administered lands with wilderness characteristics would be protected by special management. While the BLM is in the land use planning process, the BLM will manage lands so as not to forgo management options in the event that new information is presented, evaluated, and incorporated into the planning process as part of one or more RMP alternatives.

Procedures for conducting inventories for lands with wilderness characteristics are laid out in BLM Manual 6310, Conducting Wilderness Characteristics Inventory on BLM Lands (BLM 2012b). The inventory process entails the identification of wilderness inventory units, an inventory of roads and wilderness characteristics, and a determination of whether or not the area meets the overall criteria for wilderness character. Units found to possess such character are evaluated during the land use planning process to address future management for wilderness characteristics. Wilderness characteristics considered in this analysis include size (must be roadless areas larger than 5,000 acres), naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. An area with wilderness characteristics may also contain other values not necessary for the determination of wilderness character; these are known as supplemental values. These wilderness characteristics are further described below:

- Size: An area must be a roadless area of 5,000 acres of contiguous BLM-administered lands or, if less than 5,000 acres, must be contiguous with BLM-administered lands that have been formally determined to have wilderness or potential wilderness values (e.g., designated wilderness and WSAs) or any federal lands managed for the protection of wilderness characteristics.
- Naturalness: Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. An area's naturalness may be influenced by the presence or absence of roads or other developments; the nature and extent of landscape modifications; and the connectivity of habitats. Wildlife populations and habitat are recognized as important aspects of naturalness and would be actively managed.
- Outstanding Opportunities for Solitude or Primitive and Unconfined Types of Recreation: Visitors may have outstanding opportunities for solitude or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone, or secluded from

others; where the use of an area is nonmotorized, nonmechanical means; and where no or minimal recreation facilities are encountered.

- Supplemental Values: The area may contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Current Conditions

Previous planning documents did not provide special management for areas outside of WSAs with wilderness characteristics. During this RMP revision process, the BLM completed a review of BLM-administered lands within the planning area to determine whether they possess wilderness characteristics.

An external group has advocated wilderness designations through participation in the land use planning processes. The BLM's current review of lands for wilderness characteristics included these external nominations, areas identified through inventory and monitoring, and adjacent designations of other federal and state agencies. This review includes only BLM-administered lands and does not include portions of wilderness proposals on National Forest System lands or lands within existing WSAs.

Assessment of lands with wilderness characteristics was developed from the following sources:

- A review of Wilderness Review, Nevada: Intensive Inventory of Public Lands Administered by BLM, Decision Report (BLM 1980) and Wilderness Review, Nevada: Initial Inventory of Public Lands Administered by BLM, Decision Report (BLM 1979). These documents are comprehensive evaluations of wilderness characteristics on BLM-administered lands in Nevada that were conducted from 1978 to 1980, as directed by Section 603 of the FLPMA.
- Public input received during scoping that delineated tracts of BLM-administered lands reported to possess wilderness characteristics.
- A citizens group's wilderness characteristics proposals submitted December 2013. The citizens' proposals were based upon their application of BLM Manual 6310, Conducting Wilderness Characteristics Inventory on BLM Lands, which requires route forms, road/way definitions, size requirements, definitions of "outstanding," and files, narratives and documentation for all areas proposed.

A portion of the Monte Cristo North unit, which is primarily within the Battle Mountain District but crosses into the Stillwater Field Office, was also determined to have wilderness characteristics by the Battle Mountain District.

Of the areas inventoried, up to 416,500 acres potentially contain wilderness characteristics and are considered for a variety of management approaches in the alternatives for this RMP. A final determination as to the management of these areas will be issued through a separate ROD.

Table 3-24, Units Inventoried for Wilderness Characteristics Outside Existing Wilderness Study Areas, displays the units that were inventoried for wilderness characteristics and the areas found to have wilderness characteristics and potentially be managed to maintain those characteristics.

Table 3-24
Units Inventoried for Wilderness Characteristics Outside Existing Wilderness Study Areas

Unit Name	Unit Identifier	Acres Inventoried	Acres with Wilderness Characteristics	Acres without Wilderness Characteristics
Agai Pah Hills*	NV-030-402	27,200	27,200	0
Chukar Ridge*	NV-030-405	29,100	29,100	0
Excelsior North*	NV-030-425	54,400	54,400	0
Excelsior South*	NV-030-430	49,200	49,200	0
Finger Rock*	NV-030-409	41,500	41,500	0
Lyon Peak*	NV-030-520	16,300	16,300	0
Monte Cristo North**	NV-050-306	9,800	9,800	0
Peterson Mountain*	NV-030-610	16,300	16,300	0
Rawe Peak*	NV-030-517	39,800	39,800	0
Job South*	NV-030-120,116,117	77,400	77,400	0
Stillwater Additions*	NV-030-104	19,100	19,100	0
Tule Peak*	NV-030-605	36,400	36,400	0

Source: BLM 2014c
*Represent citizen-proposed submissions by the Friends of Nevada Wilderness
**Acres are for the CCD portion only

Acreages listed in **Table 3-24** are subject to change and are preliminary pending completion of the lands with wilderness characteristics assessment and report. More information on the evaluation of proposed wilderness units, including methodology for analysis, as well as detailed information on all inventoried units, is in a separate draft *Lands with Wilderness Characteristics Inventory Summary Report*. The final *Lands with Wilderness Characteristics Inventory Summary Report* is anticipated winter 2015.

Resource Changes

Comparison of the 1978-1980 wilderness characteristics review with fieldwork conducted are identified in the following findings:

- The decision areas maintained a high degree of overall naturalness. There were large-scale or incompatible land uses with long-lasting or irreversible effects on naturalness occurring over the intervening period since 1980.

- More acres of BLM-administered lands in the decision areas exhibited potential wilderness characteristics in 2014(compared to the original inventory in the 1980s), mainly due to either additional acres not considered in the 1980 wilderness review or changing land uses coupled with natural reclamation. Changing land uses often reflected a decline in mineral exploration and assessment.
- The BLM's field assessments and BLM's comprehensive inventory of vehicle routes found a rise in motorized public visitation and the popularity of many areas for driving four-wheel drive and all-terrain vehicles. Many washes and most upland routes were being used for motorcycle and OHV travel, which are uses not common in the area in 1980. As such, the implementation of travel management may have considerable influence on lands managed to protect wilderness characteristics.

For areas with wilderness characteristics that lie outside established WSAs, increased commercial development and recreation use, including OHV use, may affect naturalness, solitude, and primitive recreation values. Management actions may need to be taken to preserve or protect these values.

3.2.13 Cave and Cave Resources

With the passage of the Federal Cave Resources Protection Act, Sec. 3(1) of 1988, Congress declared that significant caves on federal lands are an invaluable and irreplaceable part of the Nation's natural heritage and recognized that significant caves may be threatened due to improper use, recreational demand, urban spread, and lack of protection. The purpose of the Act is to secure, protect, and preserve significant caves on federal lands for the perpetual use, enjoyment, and benefit of all people and to foster increased cooperation and exchange of information between governmental authorities and those who utilize caves located on federal lands for scientific, education, or recreational purposes. With the Act, Congress established policy that federal lands be managed in a manner that protects and maintains, to the extent practical, significant caves, and cave resources.

The Act defines a cave as any naturally occurring void, cavity, recess, or system of interconnected passages occurring beneath the surface of the Earth or within a cliff or ledge that is large enough to permit an individual to enter, whether or not the entrance is naturally formed or man-made. A karst is an area of irregular limestone or carbonate in which erosion has produced fissures, sinkholes, underground streams, and caverns. Caves may be considered nonrenewable resources due to the nature of the animal and plant life, paleontological deposits, biological resources, or minerals.

Under the Act, a cave is considered significant if it meets one or more of the following six criteria:

- Biota. The cave serves as seasonal or yearlong habitat for organisms or animals, or contains species or subspecies of flora or fauna native to caves, or is sensitive to disruption, or contains species found on state or federal sensitive, threatened, or endangered species lists.
- Cultural. The cave contains historic or archeological resources included in or eligible for inclusion in the NRHP because of its research importance for history or prehistory, its historical association, or other historical or traditional significance.
- Geological/Mineralogical/Paleontological. The cave possesses one or more of the following features: geologic or mineralogical features that are fragile or exhibit interesting formations.
- Hydrologic. The cave is part of a hydrologic system or contains water important to humans, biota, or development of cave resources.
- Recreational. The cave provides or could provide recreational opportunities or scenic values.
- Educational or Scientific. The resource offers opportunities for educational or scientific use or is in a virtually pristine state, lacking evidence of contemporary human disturbance or impact, or the length, height, volume, total depth, or similar measurements are notable (43 CFR Part 37).

In observance of the Act, federal lands are managed in a manner which, to the extent practical, protects and maintains significant caves and cave resources (43 CFR Part 37.2). The type and degree of protection will be determined through the resource management planning process with full public participation.

Current Conditions

The geologic setting of the planning area consists of granitic and metamorphic rocks that are overlain by volcanic and sedimentary rocks, so there is little opportunity for the formation of large or extensive cave systems. The majority of the caves in the planning area consist of undercut rock shelters and shallow cavities in basalt or rhyolite rock that were formed by wave action from ancient Lake Lahontan approximately 21,000 years ago. The wave action at various lake levels provided a mechanism to carve shoreline terraces and caves into the surrounding topography. No significant karst features have been identified in the planning area due to the lack of significant deposits of limestone that are required for the formation of karst-type caves or fissures.

There are several named and unnamed caves in the planning area. Caves with cultural significance exist but have not been identified or mapped in a single database, or the caves are proprietary in nature and the locations are documented only in cultural files as a means to protect the resource. Natural caves suitable for supporting biota such as bats are scattered throughout the

planning area, but minimal mapping or identification has occurred for this resource as well.

Hidden Cave is an archeologically significant cave located within the Grimes Point Archaeological Area 12 miles east of Fallon. This cave is an archeological site of importance for the understanding of the human occupation of the Great Basin and climatic changes that have occurred over the last 20,000 years. Excavations occurred in the 1940s, 1950s, and in the 1970s when the last set of excavations were left intact to serve as interpretive materials for archeological methods. Interpretive tours of the cave and surrounding area have been provided for 30 years, and in 2010, over 1,300 people were provided tours of Hidden Cave by BLM interpretive specialists and the Churchill County Museum. Two rock shelters, Burnt Cave and Picnic Cave, are part of the Hidden Cave interpretive tour.

There are no caves that provide recreational caving opportunities such as exploration or spelunking. The most important significance for caves is the support of several bat species that live or migrate through the area and for cultural resources.

Resource Changes

The potential for additional cave discoveries within the planning area is low considering geological data, the basin and range topography, and the amount of mineral exploration that has occurred in the ranges since the mid-1800s.

Primarily, caves within the planning area have significance due to bat habitat, bryophyte habitat, prehistoric use, or the presence of artifacts and pictographs as well as cultural connections with local Tribes. While the physical location of culturally significant caves is not publicized by the BLM, they are often known to the local populations through printed literature, USGS topographic maps, and from being passed down verbally through family and friends. This has resulted in historic as well as present day concerns from acts of theft, vandalism, and degradation of cultural artifacts and values.

With the exception of documented occurrences of vandalism, trend data for cave resources in the planning area is not collected and remains anecdotal. As recreational use of BLM-administered lands increases and the public becomes more aware of cave locations, the incidents of vandalism from graffiti and target shooting may increase. Visitation can negatively impact the biological and cultural importance of a cave from the introduction and spread of invasive weeds and organisms, soil compaction, and the disturbance of artifacts, to the spread of certain diseases such as White Nose Syndrome that can terminally infect bat populations. Cave resources will continue to be impacted by the public until management decisions are developed to adequately protect the resources.

3.3 RESOURCES USES

This section contains a description of the human uses of resources in the planning area and follows the order of topics addressed in **Chapter 2**:

- Forestry and Woodland Products
- Livestock Grazing
- Geology and Minerals (locatable, salable, and leasable)
- Recreation and Visitor Services
- Comprehensive Travel and Transportation Management
- Lands and Realty
- Renewable Energy

3.3.1 Forestry and Woodland Products

Current Conditions

The FLPMA requires that BLM-administered lands be managed under principles of multiple use and sustained yield. It also requires that fair market value is received for the use of public lands and its resources. As such, all forest products removed for commercial and public use require a permit unless it falls under reasonable use. At this time the only product that is removed from BLM-administered lands in the planning area without a permit is up to 25 pounds of pine nuts by individuals. Christmas trees, native seed, firewood, post, poles, and lumber require a permit issued under forms 5450-1, 5450-3, 5450-4, 5450-25, and 5450-26 (BLM 1992).

Historically, the CCD sold more special forest products (e.g., firewood, Christmas trees, and poles) than any other BLM district in Nevada. However, in recent years, the Ely District has been selling more special forest products than CCD as a by-product of fuels and rangeland restoration projects.

Electronic data on products sold is only available since 2007 (BLM 2012d). Biomass, pine nuts, posts, poles, and boughs sold during this 5-year period make up less than 1 percent of the total product sales. Firewood and Christmas trees make up 99 percent of the products sold on the CCD (**Table 3-25**, Permits Sold and Receipts Received from 2007 to 2013).

Christmas tree sales are showing a slight decline, whereas firewood permits were on the increase until 2011. Without specific data on regional economic trends influencing these sales, there can be no conclusions drawn about the cause of the declines/increases. However, the BLM has an active program to provide permits to the general public. The CCD has made recent attempts to increase the supply and availability of permits by selling permits in Fallon, Hawthorne, Middlegate, Reno, and Cold Springs, Nevada.

Table 3-25
Permits Sold and Receipts Received from 2007 to 2013

	2009	2010	2011	2012	2013	5-year Average
Christmas Tree Permits	1,882	1,607	1,583	1,547	1,639	1,652
Fire Wood Permits	933	1,051	743	1,468	1,258	1,573
Total Permits	2,815	2,658	2,326	3,015	2,897	3,225
Christmas Tree Receipts	$7,448	$6,428	$6,338	$6,188	$8,191	$6,919
Fire Wood Receipts	$14,844	$15,900	$13,184	$11,936	$10,064	$13,097
Total Receipts	$22,292	$22,328	$19,522	$18,124	$18,255	$20,015

In addition to the aforementioned public sales of forest products, commercial sales of firewood have been implemented in the past. To meet this demand, the BLM typically designates a commercial harvest area and sells the products by using a Forest Product Sale Contract. The designated harvest areas are determined by resource needs such as fuel hazard reduction, rangeland restoration, or salvage of dead and dying trees.

Another important forest product opportunity that has been implemented in the planning area is the use of stewardship contracts to harvest products and pay for restoration services. In these contracts, the contractor harvests trees designated by the BLM and the receipts from the sale of these products help pay for the cost of disposing of activity fuels, trail and road restoration, and site rehabilitation. Since 2007, there have been three stewardship contracts totaling 109 acres.

There are numerous state and national efforts to utilize woody biomass in meeting forest health objectives and renewable energy goals. For example, a Statewide Natural Resource Assessment was issued in 2010 by the Nevada Division of Forestry. This assessment identified BLM-administered lands in the planning area as priority landscapes for addressing catastrophic wildfire, forest health declines, and invasive weeds (National Department of Forestry 1990). This assessment identified the lack of product utilization opportunities (e.g., mills, biomass plants, and pellet plants) as a limiting factor in successful restoration of forest and woodland stands in the priority landscapes. Other than firewood permits, the BLM has only sold 13 green tons of biomass. The one biomass facility constructed in 2007 within the planning area has since closed (Atkins 2012).

Pinyon pine nuts are another important forest product available within the planning area. The Consolidated RMP allowed harvest throughout the planning area with no limitations on the amount that can be harvested overall. The Consolidated RMP limited noncommercial harvest to less than 25 pounds per individual. Harvest exceeding the 25-pound threshold requires a commercial permit at fair market value, subject to Field Manager approval. Commercial permits have not been issued since the early 1990s due to concerns expressed by Tribes about commercial collection within traditional pine nut hunting areas.

Key Features

A key factor of where forest and woodland product availability can be enhanced is consideration of the topographic and geographic locations of forest and woodland stands. Special emphasis should be placed on areas that meet one or more of the following criteria:

- Proximity to existing or emerging markets (i.e., distance for transport of products)
- Near rural and urban areas when implementing fuels reduction and forest health treatments
- Along road systems to minimize yarding distances
- On gentle slopes where mechanical treatments are more feasible (less than 30 percent).

As discussed in the **Section 3.2.4**, Vegetation, pinyon-juniper expansion has created the need to remove Phase I and Phase II woodlands around critical sage-brush habitats. In general, these lower density woodlands would not produce as much product opportunity as denser stands and may be better treated by leaving cut trees on site. Denser woodlands that are in need of thinning would be the best opportunity for product utilization.

The pine, mixed conifer, and fir stands in Alpine County contain larger diameter trees than any other areas of the district, and as such there are established markets for commercial-sized trees (greater than 8 inches in diameter) that could be thinned out to achieve forest health and resiliency to fire. Because there is product value, there is more potential for funding the restoration of these stands using various contract types (e.g., timber sale, service, and stewardship).

Due to the importance of riparian deciduous and aspen stands for landscape diversity, ecosystem functioning, and water availability for wildlife, livestock, and horses, the management of these stands should focus on retaining key species/structures, protecting stands from high-intensity wildfire, and limiting surface erosion/soil deposition. There are no established markets for utilizing by-products of treatments in this type, but there are opportunities to harvest cuttings or seed that can be transplanted or grown in nurseries for planting into similar areas to meet restoration goals. No significant forest product markets exist for mountain mahogany, but there are needs to collect seed for growing plants that can be used to plant areas after disturbance.

Resource Changes

Firewood, posts, poles, and biomass are all low-value products. The felling (cutting down individual trees), processing, and transportation costs associated with these products limit the feasibility of large-scale utilization.

The major emerging markets for forest products from the lands in the planning area include bioenergy, biofuels, biochar, and to a lesser extent, pellet plants. These markets are in the early stages of development in Nevada. In California, however, the market for bioenergy has already been developed in certain regions (e.g., Northeast California). In general, these California markets help pay for the processing and transport of biomass (wood chips).

Forest health and landscape diversity to build resiliency to climate change, fire, insects, and disease are issues that forest and woodland management objectives should specifically address. The need for vegetation treatments such as density reduction of overstocked stands, removing encroaching conifers from aspen stands, addressing disease or insect outbreaks, and restoring riparian tree communities, will continue to be a challenge into the future.

3.3.2 Livestock Grazing

For BLM-administered lands, the foremost authority that provides for grazing on public land is the Taylor Grazing Act. This act was passed on June 28, 1934, to protect public rangelands and their resources from degradation, to provide an orderly use to improve and develop public rangelands, and to stabilize the livestock industry. Following various homestead acts, the Taylor Grazing Act established a system for allotting grazing privileges. The FLPMA and the Public Rangeland Improvement Act of 1978 also provide authority for managing grazing on public rangelands. Grazing administration exclusive of Alaska is governed by 43 CFR subpart 4100.

The BLM grazing administration regulations were revised in 1995 to include Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration (43 CFR Part 4180). Through conformance and attainment of the 2007 RAC-approved Standards and Guidelines for Rangeland Health for the Sierra Front-Northwestern Great Basin Area (BLM 2007a) and outlined in Nevada Standards for Public Land Health and Guidelines for Livestock Grazing Management (**Appendix D**), the CCD assures that the Fundamentals of Rangeland Health are met. The standards and guidelines provide a clear statement of agency policy and direction for those who use public lands for livestock grazing and for those who are responsible for their management and accountable for their condition. If livestock grazing management practices are a significant factor to the nonattainment of a standard, changes in management must be implemented as soon as practicable, but no later than the start of the next grazing year after determining that existing grazing management needs to be modified, to ensure that progress is being made toward attainment of the standards. Standards include specific direction for five main categories of assessment, including soil health, riparian and wetlands, plant and animal habitat, special status species habitat, and water quality.

All applicants for grazing permits must also meet the qualifications for public land grazing privileges that are specified in the BLM's grazing regulations,

including the control over accepted base property, which is private property recognized by the BLM as having preference (or priority) for the use of grazing privileges.

An allotment is a designated area or management unit that allows grazing and can be made up of multiple pastures. The allowed use of grazing on each allotment is determined based on allocated Animal Unit Months (AUMs). An AUM is equal to the approximate amount of forage needed to sustain 1 cow, 5 sheep, or 5 goats for a month.

Current Conditions

Current Level and Locations of Use

Livestock grazing has had an important historical role in the planning area economy. Livestock grazing and ranching represent cultural traditions and continue to influence the way of life in rural Nevada. Details of the socioeconomic role of livestock grazing are included in **Section 3.5.4**, Social and Economic Conditions.

Currently 4,796,600 acres (99.9 percent) of BLM-administered public land within the planning area are available for livestock grazing, and 6,700 acres (0.1 percent) are not available for livestock use (see **Figure 2-21**, Alternative A: Livestock Grazing). Areas available for grazing include 4,652,300 acres within allotments and 144,300 acres of unallotted areas. The permitted level includes 151,196 active AUMs.

Within the planning area, there are approximately 93 allotments and 52 permittees. The allotments vary in size from 120 to 512,449 public land acres, with grazing allocations ranging from 29 to 11,410 AUMs in each allotment. In 2011, 82 percent of the permits were for cattle (55 permits), with sheep and horse grazing accounting for the remaining 18 percent (12 permits). Individual operators graze animals on 72 allotments, while the remaining 5 are common allotments grazed by two or more operators. **Table 3-26**, Livestock Grazing in the Planning Area—Allotment Details, shows grazing allotments, acreages, permitted AUMs, and grazing periods within the planning area. Approximately 17 allotments are available for grazing, but have no authorized grazing for a variety of reasons, including, but not limited to, grazing for wildlife, voluntary relinquishment, and issues with base property.

The CCD also has MOUs with other BLM districts that establish management of grazing allotments. New Pass, Porter Canyon, South Smith Creek, and Stewart Springs Allotments are within the Battle Mountain District but are administered by the Stillwater Field Office. Hole in the Wall, Rochester Common, and a portion of Boyer Ranch Allotments are within the Winnemucca District, with administration provided by the Stillwater Field Office.

Table 3-26
Livestock Grazing in the Planning Area—Allotment Details

Allotment Name	Allotment Number	Period Begin Date	Period End Date	BLM Acres	AUMs	Livestock Kind	Author-ization No.
Adriance Valley	3000	4/1	8/31	32,100	337	Cattle	2702889
Adriance Valley	3000	3/1	3/31	32,100	188	Cattle	2702889
Adriance Valley	3000	9/1	2/28	32,100	1,095	Cattle	2702889
Antelope Mountain	3001	4/15	10/31	55,800	6,358	Cattle	2703001
Artesia	3500	1/1	2/1	13,400	736	Cattle	2703614
Bagley Valley	3504	6/21	9/21	5,800	131	Sheep	2700069
Barney Riley	3506	6/1	9/30	2,200	219	Cattle	2703519
Basalt*	3505			22,200			
Bass Flat	3002	11/15	4/15	37,600	1,599	Cattle	2703219
Belleville	3511	11/1	4/15	164,300	300	Cattle	2702877
Big Canyon	3004	5/1	5/31	14,000	282	Cattle	2703008
Big Canyon	3004	6/1	12/31	14,000	2,650	Cattle	2703008
Big Canyon	3004	4/1	4/30	14,000	63	Cattle	2703008
Big Canyon	3004	5/1	11/30	14,000	56	Horse	2703008
Black Mountain	3507	10/1	2/28	14,300	900	Sheep	2703442
Boyer Ranch	3006	10/1	2/28	129,500	889	Cattle	2703018
Boyer Ranch	3006	5/1	6/30	129,500	359	Cattle	2703018
Boyer Ranch	3006	7/1	9/30	129,500	541	Cattle	2703018
Buckeye	3509	4/1	9/15	82,000	1,471	Cattle	2703508
Bucky O' Neill	3007	11/15	2/28	39,800	1,045	Cattle	2703503
Bucky O' Neill	3007	3/1	4/15	39,800	454	Cattle	2703503
Butler Mountain	3510	3/1	5/15	46,100	1,179	Sheep	2703443
Butler Mountain	3510	11/1	2/28	46,100	1,861	Sheep	2703443
Carson	3003	12/1	11/30	3,400	193	Cattle	2703029
Carson Hill*	3512			5,100			
Carson Plains/Gold H	3513	4/1	5/31	21,200	416	Sheep	2702960
Carson Plains/Gold H	3513	4/1	4/30	21,200	119	Sheep	2702960
Cedar Mountain	3515	11/1	3/31	60,200	X**	Cattle	2703554
Central	3516	10/2	10/31	300	29	Cattle	2703614
Churchill Butte	3008	10/1	3/31	10,700	934	Cattle	2703030
Churchill Canyon	3518	11/1	11/30	48,500	4	Cattle	2703525
Churchill Canyon	3518	11/1	5/15	48,500	1,070	Cattle	2703525
Clan Alpine	3009	12/1	2/28	358,500	1,028	Sheep	2703210
Clan Alpine	3009	3/1	3/15	358,500	172	Sheep	2703210
Clan Alpine	3009	5/1	3/31	358,500	10,210	Cattle	2703054
Cleaver Peak	3010	11/1	3/31	40,500	1,241	Cattle	2703011
Clifton*	3519			19,200			
Clifton Flat	3011	3/1	3/31	7,600	73	Cattle	2700019
Clifton Flat	3011	11/1	2/28	7,600	284	Cattle	2700019
Constantia North	3427	6/15	9/15	9,600	459	Cattle	2703170
Constantia South	3012	4/15	8/31	10,700	650	Cattle	2703024
Copper Kettle	3013	3/1	2/28	72,100	2,339	Cattle	2700176
Cow Canyon	3015	5/1	11/15	146,200	2,388	Cattle	2703012
Desert Mountain	3017	11/1	3/31	21,300	840	Cattle	2703031
Dixie Valley	3018	3/1	3/31	261,200	5	Cattle	2703376
Dixie Valley	3018	3/1	2/28	261,200	6,336	Cattle	2703376

Table 3-26
Livestock Grazing in the Planning Area—Allotment Details

Allotment Name	Allotment Number	Period Begin Date	Period End Date	BLM Acres	AUMs	Livestock Kind	Author-ization No.
Duck Hill	3530	11/16	12/15	5,300	14	Sheep	2702898
Duck Hill	3530	5/1	6/30	5,300	172	Sheep	2702898
East Walker	3531	12/1	2/28	30,100	1,471	Cattle	2703518
East Walker	3531	3/1	3/31	30,100	507	Cattle	2703518
Eastgate	3020	4/16	10/31	306,000	1,564	Cattle	2703603
Eastgate	3020	3/1	4/15	306,000	2,273	Cattle	2703603
Eastgate	3020	11/1	2/28	306,000	5,930	Cattle	2703603
Edwards Creek	3021	12/1	11/30	56,500	3,309	Cattle	2703029
Eldorado Canyon*	3532			9,700			
Flanigan	3022	4/16	6/15	54,500	1,352	Cattle	2703431
Flanigan	3022	12/1	4/15	54,500	1,297	Cattle	2703431
Flanigan	3022	6/16	9/30	54,500	2,367	Cattle	2703431
Fort Churchill	3023	4/1	7/31	14,600	541	Cattle	2703011
Frenchman Flat	3024	10/15	2/28	25,100	1,815	Cattle	2703058
Frenchman Flat	3024	3/1	3/15	25,100	199	Cattle	2703058
Garfield Flat	3535	10/25	2/28	220,400	2,579	Cattle	2703439
Garfield Flat	3535	3/1	4/15	220,400	934	Cattle	2703439
Gillis Mountain	3536	11/15	4/30	166,200	2,331	Cattle	2700175
Gray Hills	3539	6/5	8/4	98,800	570	Sheep	2703539
Gray Hills	3539	10/16	4/15	98,800	3,710	Sheep	2703539
Hackett Canyon	3541	3/15	6/30	6,800	146	Sheep	2700158
Hackett Canyon	3541	3/15	6/30	6,800	39	Cattle	2700158
Hallelujah Junction	3026	4/15	5/15	15,200	102	Cattle	2703040
Hallelujah Junction	3026	4/15	11/30	15,200	1,074	Cattle	2703040
Hangman*	3542			500			
Hardscrabble Canyon	3027	3/1	10/31	12,500	1,221	Cattle	2703060
Harvey Flat	3543			4,500	closed		
Hay Press	3544	6/16	9/30	1,200	176	Cattle	2703500
Hole in the Wall				82,500	2,675		
Horse Mt	3031	11/1	2/28	62,600	2,371	Cattle	2703037
Horse Mt	3031	3/1	3/31	62,600	613	Cattle	2703037
Horse Spring	3032	11/1	3/31	15,300	601	Cattle	2703004
Hudson Hills	3545	2/2	3/15	42,700	967	Cattle	2703614
Hudson Hills	3545	4/16	5/25	42,700	421	Sheep	2703444
Hudson Hills	3545	12/16	2/28	42,700	3,088	Sheep	2703444
Indian Creek*	3547			1,000			
Jumbo	3034	5/1	6/30	26,200	755	Sheep	2702898
Jumbo	3034	5/1	8/31	26,200	643	Cattle	2703006
Koch Ditch*	3552			500			
La Beau Flat	3035	10/1	2/28	121,300	2,323	Cattle	2703026
La Beau Flat	3035	3/1	4/15	121,300	708	Cattle	2703026
Lahontan	3036	3/1	3/31	55,800	236	Cattle	2702955
Lahontan	3036	11/1	2/28	55,800	915	Cattle	2702955
Lincoln Flat	3555	11/1	12/31	17,900	1,404	Cattle	2703614
Little Huntoon	3546	11/1	4/15	13,700	60	Cattle	2703167
Lucky Boy*	3557	6/1	10/5	19,500	835	Cattle	2703518

Table 3-26
Livestock Grazing in the Planning Area—Allotment Details

Allotment Name	Allotment Number	Period Begin Date	Period End Date	BLM Acres	AUMs	Livestock Kind	Author-ization No.
McBride Flat*	3560			5,100			
Mickey Pass*	3561			4,800			
Mill Canyon*	3563			19,200			
Millberry Canyon*	3562			1,300			
Mountain Well-Laplata	3039	3/1	2/28	133,200	8,004	Cattle	2703288
New Pass	UNK			10,000			
Nine Mile	3569	4/1	5/31	27,000	1,889	Cattle	2703518
Nine Mile	3569	10/1	11/30	27,000	401	Cattle	2703518
Olinghouse	3041	10/1	2/28	23,000	495	Cattle	2703055
Olinghouse	3041	11/1	5/15	23,000	97	Cattle	2703065
Olinghouse	3041	3/1	3/31	23,000	102	Cattle	2703055
Pah Rah	3042	9/1	12/31	4,500	180	Cattle	2703015
Paiute Canyon	3043	3/1	2/28	69,900	4,800	Cattle	2703199
Parker Butte	3572	11/21	5/20	30,700	1,666	Cattle	2703279
Perry Springs-Deadman	3573	12/1	2/28	59,200	1,784	Cattle	2703518
Perry Springs-Deadman	3573	3/1	3/31	59,200	615	Cattle	2703518
Phillips Well	3046	12/1	3/31	79,900	1,448	Cattle	2703003
Pilot-Table Mountain	3574	11/1	3/31	526,900	4,468	Cattle	2703557
Pilot-Table Mountain	3574	4/1	10/31	526,900	1,055	Cattle	2703557
Pilot-Table Mountain	3574	3/1	2/28	526,900	144	Horse	2703557
Pinenut	3576	11/1	11/30	19,000	126	Sheep	2703505
Pinenut	3576	7/1	8/31	19,000	261	Sheep	2703505
Pinenut	3576	11/1	11/30	19,000	447	Sheep	2703505
Pinenut	3576	6/1	6/30	19,000	316	Sheep	2703505
Plumas Station	3047	4/1	9/30	5,500	307	Cattle	2703051
Rawe Peak*	3580			6,900			
Red-Burbank*	3581			4,800			
Red Rock	3014	4/15	10/31	3,500	454	Cattle	2703001
River	3521	3/1	2/28	120	84	Cattle	2703518
Rock Springs	3049	11/1	4/15	24,900	535	Cattle	2703019
Salt Wells	3050	10/15	4/15	51,200	1,624	Cattle	2703042
Sand Canyon*	3583			4,000			
Spanish Springs/Mustang	3052	11/1	4/30	24,500	708	Cattle	2703386
Spanish Springs/Mustang	3052	3/1	2/28	24,500	1,068	Cattle	2703093
Spring Gulch	3587	3/1	8/15	52,500	2,749	Sheep	2703444
Spring Gulch	3587	4/1	5/25	52,500	362	Sheep	2703444
Spring Gulch	3587	12/16	2/28	52,500	814	Sheep	2703444
Stewart Springs	20026			15,783			
Stockton Flat*	3053			9,400			
Sunrise	3590	3/15	6/15	18,000	159	Cattle	2700068
Truckee-Virginia	3054	3/1	4/15	20,200	275	Cattle	2702958
Truckee-Virginia	3054	11/1	2/28	20,200	718	Cattle	2702958

Table 3-26
Livestock Grazing in the Planning Area—Allotment Details

Allotment Name	Allotment Number	Period Begin Date	Period End Date	BLM Acres	AUMs	Livestock Kind	Author-ization No.
Wade Valley	3593	4/16	6/15	630	60	Cattle	2703510
Wedekind*	3056			230			
Wheeler Flat	3598	11/1	2/28	10,900	693	Cattle	2703708
White Cloud	3057	10/1	2/28	77,200	571	Cattle	2703056
White Cloud	3057	4/1	9/30	77,200	1,197	Cattle	2703056
White Cloud	3057	3/1	3/31	77,200	117	Cattle	2703056
White Hills	3058	4/1	10/31	25,300	1,119	Cattle	2703385
White Hills	3058	4/1	10/31	25,300	84	Cattle	2703065
Wilson Canyon	3600	10/1	2/28	3,200	159	Sheep	2703444
Winnemucca Ranch	3059	6/10	10/15	44,500	944	Cattle	2703487
Winnemucca Ranch	3059	5/20	5/31	44,500	258	Cattle	2703487
Winnemucca Ranch	3059	6/10	10/15	44,500	1,548	Cattle	2703487
Winnemucca Ranch	3059	6/1	6/9	44,500	175	Cattle	2703487
Winnemucca Ranch	3059	6/1	10/31	44,500	305	Cattle	2703487
Winter's Ranch*				1,000			

*No active grazing permit
**GIS data not available

Grazing within the planning area occurs throughout the year, with much of the use concentrated during winter and spring months. Summer use allotments are commonly found at higher elevations, while winter use allotments are primarily located in lower elevations associated with an arid climate. The elevation and ecological site present on any given allotment plays a significant role in determining the grazing season and system most appropriate for that allotment. Higher-elevation sites are often more able to provide for summer grazing, while lower-elevation sites are often well suited for winter grazing.

All grazing permits include terms and conditions for management of the allotment. In some cases, AMPs have been developed that include details about the location, amount, and timing of permitted grazing use and that incorporate allotment-specific planned grazing systems.

Permittees paid to use 99,251 AUMs of livestock forage in 2011. Over the past 5 years, billed use has averaged 66,170 AUMs, or 42.2 percent of total permitted use. This difference can be attributed to a number of variables. Seasonal variations in precipitation and temperature result in more or less available forage from one year to the next. Drought conditions have required a reduction in grazing use in order to maintain good range conditions. Permittees may also opt for voluntary nonuse for a variety of reasons, resulting in AUMs that are available but not used. Some permitted AUMs are in suspension due to problems with the base property or other issues, and are not available for use. In addition, grazing is typically deferred in an area for 2 years following some land treatments and fire rehabilitation projects, accounting for lower use levels.

Most allotments in the planning area contain portions that are only slightly used or not used at all by livestock due to topography, distance from water, limitations caused by natural barriers, or for other reasons. Rangeland improvement projects, water developments in particular, have been implemented within the planning area to better distribute livestock grazing.

As part of implementing the 2007 RAC Standards and Guidelines for Rangeland Health for the Sierra Front-Northwestern Great Basin Area, BLM employees conducted land health assessments in 38 allotments containing 2,113,771 acres across the CCD between 2003 and 2012 during which they assessed the current condition of the vegetation and overall land health. The results of the assessments are discussed in **Section 3.2.3**, Water Resources, **Section 3.2.4**, Vegetation, and **Section 3.2.6**, Special Status Species.

Resource Changes

Anticipated demand for livestock grazing on BLM-administered lands is expected to continue into the future. There is interest in acquiring grazing permits as they become available. In addition, due to the proximity to expanding urban areas, some grazing areas may lose available acreage. This loss ensures the demand for the areas that will remain open to livestock grazing.

Due to the increased interaction of livestock grazing and other land uses as urban areas expand, education is becoming increasingly important so that land users can understand and respect each other's use. Allotments that have small, noncontiguous blocks of BLM-administered land intermixed with private land have often provided management problems in the past. In addition, problems are often associated with BLM grazing allotments adjacent to developed areas (urban-interface), including vandalism and theft on infrastructure such as troughs, pumps, and fence posts.

Vegetative communities and livestock interactions with the vegetative component are continually becoming better understood, and dynamics are also changing as the vegetation in the planning area undergoes transitions. These ongoing changes require that grazing systems remain responsive to the ecological capability and requirements.

It is also important to recognize and acknowledge the grazed areas that have improved in ecological integrity under the implementation of a well-suited management plan. Options for use of grazing for vegetation management include prescriptive grazing for invasive species reduction, which may be viable in some areas of the CCD.

3.3.3 Geology and Minerals (Locatable, Salable, and Leasable)

Current Conditions

Physiography

The majority of the planning area is within the Basin and Range physiographic province, with the western portion within the Sierra Nevada region of the Sierra-Cascade-Coast Mountain physiographic province (Lobeck 1975). A physiographic province is a broad-scale land subdivision, based on terrain texture, rock type, geologic structure, and geologic history. The two provinces are separated by the Walker Lane, a north-northwest trending depression approximately 30 to 40 miles wide and extending approximately 500 miles from south-central Oregon to the latitude of the Garlock Fault-Las Vegas area. The Walker Lane is composed of strike-slip faulting with diverse orientations of mountain ranges and faults, and contains Pyramid and Walker Lakes. The Walker Lane structural zone contains irregular topography and represents a transition zone between the northwest-moving Sierra Nevada Block to the west, and the east-west extending Basin and Range province to the east.

The mountain ranges within the planning area do not trend in a uniform direction. The Sierra Nevada Range that extends along the western margin of the CCD is an approximately 400-mile-long fault block structure that trends in a northwesterly direction. The range was uplifted during the Pliocene Epoch and is tilted up on the east with a steep east-facing scarp that rises above the Great Basin along the Sierra-Nevada Fault System. It has a long west-facing slope that descends gradually to the Great Valley in California. The Carson Range, which lies almost entirely within the planning area on National Forest System lands, and much of the eastern portion of the planning area trend in a general north-south orientation. Lake Tahoe, the largest freshwater lake in California, fills a graben between the Carson Range and the Sierra-Nevada Range, to an elevation of over 6,000 feet. The highest elevation in the Carson Range is Mount Rose, at 10,778 feet.

The Basin and Range physiographic province roughly corresponds in proximity to the Great Basin, which is a contiguous watershed region between the Sierra Nevada Mountains and the Rocky Mountains that has no natural outlet to the sea. Extensional tectonic forces in the Earth's crust within the Great Basin are responsible for moving Reno away from Salt Lake City at the rate of a couple inches a year. These same forces have resulted in the present-day landscape of alternating mountain ranges and deep, sediment-filled basins, which characterize the eastern portion of the planning area. Elevations within the planning area range from 3,796 feet at Pyramid Lake, 40 miles northeast of Reno, to 11,236 feet on Mount Grant in the Wassuk Range, approximately 8 miles northwest of Hawthorne. The principal drainages in the planning area, from north to south, are the Truckee River, which flows from Lake Tahoe to Pyramid Lake; the Carson River, which heads in the Sierras south of Lake Tahoe and drains

northward past Carson City and ultimately to the Carson Desert; and the West Walker and East Walker Rivers, which head in the Sierra and converge in Mason Valley south of Yerington in Lyon County. Both rivers ultimately discharge to Walker Lake in Mineral County. Despite being terminal lakes, both Pyramid Lake and Walker Lake are fresh enough to support trout and other fish, although their salinity has increased measurably in recent years, partly as a result of reduced inflows. The Carson Desert contains numerous saline lakes, alkali flats, and saline marshes.

During the late Pleistocene (0.01 to 1.8 Ma [megaannum; equal to 1 million years]), an extensive portion of the Great Basin was occupied by several large pluvial lake systems. One of the largest pluvial lakes in the Great Basin was ancient Lake Lahontan, which covered much of the planning area in northwestern Nevada and extended into northeastern California and southern Oregon. At its high stand about 15,000 years ago, the lake climbed to an elevation of 4,380 feet above mean sea level and covered a surface area of more than 8,500 square miles (USGS 2004). At that time, the maximum lake depth is estimated to have been about 900 feet at present-day Pyramid Lake in the north end of the planning area. During the late Pleistocene, Lake Lahontan was subjected to a series of deep-lake fluctuations, which caused wave action that carved shorelines, terraces, and caves into the surrounding topography.

Geologic Overview

The oldest rocks in the planning area are Precambrian (greater than 540 Ma) schists. Paleozoic (250 to 540 Ma) rocks are present in areas, but Mesozoic-age (65 to 250 Ma) rocks comprise the most extensive pre-Tertiary (greater than 65 Ma) outcrops exposed within the planning area. Mesozoic rocks in the planning area consist of Triassic (201 to 250 Ma) and Jurassic (145 to 201 Ma) metasedimentary and metavolcanic rocks and Jurassic and Cretaceous (65 to 145 Ma) granitic rocks. Over much of the planning area, these Mesozoic granitic and metamorphic rocks are overlain by an extensive sequence of Cenozoic (younger than 65 Ma) volcanic and interbedded sedimentary rocks. **Table 3-27**, Lithologic Units within the Planning Area, provides detailed descriptions of the geologic composition of each map unit in the planning area. All of these rocks have been exposed to extensive folding and faulting from the development of the Western Cordillera. The Western Cordillera extends from Alaska to Mexico and can be summarized as a series of mountain-building periods due to accreted terrains interlaced with periods of sedimentation. The Western Cordillera is most recently marked by a failed rift zone. The result of the formation and deformation of the Western Cordillera sequence is the Basin and Range ecoregion that is characteristic to Nevada.

Within the complex geology of the CCD, zones of crustal weakness are important targets for precious metal exploration because they represent major conduits for the hydrothermal activity associated with ore deposit formation.

Table 3-27
Lithologic Units within the Planning Area

Map Symbol	Age	Lithotypes and Formation Names	Lithology
Qa	Quaternary	Alluvial deposits; locally includes beach and sand dune deposits	Alluvium; mass wasting; dune sand; lake or marine deposit (nonglacial)
Qls	Quaternary	Landslide deposits	Landslide; colluvium; sedimentary rock
Qm	Quaternary	Moraine deposits	Glacial drift
Qp	Quaternary	Playa, marsh, and alluvial-flat deposits, locally eroded	Playa; alluvium
QTs	Pliocene to Quaternary	Sedimentary rocks; mostly lake deposits	Lake or marine deposit (nonglacial); sedimentary rock
QTa	Miocene to Quaternary	Intrusive rocks of mafic and intermediate composition	Andesite; rhyodacite; basalt; sedimentary rock
QTb	Miocene to Quaternary	Basalt flows; locally includes maar deposits	Basalt; andesite; trachybasalt; latite; andesite
QToa	Miocene to Quaternary	Older alluvial deposits	Alluvium; lake or marine deposit (nonglacial)
Tba	Early Miocene to Early Pliocene	Andesite and basalt flows; mostly ranging from about 17 to about 6 Ma; may locally include rocks younger than 6 Ma	Basalt; andesite; shoshonite
Tr3	Middle Miocene to Late Miocene	Rhyolitic flows and shallow intrusive rocks	Rhyolite; dacite; trachyte
Tr2	Early Oligocene to Early Miocene	Rhyolitic flows and shallow intrusive rocks	Rhyolite; dacite; trachyte
Tri	Eocene to Miocene	Rhyolitic intrusive rocks	Granitoid
Tmi	Eocene to Miocene	Intrusive rocks of mafic and intermediate composition	Diorite; monzodiorite; quartz diorite; quartz monzogabbro; tonalite; gabbros
Ta3	Late Miocene to Middle Miocene	Andesite and related rocks of intermediate composition; flows and breccias	Andesite; latite; trachyte; dacite
Ts3	Late Eocene to Late Miocene	Tuffaceous sedimentary rocks; locally includes minor amounts of tuff	Sandstone; limestone; siltstone; conglomerate; mudstone; dolostone (dolomite); felsic volcanic rock; intermediate volcanic rock; mafic volcanic rock; tuff
Tt3	Middle to late Miocene	Welded and nonwelded silicic ash-flow tuffs; locally includes thin units of air-fall tuff and sedimentary rock	Rhyolite
Trt	Middle to Late Miocene	Ash-flow tuffs, rhyolitic flows, and shallow intrusive rocks	Rhyolite

Table 3-27
Lithologic Units within the Planning Area

Map Symbol	Age	Lithotypes and Formation Names	Lithology
Ta2	Early Oligocene to Early Miocene	Andesite and related rocks of intermediate composition-flows and breccias	Andesite, trachyte, dacite
Tt2	Early Oligocene to Early Miocene	Welded and nonwelded silicic ash-flow tuffs; locally includes thin unites of air-fall tuff and sedimentary rock	Rhyolite; dacite; trachyte
Ts2	Early Oligocene to Early Miocene	Tuffaceous sedimentary rocks; locally includes minor amounts of tuff	Sandstone; siltstone; limestone; conglomerate; mudstone; debris flow; landslide; tuff
Tr1	Middle to Late Eocene	Rhyolitic flows and shallow intrusive rocks	Rhyolite
Tgr	Paleocene to Late Miocene	Granitic rocks; mostly quartz monzonite and granodiorite	Granodiorite; quartz monzonite; granite; monzonite
TJgr	Jurassic to Miocene	Granitic rocks, mostly quartz monzonite and granodiorite; inconclusively dated or not dated isotopically	Quartz monzonite; granodiorite; granite; peraluminous granite
Kgr	Cretaceous	This unit is grouped with NVMzgr in the literature; the two units are the same types of rocks but those included in this unit have their ages confirmed by radiometric dating. Granodiorite is dominant over quartz monzonite in northern Nevada while the opposite is true in southern Nevada	Quartz monzonite; granodiorite; granite; monzonite; quartz diorite; peraluminous granite
MZgr	Jurassic to Cretaceous	Granitic rocks, western Nevada (Mesozoic); mostly quartz monzonite and granodiorite; inconclusively dated or not dated isotopically	Granodiorite; quartz monzonite; granite; quartz diorite; gabbro
KJd	Jurassic to Cretaceous	This unit includes both nonquartz and quartz diorite; nonquartz diorite appears more widespread though both are almost equally represented.	Diorite; quartz diorite; gabbro; granite; granodiorite; serpentine
JPu	Permian to Jurassic	Volcanogenic sedentary rocks, tuff, andesite and felsic flows, and carbonate rocks; age uncertain; Mineral, Esmeralda, and northwest Nye Counties	Greenstone; sandstone; volcanic rocks (aphanitic); limestone; siltstone; conglomerate

Table 3-27
Lithologic Units within the Planning Area

Map Symbol	Age	Lithotypes and Formation Names	Lithology
Jgb	Lower to Middle Jurassic	Gabbroic Complex; gabbro, basalt, and synorogenic quartz sandstone	Gabbro, basalt, quartz sandstone
Jgr	Jurassic	Granitic rocks; mostly quartz monzonite and granodiorite	Quartz monzonite; granodiorite; granite; monzonite; quartz diorite; peraluminous granite
Jd	Early Jurassic to Middle Jurassic	Dunlap Formation; conglomerate, sandstone, greenstone, felsite, and tuff; locally contemporaneous with folding and thrusting; Mineral County and adjacent parts of Esmeralda and Nye Counties	Sandstone; conglomerate; volcanic rock (aphanitic); limestone; siltstone; shale
JTRsv	Late Triassic to Early Cretaceous	Shale, sandstone, volcanogenic clastic rocks, andesite, rhyolite, and locally thick carbonate units	Rhyolite; andesite; dacite; trachyte; argillite; shale; sandstone; siltstone; carbonate; basalt
Trc	Triassic	Limestone, minor amounts of dolomite, shale, and sandstone; locally thick conglomerate units; includes Tobin, Dixie Valley, Favret, Augusta Mountain, and Cane Spring formations and Star Peak Group	Limestone; dolostone (dolomite); shale; sandstone; conglomerate; siltstone; andesite; chert
JTRs	Late Triassic to Early Jurassic	Includes Auld Lang Syne Group, Nightingale sequence of Raspberry, Winnemucca, Grass Valley, Dun Glen, and Osobb formations	Claystone; shale; sandstone; siltstone; carbonate; volcanic rock (aphanitic); conglomerate
TRPvs	Permian to Triassic	Happy Creek volcanic series composition is mostly andesitic with some basalts; sedimentary rocks are associated with volcanic rocks of certain areas: the limestone and conglomerate with rocks of Washow County, sandstone, conglomerate and calcareous rocks with the Dunlap, and the greywacke and sandstone with the Happy Creek volcanic series	Andesite; basalt; dacite; greywacke; sandstone; shale; chert; limestone; conglomerate

Table 3-27
Lithologic Units within the Planning Area

Map Symbol	Age	Lithotypes and Formation Names	Lithology
TRk	Permian to Early Triassic	Koipato Group and related rocks; altered andesitic flows, rhyolitic tuffs and flows, and clastic rocks; includes rocks mapped by Siberling (1995) as Pablo formation and originally considered to be Permian in the Shoshone Mountains, Nye County; also includes Tallman Fanglomerate (Permian?) in Humboldt County	Rhyolite; andesite; clastic; basalt
TRPd	Early Permian to Early Triassic	Conglomerate, sandstone, shake, and dolomite of the Diablo Formation below and shale, sandstone, and conglomerate of Candelaria Formation above; Mineral, Esmeralda, and northwestern Nye Counties	Shale; siltstone; sandstone; dolostone (dolomite); limestone; conglomerate
PZsp	Late Devonian to Early Triassic	Serpentinite; Mineral, northwestern Nye, and eastern Humboldt Counties	Serpentinite
PMh	Mississippian to Permian	Havallah Sequence of Siberling and Roberts (1962); chert, argillite, shale, greenstone, and minor amounts of siltstone, sandstone, conglomerate, and limestone; includes Schoonober Formation of Fagan (1962) and Reservation Hill Formation in southwestern Humboldt County and Havallah and Pumpernickel Formations in Pershing, Lander, and parts of Humboldt Counties; also includes rocks originally considered a part of the Pablo and Excelsior Formations in northern Nye, northern Esmeralda, and southern Mineral Counties	Shale; metavolcanic rock; chert; siltstone; sandstone; conglomerate; limestone

Table 3-27
Lithologic Units within the Planning Area

Map Symbol	Age	Lithotypes and Formation Names	Lithology
OSv	Ordovician to Devonian	Siliceous and volcanic rocks; chert, shale, quartzite; greenstone; and minor amounts of limestone; includes units such as Valmy Formation of north-central Nevada and some rocks mapped as Palmetto Formation in northern part of Esmeralda County and adjacent parts of Mineral and Nye Counties; locally includes rocks of Silurian and Devonian Age	Chert; quartzite; shale; greenstone; limestone; conglomerate; siltstone; chemical sedimentary rock
CZs	Late Proterozoic to Early Cambrian	Phyllitic siltstone, quartzite, and lesser amounts of limestone and dolomite; includes Reed Dolomite; Deep Spring, Campito, Poleta, Harkless, and Saline Valley Formations; and Mule Spring Limestone	

The local and regional stresses occurring in these zones are also important in providing the mechanical ground preparation required for ore deposit emplacement. As a result, the Walker Lane structural zone is associated with the occurrence of several precious metals deposits that have been discovered within the planning area.

Geologic/Seismic Hazards

A fault is a break in earth in which one side moves in relation to the other. There are faults all over Nevada. When there are sudden and strong movements, earthquakes occur on the faults. Faults and the earthquakes occurring along them have aided the creation of the mountains and valleys in the Great Basin. Larger earthquakes typically result from greater displacement occurring along a fault. Often the earthquakes do not break the surface. However, the effects of a few large earthquake events have manifested themselves in some sizable surface ruptures. Evidence of two such large earthquakes occurring within the planning area may be observed: one at a gravel pit in Alpine County south of Genoa, California, and another more recent event that occurred in the 1950s along the east side of Fairview Peak and along Dixie Valley in Churchill County.

Nevada is the third most active state for earthquakes behind Alaska and California (Price 2004). A highly destructive earthquake of the 7.0 or greater magnitude generally occurs every 30 years in Nevada, but an earthquake of 6.0

to 7.0 magnitude occurs each decade. The planning area is situated within two active seismic regions, the Walker Lane structural zone to the west and the Central Nevada Seismic Belt to the east.

Surface ruptures with documented offsets of up to 2.5 feet occurred following a series of 1954 earthquakes (Caskey 2004). A right lateral component of movement measured along portions of the rupture zone was evidenced by stream channels being offset by as much as 3 feet. The rupture zone resulting from the 1954 earthquakes spans approximately 37 miles and extends from Highway 50 and into the Carson Sink.

Minerals Overview

The presence and distribution of minerals is largely controlled by the associated geology. Indicators for a particular commodity include known occurrences and deposits; mineral potential reports from various industries and government and academic agencies; and geologic factors derived from studies of controlling fault structures, hydrothermal alteration of rocks, geochemical surveys, satellite imagery, and geophysical surveys.

BLM-administered lands within the planning area are known to contain several areas of moderate to high mineral resource potential. The BLM Nevada State Office adjudicates mining claims and mineral leasing associated with the federal mineral estate within the planning area. The majority of the federal mineral estate within the planning area underlies federal lands managed by the BLM, Bureau of Reclamation, or Forest Service. There is a very limited amount of split estate in the planning area where private surface/federal minerals or federal surface/private minerals exist. These limited areas of split estate are primarily associated with town lot patents in the Virginia City and Gold Hill townsites of Storey County, Nevada, which were patented without the underlying mineral estate.

Mineral resources are discussed in three separate subsections: leasable minerals (solid and fluid), locatable minerals, and mineral materials or salable minerals. Within the planning area fluid leasable minerals include oil and gas, and geothermal resources. Non-fluid leasable minerals include phosphate, sodium, sulfur, and potash/potassium compounds. Locatable minerals are divided into metallic and industrial minerals. Metallic minerals found in the planning area include gold, copper, silver, molybdenum, tungsten, iron, and uranium. A number of industrial minerals are found in the planning area, including diatomaceous earth, fluorspar, gypsum, and barite. Salable minerals in the planning area consist of sand and gravel, aggregates, dimension stone, cinders, clay, pumice, and pumicite.

The BLM regulates surface-disturbing activities associated with exploration and development of mineral resources on BLM-administered land in the planning area. The BLM permits mineral exploration, development, and production on

BLM-administered lands through three programs: Salable Minerals, Leasable Minerals, and Locatable Minerals.

Salable minerals are commonly referred to as sand and gravel, aggregates, or mineral materials and consist of common varieties of sand, stone, gravel, cinders, clay, pumice, and pumicite, as described under the Materials Act of 1947 and the Surface Resources Act of 1955. The BLM manages salable mineral disposals on BLM-administered land under sale contracts or free use permits. At present there are more than 260 authorized salable minerals contracts/permits issued from BLM-administered land within the planning area.

Leasable minerals have been subdivided into two classes, solid and fluid. Solid leasables include phosphate, coal, oil shale, sodium, and nitrate. Fluid leasables include oil and gas and geothermal resources. The exclusive right to explore, develop, and/or produce leasable minerals from the planning area is secured through obtaining a lease from the BLM Nevada State Office. There are no active solid mineral leases within the planning area. There are less than 30 active oil and gas leases within the planning area, but only a limited amount of exploration and no production has occurred in association with any of these leases. The bulk of the fluid mineral exploration and development within the planning area is related to geothermal.

Locatable minerals contain all minerals not identified as a salable or leasable mineral as described under the General Mining Law (Mining Law) of 1872, as amended. Locatable minerals are obtained through the staking of mining claims and include both metallic and nonmetallic (industrial) minerals. Some metallic minerals found in the planning area include gold, copper, silver, molybdenum, tungsten, iron, and uranium, and some industrial minerals include diatomaceous earth, fluorspar, gypsum, and barite. It is very difficult to prepare a complete list of locatable minerals because the history of the law has resulted in a definition of minerals that includes economics, and by statute, certain minerals have been excluded from the operation of the General Mining Law.

The BLM regulates the development of locatable minerals through the permitting and approval of exploration and mining Plans of Operation. Small areas of disturbance (less than 5 acres each) associated with exploration may be acknowledged through a simple notification process. Presently within the planning area there are 24 authorized exploration or mining Plans of Operation (required for any mining of locatable minerals or locatable mineral exploration causing surface disturbance of more than 5 acres) and 37 authorized exploration Notices (required for locatable mineral exploration surface disturbance of less than 5 acres).

Salable Minerals

Salable mineral disposals from BLM-administered land are administered by the CCD under sale contracts or free use permits. The vast majority of these contracts/permits are associated with the sale or free use of small amounts of

material that are used for nearby road jobs or construction projects in rural areas. In contrast, there are three large contracts that have been issued to operators within the urban interfaces of Reno, Carson City, and Douglas County. These contracts have been issued on a competitive basis for the purchase and use of larger amounts of material from BLM-administered land within the planning area. They supply more material annually than all of the other contracts/permits combined. The general information associated with these larger Competitive Sale contracts in the planning area are listed in **Table 3-28**, Active Competitive Sale Contracts and Acres .

Table 3-28
Active Competitive Sale Contracts and Acres in the Planning Area

Operator	Serial Number	Date Issued	Term (Years)	Pit/Quarry Name	Location			Acres	Contracted Tons
					Township	Range	Section		
Cinderlite Rock	NVN 077480	9/30/2005	10	Goni Pit Expansion	16N	20E	28 & 29	28.2	2,000,000
Pyramid Materials Inc.	NVN 085679	7/12/2010	10	Tracy	20N	22N	22	520	1,500,000
Martin Marietta Materials	NVN 087320	9/27/2009	10	Spanish Springs	21N	20N	15	178.29	1,005,520

Leasable Minerals (excluding Geothermal)

Depositional environments that would be conducive to the formation of economic coal resources have not been identified within the planning area. As such, there are no coal mine operations within the planning area. No known economic deposits of phosphate, oil shale, sodium, or nitrate are known to occur within the planning area. Likewise, no economic supplies of oil and gas are known to exist within the planning area. New technology such as hydraulic fracturing may result in additional oil and gas exploration and eventual production within the planning area; however, there is no data available regarding the amount of oil and gas potential based on new technology.

Geothermal

As of February 2013, there were 148 geothermal leases totaling approximately 299,195 acres in the planning area (BLM 2013f). Power production is occurring in 7 areas totaling approximately 238 megawatts. These areas include Steamboat Hills near Reno; Dixie Valley; Wabuska near Yerington; and Soda Lake, Stillwater, Patua/Hazen area, and Salt Wells near Fallon. Additionally, Southern Gabbs Valley and Northern Edwards Creek Valley have active exploration projects with proposed future energy production. Additional areas that have active geothermal leases but minimal or no exploration include Rhodes Salt Marsh near Mina, Winnemucca Ranch, and the Honey Lake areas north of Reno. **Figure 3-12**, Geothermal Leasing, shows the current geothermal leases within the planning area as of January 18, 2012. Geothermal plants that produce electricity are also shown.

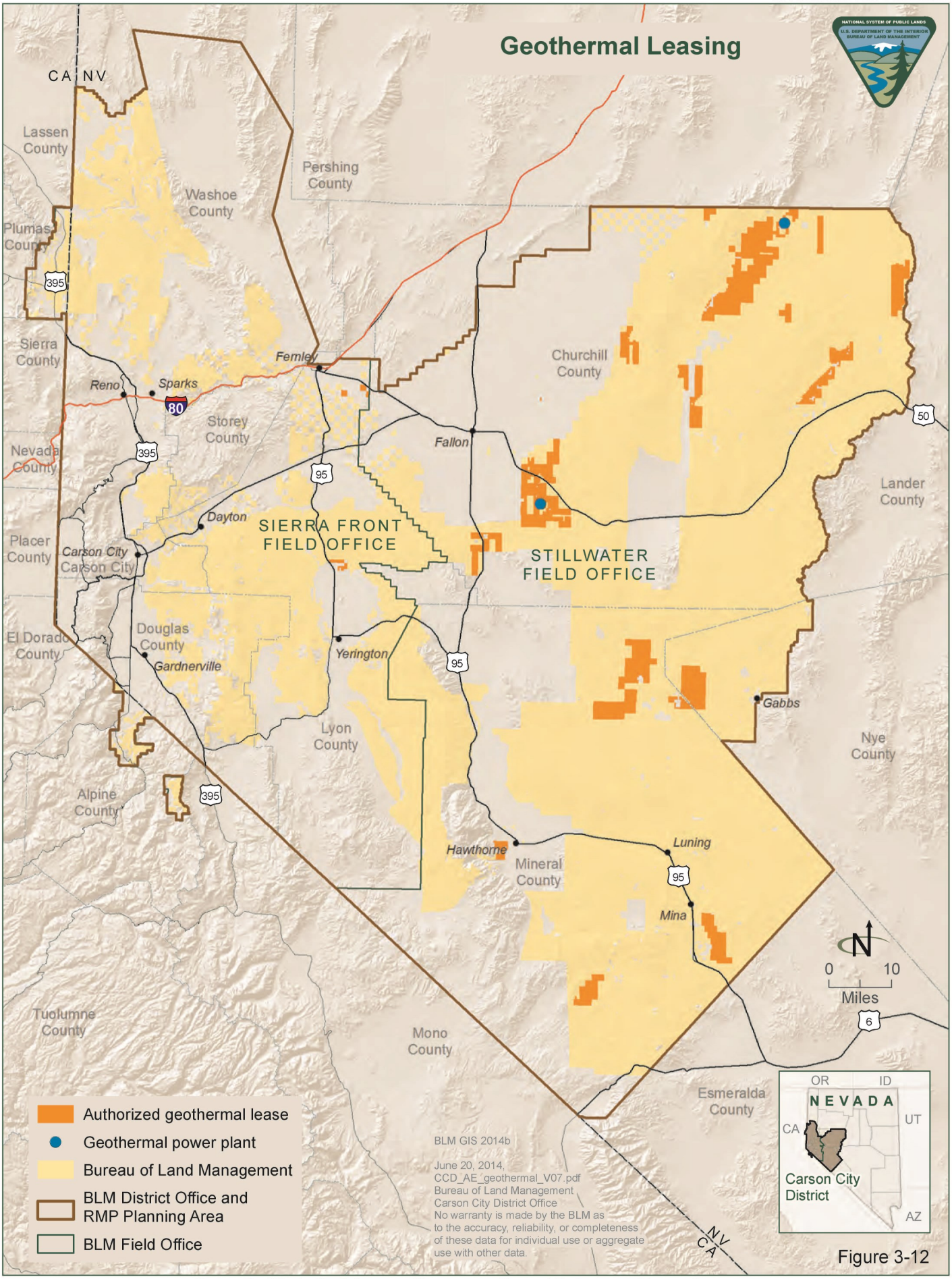
Geothermal Leasing
CA NV
Lassen County
Pershing County
Washoe County
Plumas County
Sierra County
Nevada County
Placer County
El Dorado County
Douglas County
Alpine County
Tuolumne County
Mono County
Lyon County
Storey County
Churchill County
Lander County
Nye County
Esmeralda County
Mineral County
Reno
Sparks
Fernley
Fallon
Dayton
Carson City
Gardnerville
Yerington
Hawthorne
Luning
Mina
Gabbs
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
80
395
95
50
6
0 10
Miles
Authorized geothermal lease
Geothermal power plant
Bureau of Land Management
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b
June 20, 2014,
CCD_AE_geothermal_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
OR
ID
NEVADA
UT
CA
AZ
Carson City District
NV
CA

Figure 3-12

As of January 18, 2012, a majority of high-interest geothermal areas have authorized leases. Substantial exploration and development projects are now in progress in at least five areas, including Dixie Valley, Edwards Creek Valley, Gabbs Valley, Soda Lake, and Salt Wells. Additionally, future projects have been proposed for the Stillwater area (i.e., west Stillwater Range).

Locatable Minerals

Metallic Minerals. Economic metaliferous deposits are generally considered to be locatable minerals under the Mining Law. Metallic mineral commodities produced in the planning area include gold, silver, copper, iron, tungsten, lead, and zinc. Nevada is a major producer of precious metals and is currently ranked as the third or fourth largest gold-producing region in the world in terms of its annual production (USGS 2012b). Nevada is the largest gold producing state in the US; gold production accounted for 72 percent, or 5.3 million ounces, of the gold produced domestically in 2010. Most of the gold in Nevada is produced from the major gold belts of north-central Nevada (USGS 2012b). Gold and silver deposits in the planning area are found primarily in association with Tertiary rocks.

Vein deposits or "Bonanza Veins" containing silver and gold were the most important type of deposits discovered and exploited in Nevada from the 1850s to the early 1900s, as they accounted for almost all the precious metal production. A small amount of gold was also produced from placer deposits located near some of the old high-grade mines. In the early 1970s, after the central role of gold in world currency systems ended, the dollar and gold floated, and in January 1980 the gold price briefly hit a record of $850 per ounce before retreating but ultimately averaging over $600 per ounce that year (COMEX 1980). Following this event, several mining companies began exploring extensively in the planning area near the old high-grade mines. The emphasis of exploration at that time had shifted to finding and developing large, low-grade deposits, which became economical using cyanide heap leach methods for gold and silver recovery. Exploitation of these large low-grade precious metal deposits peaked within the planning area in the mid-1990s, when the price of gold began to decline steadily. Many precious metal mines that were active at that time are listed in **Table 3-29**, Active Plans of Operation . Most of these operations are currently in closure. The Rawhide Mine in Mineral County is the only major producer of precious metals currently operating in the planning area. Reported production from the Rawhide Mine in 2010 was 20,159 ounces of gold and 342,382 ounces of silver (Nevada Division of Minerals 2011). Mesozoic contact metamorphic rocks were a major source of base metals, including copper, iron, and tungsten. Copper deposits, many with associated precious metals values, were exploited in several areas within the planning area during the first decades following 1900. One area near Yerington produced copper into the late 1920s, and again between the mid-1950s and the mid-1970s. At

Table 3-29
Active Plans of Operation in the planning area

Serial Number	Type	Commodity	Operator	Date Authorized	Operation	Township	Range	Section(s)	Acres
NVN 069118	Mining	Gold	Barrick Mining Co.	4/18/1985	Giroux Valley	8N	34E	1, 3 & 24	400
						8N	35E	6	
						9N	34E	36	
						9N	35E	31	
NVN 069126	Mining	Gold	Anaconda Minerals Co. Miramar Gold Corp.	5/12/1994	Six Mile Canyon	17N	21E	23,24,26	50
NVN 069128	Mining	Gold	Candelaria Mining Co.	5/29/1981	Candelaria	3N	35E	3,4	600
			Nerco Metals Inc.			4N	35E	25,26,27,32,33,34, 35	
NVN 069134	Milling	Cinders	Cinderlite Rock	4/8/1997	Goni Road	15N	20E	4	13.8
NVN 069458	Mining	Gold	Barrick Mining Co.	3/10/1992	Calvada Flat	8N	35E	4,5	260
						9N	35E	28,32,33	
NVN 069458	Mining	Gold	Pruett Ranches	6/22/1993	Buckskin Mine	13N	24E	18	18
NVN 069623	Mining	Diatomite	Eagle Picher Minerals Inc.	1/14/1997	Clark Mine	20N	23E	34	120
NVN 069690	Mining	Gold	Rawhide Mining LLLC	12/22/1994	Rawhide	13N	32E	4,5,6,7,8,9,10,16,1 7	1,000
NVN 069929	Mining	Salt	Huck Salt	11/19/2002	Fourmile Flat	16N	31E	7,11,12,13	16.5
NVN 069932	Mining	Limestone	Nevada Cement Co.	1/13/1992	Fernley	19N	25E	3,4	45
						20N	25E	32,33	
NVN 069957	Mining	Pearlite	Eagle Picher Minerals Inc.	3/15/1993	Russell Pass	16N	28E	24	24.5
						16N	29E	19	
NVN 069966	Mining	Diatomite	Celite Corp	8/19/1994	Fernley	19N	26E	8	103

Table 3-29
Active Plans of Operation in the planning area

Serial Number	Type	Commodity	Operator	Date Authorized	Operation	Township	Range	Section(s)	Acres
NVN 070004	Mining	Diatomite	Eagle Picher Minerals Inc.	11/6/1996	Hazen	19N	26E	6	6.64
NVN 070006	Mining	Gold	American Gold Capitol Inc.	2/15/1995	Talapoosa	18N 19N	24E 24E	2,3,10,11 34	120
NVN 070049	Mining	Gold	Custom Details, LLC	7/12/2002	Bovie Lew	13N	24E	8,17,20	10.35
NVN 070054	Mining	Clay	Nevada Bentonite Ent.	12/22/1997	Lahontan Mountains	18N 18N	30E 31E	24,25 18,19	65.5
NVN 075839	Mining	Pearlite	Noble Perlite	4/2/2002	Noble Perlite	16N	29E	15,16,21,22	2
NVN 083297	Mining	Gold	Geo-Nevada Inc.	1/20/2011	Spring Valley	16N	21E	20,21,28	27.2
NVN 084570	Expl.	Copper	Entree Gold Us Inc.	3/2/2010	Ann Mason	13N	24E	10,11,13,14,15,16, 23,24	14.22
NVN 084610	Expl.	Gold	Bonaventure NV Inc.	11/17/2009	New Pass	20N 21N	40E 40E	6 31	9.32
NVN 085212	Expl.	Copper	Quaterra Alaska Inc.	11/20/2009	Macarthur Pit	14N 14N	24E 25E	24,25,26 19,30	43.34
NVN 085589	Mining	Gold	TNT Ventures LLC	2/17/2010	Mason Pass	14N	25E	18,19	4.4
NVN 086260	Mining	Pozzolan	NV Cement Co.	3/1/2011	NV Cement Co.	20N	24E	28	25.9

present copper may be making a comeback, as several new operators are currently exploring for copper in the Yerington area. Iron and tungsten were also produced historically in the planning area. Several tungsten mines within the planning area generated small to moderate production during periods of high tungsten prices, mainly during World Wars I and II and during the Korean War. A limited amount of iron was also produced within the planning area during that time. Presently, iron and tungsten are less sought after in the planning area due to increasing global competition for those commodities in the base metals markets.

Non Metallic (Industrial) Minerals. Nonmetallic (industrial) minerals produced in the planning area include salt, borates, gypsum, fluorite, clay, zeolite, limestone, and diatomite (diatomaceous earth). In the planning area, nonmetallic minerals activity began in the early 1860s with the exploitation of salt deposits from playa lakes at various locations in Churchill and Mineral Counties. One operator in the planning area continues to produce salt from brines occurring on BLM-administered lands in the Four Mile Flat area of Churchill County. Borate minerals were later discovered at similar locations in Churchill and Mineral Counties, and small amounts of borax were produced. However, no borate production is occurring currently within the planning area. Gypsum has been produced from three localities within the planning area and continues to be produced from one deposit at Moundhouse in Lyon County. No gypsum is actively being produced from BLM-administered land within the planning area. Fluorite has been produced from two locations, but there has been no production of fluorspar since 1957. Small deposits of clay have been mined at several locations within the planning area, and some intermittent clay and zeolite mining still occurs in the Lahontan Valley of Churchill County, Nevada.

Industrial mineral resources such as limestone and diatomite are actively being mined on a large scale within the planning area. Diatomite is mined east of Reno near Clark Station in Storey County, and from deposits near Hazen, in Churchill County. Limestone is mined from one location in Lyon County southeast of Fernley, and is used to manufacture cement at the cement plant in Fernley. While industrial minerals such as diatomite, limestone, and gypsum are being mined within the planning area, no production data for these minerals has been reported (NDOM 2011).

Key Features

BLM-administered lands within the planning area are known to contain several areas of moderate to high mineral resource potential.

Salable mineral (e.g., sand and gravel and crushed stone) potential is widespread throughout the planning area. The greatest potential is in the alluvial-covered areas along the lower flanks of the mountain ranges within the planning area, as well on alluvium deposited by the Truckee, Walker, and Carson Rivers and their tributaries. Terrace sand and gravel deposits left along the various levels of

ancient Lake Lahontan are also exploited as a sand and gravel resource. Because of their low unit value, sand and gravel deposits are generally not transported long distances, however sand and gravel operations within the planning area will continue to be developed as close to the consuming areas as possible. The largest operations within the planning area are located close to the urban interface surrounding Reno and Carson City, while numerous smaller operations are situated adjacent to smaller towns and at regular intervals along transportation corridors.

The potential for leasable minerals (excluding geothermal) such as oil and gas, coal, uranium, and potash, are low throughout the planning area. The depositional environments that would be conducive to the formation of and economic quantities of these minerals have not been identified within the planning area. An indicator of leasable mineral potential is the number of active leases. The planning area has 29 active oil and gas leases containing 65,988 acres. The average size of these leases is 2,275 acres.

Locatable minerals, namely precious and base metals such as gold, silver, and copper, and industrial minerals such as diatomite and limestone have the highest potential for continued development within the planning area. An indicator of locatable mineral potential is the number of active mining claims. At present there are approximately 23,800 active claims within the planning area. With the average mining claim comprising approximately 20 acres, that equates to approximately 475,000 acres under claim.

Resource Changes

The US minerals sector in 2009 suffered decreased performance resulting from the widespread effects of the struggling domestic economy (USGS 2010). Although minerals contributed to the real gross domestic product at several levels, including mining, processing, and manufacturing of finished products, their contribution to the gross domestic product was less than that in 2008. Trends in other sectors of the domestic economy were reflected in mineral production and consumption rates.

Salable Minerals

Continued declines in the US housing market during 2009 were reflected in further reductions in the production and consumption of cement, clays, construction sand and gravel, crushed stone, and gypsum (commodities that are used almost exclusively in construction), and those associated with the related manufacture of goods, such as ceramic tile, paint, roofing, and wallboard, used by the housing industry. As the economy rebounds and the housing industry improves, so will the demand for industrial minerals in the planning area.

Leasable Minerals (excluding Geothermal)

Drilling for oil and gas resources within the planning area in Washoe, Lyon, Churchill, and Mineral Counties has been conducted on a limited basis since the early 1900s until present, and no economic oil or gas deposits have been found

to date. Hence, there is no reason to believe that oil and gas would constitute an economic resource within the planning area in the future. However, it is likely that oil and gas exploration will continue to occur on a limited basis as new potential targets are identified within the planning area.

Geothermal

Because there are numerous geothermal projects in the district, a large number of acres under lease, and continued interest in new projects, the CCD is expected to continue to have an active geothermal program.

In the short term, an increased emphasis on exploration and development is expected, as the known active geothermal fields are already under lease and being explored for resource potential. There is also potential for hybrid geothermal-solar plants; the Stillwater Geothermal Power Plant, which is on private land and included in a federal geothermal unit, incorporated a photovoltaic solar field in 2011, making it the first hybrid geothermal/solar power plant in the world. Hybridization includes utilization of both solar and geothermal energy facilities, as well as reheating of geothermal fluid through solar means to allow recirculation through a power plant's heat exchanger. The BLM has been approached about hybridization of an existing geothermal project on BLM-administered land, but no applications have been formally submitted.

Exploration activities usually utilize a ROW for road systems and development activities almost always necessitate a ROW for power lines. A continued, active geothermal program also forecasts an increase in road and power line ROW applications.

Locatable Minerals

Metallic Minerals

The metals industry is highly cyclical. The length and magnitude of industry cycles have varied over time and by product but generally reflect changes in macroeconomic conditions, levels of industry capacity, and availability of usable raw materials. Recent years have seen resurgence in precious and base metal exploration resulting from increasing commodities prices. The recent spike in the value of gold and silver, and copper, respectively, has resulted in a renewed interest in the exploration for these metals within the planning area. Precious metals exploration appears to be directed at redefining existing resources associated with or surrounding areas of known potential. Base metal exploration within the planning area has focused on copper resources in the area of the former Anaconda Copper Mine in Yerington, Nevada. Based on the cyclical nature of the metals industry, the potential for future development of gold and silver, or copper, within the planning area is likely to occur, contingent on an increase in demand and increasing or stable prices of those resources in the market place.

Non Metallic (Industrial) Minerals

The economic forecast for nonmetallic (industrial) minerals would be similar to that described above for salable minerals with the exception of diatomaceous earth, which is used for industrial filter applications. Such uses have been insulated from the recent downturn in the construction industry. Therefore, the production of diatomaceous earth from active operations within the planning area is anticipated to continue.

3.3.4 Recreation and Visitor Services

Federal lands within the planning area provide a broad spectrum of outdoor opportunities that afford visitors the freedom of recreational choice with minimal regulatory constraints. As a national provider of recreational opportunities, the BLM focuses on its primary niche: providing resource-based recreation and tourism opportunities. Visitor's freedom to pursue unstructured recreational opportunities is promoted, as long as they accept the responsibility to use BLM-administered lands wisely and to respect other land users. Responsible use is encouraged by the BLM and its partners through land use ethics programs such as Tread Lightly and Leave No Trace. Recreational opportunities are offered to the public on all BLM-administered lands within the planning area where legal access exists.

The BLM provides opportunities for outdoor recreation and nature-based tourism using the concept of multiple use and sustained yield management. It is one of the four primary missions of the Department of the Interior. The public values natural landscapes, the freedom to choose a particular activity to participate in, the opportunity to test personal skills in a sport or activity, time spent with family and friends, and the opportunity for discovery. Recreational activities occurring on BLM-administered lands are multifaceted and are generally considered to be non-consumptive.

Whether the visitor chooses to recreate in designated fee sites or spend time in remote areas where fees or registration is not required, the BLM relies heavily on public land users to protect the land, water, and structures so that the next person can also have a quality recreational experience. Most recreational use in the planning area occurs within dispersed, nonfee areas.

Recreation Setting Characteristics

The Recreation Setting Characteristics is a modified version of the Recreation Opportunity Spectrum (ROS) process that identifies recreation opportunities based on the area's setting and activities. BLM-administered lands in the planning area contain the full spectrum of ROS classes: Primitive, Back Country, Middle Country, Front Country, Rural, and Urban. Natural Resource Recreational Settings are indicators of the type and quality of recreational experience available in a given area.

Limits of Acceptable Change

A widely used management-monitoring technique in recreation is Limits of Acceptable Change. Limits of Acceptable Change utilizes indicators with prescriptive standards based on the recreation objectives to define acceptable limits. If the standards (acceptable limits) are exceeded the managing partners then make pre-determined management changes that will bring concerns such as: (1) visitor impacts on natural/cultural resources, (2) the physical, social and administrative natural resource recreation setting prescriptions or (3) the visitor's attainment of recreation outcomes back within acceptable standards.

Visitor Use/Demographics

Tracking visitor use and regional demographics is necessary for managing recreational use, identifying trends, projecting and prioritizing future recreation management, and identifying natural resource recreation settings, carrying capacities, and Limits of Acceptable Change. Visitor use and demographic data is collected by means of traffic counters, visitor registrations, recreation use permits, visitor surveys, and from outside sources such as the Nevada Department of Transportation, Nevada Department of Tourism, Nevada state demographer's office, and the Nevada and California Statewide Comprehensive Outdoor Recreation Plans. Annual visitor use data on BLM-administered lands is tracked through the Recreation Management Information System. Visitor and visitor use days in the planning area from 2006 through 2011 can be found in **Table 3-30**, Visitor and Visitor Use Days (2006-2013) in the Planning Area.

Table 3-30
Visitor and Visitor Use Days (2006-2013) in the Planning Area

Year	Visits	Visitor Days
2006	972,726	929,440
2007	1,010,192	948,757
2008	1,040,303	912,562
2009	972,392	863,017
2010	945,623	831,742
2011	1,007,842	840,653
2012	1,129,991	927,308
2013	1,063,080	876,310

Current Condition

Recreation Management Areas

Currently, there are only two Recreation Management Areas, Walker Lake and Indian Creek Special Recreation Management Areas (SRMAs), that have been designated through previous land use planning actions within the planning area. The BLM also manages developed and undeveloped recreational areas consisting of trailheads, campgrounds, interpretive sites, and fishing/floating access sites. Some of the trailheads are day-use only, while others allow camping. Several of

the trailheads provide access to both BLM-administered land and National Forest System land (trails are discussed further in **Section 3.3.5**, Comprehensive Travel and Transportation Management). There are two Recreation Use Permit fee campgrounds and one Individual Special Recreation Permit (SRP) site. The recreation sites provide excellent opportunities for activities such as camping, hiking, backpacking, horseback riding, wildlife viewing, sightseeing, OHV touring, fishing, hunting, and river floating.

The following are recognized as important recreation areas by activity-based planning efforts, significant user demand, and/or through the Federal Register process. These areas are being evaluated for potential designation as SRMAs or Extensive Recreation Management Areas (ERMAs) during the planning process.

Ambrose Natural Area

The Ambrose Carson River Natural Area is located along the east side of Carson City along the banks of the Carson River. Facilities at this passive recreation site consist of a parking area and trail system that is jointly managed by the BLM and Carson City. It is anticipated that this site will be transferred to Carson City in accordance with the 2009 Omnibus Public Lands Management Act.

Faye-Luther Trail

The Faye-Luther Trail provides the only public trail access from the Carson Valley into the higher elevations of the Carson Range of the Sierra Nevada Mountains. The trail system is a joint effort of the Humboldt-Toiyabe National Forest-Carson Ranger District, the Sierra Front Field Office, the American Land Conservancy, and the Carson Valley Trails Association. The 5-mile-long Faye-Luther Trail provides majestic views of Job's Peak to the northwest and the Pine Nut Mountains to the east of Carson Valley. The nonmotorized trail is open for dog-walking, hiking, horseback riding, and mountain biking during the dry season and is popular for cross-country skiing and snowshoeing in winter. The area is closed to overnight camping.

Fort Churchill to Wellington Back Country Byway

This byway is a 6- mile gravel surface road that provides a scenic drive through the foothills of the Pine Nut Mountains. The Back Country Byway also travels along the Carson River from Fort Churchill. Additional discussion can be found in **Section 3.4.2**, Back Country Byways. Sections of the road are maintained infrequently and are prone to washouts. High-clearance four-wheel-drive vehicles are recommended for travel on this route.

Hungry Valley Recreation Area

Located north of Reno, the approximately 27,400-acre Hungry Valley Recreation Area is a popular OHV riding area for OHVs, motorcycles, and rock crawlers. The area attracts both community- and destination-based visitors from the Reno area and central California. Recreation opportunities are varied, but

the dominant activities include camping, general use target shooting, and intensive OHV and equestrian use.

Jumbo Grade/Virginia City

Located east of Washoe Lake, in the Virginia City National Historic Landmark, the Jumbo Grade and Virginia City areas attract both community- and destination-based recreation users. Recreation opportunities are varied, but the dominant activities include OHV use, hiking, horseback riding, and intensive OHV play near the Jumbo Grade OHV trailhead.

Lemmon Valley Motocross Area

Located north of Reno, the 192-acre Stead Motocross site has been set aside specifically for Moto-cross use. There is no legal public access to this area, rather the public has to cross Stead Airport Authority lands. The difficulty in adequately managing the ongoing use and maintenance of this type of recreation site may pose potential public health and safety and BLM liability issues. Typically the course structures, constructed and maintained by the public with heavy equipment, include earthen jumps or ramps and banked turns designed with no known industry standards. Moreover, there are no partners or user groups under agreement with the BLM to manage or maintain the site. This site is designated open to OHV use.

Pah Rah Hills

Located east of Sparks, the Pah Rah Hills area is a popular mountain bike riding area. The area attracts primarily community-based visitors; however, it also has a high potential to attract destination-based mountain bike use in the future if the activity is managed and promoted. Recreation opportunities include mountain biking, hiking, general use target shooting, and hunting.

Petersen Mountain Natural Area

The Petersen Mountain Natural Area is a 9,963-acre tract of high desert located along the California and Nevada state line north of Reno and southwest of Pyramid Lake. The area is managed for semi-primitive nonmotorized recreation, including hiking, biking, and equestrian use. There is a trailhead and parking /staging lot on the east side of the area. In September of 1988, 5,120 acres of the area was closed to motorized use (Federal Register Notice Vol. 53, No. 179). The Consolidated RMP recommended that this site be designated as the Petersen Ridge "Recreation Lands"; however, at the time of designation, it was determined that recreation lands was no longer a valid designation so the name was changed to the Petersen Mountain Natural Area through Federal Register Notice Vol. 49, No. 213 in November 1984.

Prison Hill Recreation Area

Visible throughout Carson City, the approximately 2,450-acre Prison Hill Recreation Area has been set aside and dedicated as open space for the community of Carson City and the general public. This popular open space is available for hiking, mountain biking, horseback riding, OHV use (south end

only), technical rock climbing, nature photography, and experiencing views of the Carson Range and Pine Nut Mountains. Prison Hill is on the southeast side of town and has three main community parking areas. This area will be transferred to Carson City. (See note under Silver Saddle Ranch paragraph, below.)

Sand Mountain Recreation Area

Sand Mountain Recreation Area is 25 miles east of Fallon along Highway 50 in Churchill County. The recreation area consists of approximately 4,700 acres of BLM-administered lands managed primarily for off-highway vehicle use and sensitive species habitat. The area provides a mix of open riding on the 600-foot-high by 1.5-mile by 2-mile wide dune complex and approximately 17 miles of designated trails. Camping is allowed in a primitive camp area for RV and tents with services limited to a fee booth, six vault toilets, and refuse containers. Approximately 1,280 acres are designated as open to OHV travel, 1,500 areas are designated as limited to designated trails, and 1,918 acres are closed to OHV travel. Due to the scarce resource of open sand dunes in the west, Sand Mountain draws recreational users from adjacent states, including California, Oregon, Idaho, and Utah. The area is managed as a recreation fee site area and was designated as a recreation area in March of 1986 through a Federal Register Notice.

Sand Springs Desert Study Area

The Sand Springs Desert Study Area is a fenced 40-acre tract located just south of the Sand Mountain Recreation Area that preserves a remnant of the land the way it was during the days of the Pony Express. The area is closed to OHV travel and open to hiking. There is a 0.5-mile self-guided interpretive trail that winds through the study area. Along this trail visitors will find more than a dozen signs that provide information on the wildlife, plants, history, and geology of the Sand Mountain area. The Sand Springs Pony Express Station, one of the few remaining rock-walled structures, is located within the study area. The station was buried under sand for close to 100 years prior to being excavated by University of Nevada, Reno in 1977.

No additional natural areas have been identified or proposed for the planning area. Since the existing natural area designations are not Congressional designations, they are being reviewed during the RMP process for redesignation as ACECs or SRMAs to ensure the protection of values that have been identified.

Silver Saddle Ranch

Located in the southeastern part of Carson City off Carson River Road, the ranch encompasses 702 acres that run along the east and west banks of the Carson River. The ranch connects BLM-administered lands on Prison Hill and the Pine Nut Mountains. Once proposed as a location for residential development, the ranch is considered a key piece of property by Carson City

residents and the BLM for maintaining open space and recreational and educational opportunities while preserving part of the natural Carson River environment. It is a popular place to hike, bird-watch, and experience a rural setting that is fast disappearing in much of western Nevada.

Congress directed transfer of the Silver Saddle Ranch and federal lands along the Carson River, including the existing Prison Hill Recreation Area (approximately 3,604 acres), subject to the reservation of a conservation easement, to Carson City under the authority of the Omnibus Public Lands Management Act of 2009 (Public Law 111-11, Section 2601). Once the transfer occurs, Carson City will use the property for undeveloped open space, passive recreation, customary agricultural practices, and wildlife protection. Carson City will construct new and maintain existing trails and trailhead facilities, conduct fuels reduction projects, maintain or reconstruct any improvements on the property that were in existence on March 31, 2009, and allow the use of motorized vehicles on designated roads, trails, and areas in the south end of Prison Hill.

Wilson Canyon

Wilson Canyon is located along the banks of the West Fork of the Walker River in Lyon County 20 miles south of Yerington along Highway 208. The area supports a strong OHV contingency and attracts both community- and destination-based visitors. Recreation opportunities include camping, fishing, equestrian use, hiking, picnicking, and riding OHVs in the surrounding hills.

Special Recreation Management Areas

During the land use planning process, BLM-administered lands that are identified as providing unique or outstanding recreational opportunities or potential opportunities, can be set aside as SRMAs. SRMAs are administrative units that traditionally have higher recreation use, require extra recreation investment, or need more intensive recreation management. Recreation Area Management Plans are usually developed specifically for a SRMA to protect and enhance a targeted set of recreational activities, experiences, benefits, and desired recreation setting characteristics. Since recreation is the management focus and highest-use value over other resource uses, management of these areas provides for the long-term protection of the recreation resource.

Walker Lake and Indian Creek/East Fork Carson River are the only two sites within the planning area that are currently designated as SRMAs, through past land use planning process, due to the unique and identified recreational niche found in these areas. Refer to **Figure 2-53**, Alternative A: Special Recreation Management Areas, for the location and boundaries of these two sites.

Indian Creek /East Fork of the Carson River SRMA

The Indian Creek recreation area consists of more than 7,000 acres of lands that are managed for public outdoor recreational use. Access is provided by Airport Road, off State Highway 89 midway between Woodfords and

Markleeville, California. The 160-acre 30-unit campground is located on the west shore of Indian Creek Reservoir. The East Fork of the Carson River supports white water rafting and fishing. Additional discussion can be found in **Section 3.4.4**, Wild and Scenic Rivers. Recreational opportunities include camping, picnicking, hiking, hunting, fishing, white water rafting, sailing, mountain biking, nature study, rock collecting, sightseeing, and photography. While geographically located in California, the area is managed as a recreation fee area by the Sierra Front Field Office.

Walker Lake SRMA

The Walker Lake recreation area encompasses 87,700 acres along the east and west shorelines of Walker Lake near the town of Hawthorne in Mineral County. On the western shoreline along Highway 95, the recreation area consists of Sportsman's Beach Campground, which includes 31 individual camp sites, and the dispersed camping areas of The Cove, Tamarack, and Twenty Mile Beach. There are no developments along the eastern shoreline. Walker Lake offers a variety of recreational opportunities, including swimming, picnicking, boating, bird watching, and water-skiing.

Extensive Recreation Management Areas (ERMA)

In addition to the SRMAs, the CCD is also responsible for designating and managing recreation opportunities in areas designated as ERMAs. ERMAs are administrative units that require specific management considerations in order to sustain the principle recreation activities and associated qualities and conditions, commensurate with the management of other resources and resource uses. Recreational uses do occur and some management activities are required within these areas, but they are not identified as the primary resource or resource use, and management actions or land use decisions may consider other resource values over the recreation values or opportunities. Addressing recreation setting characteristics, visitor health and safety, resource protection, and use and user conflicts is the primary objectives established for management of these areas. There are no ERMAs currently designated in the planning area.

BLM-administered lands not designated as Recreation Management Areas

Lands not designated as RMAs are managed to meet the basic recreation and visitor services needs that consist mainly of recreational activities of an undeveloped and dispersed nature. By definition, dispersed recreation is made up of small occurrences distributed over large areas. Impacts such as minor disturbances to soil and vegetation are negligible, and the environment tends to recovery quickly. It is the general policy of the BLM that undeveloped federal lands under its administration are available to the public for dispersed camping and general recreation, with the following provisions:

- Camping is limited to 14 days within a 25-mile radius in a 28-day period.
- Pack out what you pack in.

- Avoid camping within 200 feet of any water source.
- Do not leave campfires unattended.

Unless otherwise designated, most of the planning area is open for dispersed recreation use, which can be popular in many areas. Long-term cumulative impacts may occur in association with dispersed recreational activities and need to be monitored. These activities are normally, but not exclusively, linked to heavily used popular areas and can include soil compaction and erosion, noxious weed dispersal, the creation of unauthorized two-track, single-track and nonmotorized trails as well as the purposeful vandalism of natural and cultural resources. Over time, recreational activities can adversely affect sensitive soils, wildlife habitat, riparian areas and important cultural and historical sites.

Special Recreation Permits

The BLM administers over 50 commercial and competitive permits. These single- and multiple-event permits generally include OHV races and tours, horse endurance rides, dog trials, vendors, back country touring, and outfitters and guides. Counties generally support and encourage these events as they provide economic benefits to the surrounding communities. Demand for permits is high and continues to increase along with the popularity of recreational use of BLM-administered lands.

Individual Special Recreation Permits

Individual SRPs are only issued at Sand Mountain Recreation Area for camping and use of the recreation area, primarily by OHV enthusiasts. Users have the option of purchasing a 7-day permit for $40 or an annual permit for $90 (2013 figures) for use of the site. Revenue collected is returned to the site to provide for facility maintenance, staffing, law enforcement, and site improvements. An estimated 50-70,000 users visit the recreation site annually, with roughly 60 percent of the users travelling from California. **Table 3-31**, Recreational Permit Data for Sand Mountain Recreation Area, presents permit sales and revenues for Sand Mountain Recreation Area from 2006 through 2013.

Table 3-31
Recreational Permit Data for Sand Mountain Recreation Area

FY	Permits			Revenue		
	Annual	Weekly	Total	Annual	Weekly	Total
2006	1,792	4,895	6,687	$161,286	$195,781.00	$357,067
2007	1,609	4,798	6,408	$144,826	$ 91,937.00	$336,763
2008	1,685	3,941	5,626	$151,636	$157,629.00	$309,265
2009	1,605	4,373	5,977	$144,408	$174,918.00	$319,326
2010	1,255	3,343	4,599	$112,979	$133,732.00	$246,711
2011	923	2,604	3,527	$82,090	$103,640	$185,730
2012	782	2,209	2,991	$69,074	$88,039	$157,834
2013	584	2,141	2,725	$57,590	$95,858	$153,448

Recreational Use Permits

Recreational Use Permits are issued to individuals or groups for short-term recreational use at the Indian Creek Campground near Markleeville, California, and Sportsman's Beach Campground at Walker Lake. Permits are issued at Indian Creek Campground through a camp host, while Sportsman's Beach is self-pay. **Table 3-32**, Recreational Use Permit Data for Sportsman's Beach and Indian Creek Campgrounds, reflects the fee collection at Sportsman's Beach and Indian Creek from 2006 through 2013.

Table 3-32
Recreational Use Permit Data for Sportsman's Beach and Indian Creek Campgrounds

FY	Revenue	Permits
Sportsman's Beach		
2006	$ 2,979	490
2007	$ 3,554	590
2008	$ 3,438	573
2009	$ 3,253	523
2010	$ 2,653	397
2011	$ 2,344	350
2012	$1,844	285
2013	$2,555	431
Indian Creek		
2006	$ 44,727	1,195
2007	$ 44,434	1,166
2008	$ 29,553	916
2009	$ 34,294	1,063
2010	$ 14,013	448[1]
2011	$ 33,066	1,121
2012	$ 23,943	773[2]
2013	$ 28,177	987[3]

1 Campground closed 2 months during camping season for pavement resurfacing.
2 Collection procedures were modified during 2012.
3 Decreased use associated with the early October campground closure (about 2 weeks) due to furlough and the Rim Fire ("Yosemite") smoke during the summer which deterred campers.

Vending

Issuance of vending SRPs within the planning area has mostly been limited to the Sand Mountain Recreation Area. Vending associated with specific SRP events is generally captured under the event permit. Vendors sell OHV-related items, parts, accessories and clothing, and food items, or provide welding and repair services. Vendor permits issued at Sand Mountain are for a 5-year period with the requirement for annual validation and quarterly post use reporting. On average, there are six to eight permits issued annually.

Outfitter and Guide

Outfitter and guide permits are issued at the district level for a period of up to 10 years with the requirement for annual validation. Permits are issued to guides by the CCD Office closest to their residence or the office they hunt in the most. While one district has the lead for the permit, the other districts in the state provide authorization for the use of public lands in their area. The BLM manages approximately 10 guide permits annually.

Letters of Agreement

Letters of Agreement can be used as an alternative to issuing SRPs when the proposed recreation use has no foreseeable impact on resources, and stipulations are not required. Agreements have been used to allow such activities as trail ride reenactments and educational events.

Key Features

Popular recreation sites within the planning area include the developed Indian Creek Campground and Walker Lake Special Recreation Management Areas, Sand Mountain OHV Recreation Area, Silver Saddle Ranch, and Grimes Point Archaeological Area, undeveloped or dispersed recreation areas, and Recreation and Public Purpose sites that are managed by local government agencies or organizations. SRPs for motorized and nonmotorized recreational uses are an important component of the recreation program in the planning area and include OHV races, nonspeed OHV events such as poker runs, trail rides, and back country touring, and nonmotorized events such as dog trials, mountain bike events, equestrian events, vending, reenactments, and weddings.

Increased activities observed at the local level include driving for pleasure, OHV use, fishing, hunting, camping, wildlife viewing, and mountain biking. **Table 3-33**, Popular Recreational Activities within the Planning Area, illustrates popular activities in the planning area for 2009 through 2011 obtained from the BLM Recreation Management Information System database.

Commercial, Competitive, and Organized Groups for motorized types of Recreation

The use of roads and trails by motorized groups to conduct events has been a primary component of travel management within the planning area. When OHV use is specifically authorized (i.e., an SRP) it is no longer defined as an OHV. Commercial, competitive, and organized motorized groups utilize roads and trails in both the urban and rural areas for local and regional recreational events. Motorized uses include events such as the annual Vegas to Reno Off Road Race that has been authorized for the past 18 years. This event uses roughly 225 miles of county and BLM-maintained roads, sand washes, and primitive roads for their designated point-to-point course, which starts in the town of Beatty and ends in Dayton 534 miles later. Other motorized events such as the Valley Off-Road Racing Association Hawthorne, Yerington, and Fallon races use segments of roads and primitive roads to hold their events on

Table 3-33
Popular Recreational Activities within the Planning Area

Activity	Visitor Days		
	2009	2010	2011
Motorized Boating	682	683	779
Non-Motorized Boating	2,313	2,038	2,348
Camping/Picnicking	241,347	231,537	251,541
Pleasure Driving	22,767	22,199	23,123
Fishing	14,179	12,683	13,746
Hunting	61,094	58,912	64,366
Interpretation and Education	16,384	16,484	17,344
Non-Motorized travel	126,489	122,551	132,654
OHV Travel	349,205	337,596	302,620
Specialized Motorsport Events	488	44	1,244
Specialized Non-motorized Events	24,697	23,764	27,392
Non-motorized winter activities	3,268	3,145	3,407

circular courses of 40 to 60 miles. Competitive motorcycle races from local clubs utilize single-track trails in areas such as the Dead Camel Mountains and the Virginia City area. Motorized groups such as the Modesto Ridge Runners, who have been active for over 30 years, and the Sierra Trail Dogs utilize roads and trail systems to sponsor rallies and poker runs that are nonspeed events for four-wheel-drive vehicles and motorcycles. Back-country or guided touring by commercial enterprises and individuals has become more popular in recent years. This includes the use of four-wheel-drive vehicles such as individual sports utility vehicles or technical off-road vehicles, all-terrain vehicles, and side-by-side vehicles. Roads and trails within the planning area are also utilized by groups to access BLM-administered lands for dispersed recreational activities throughout the year.

Nonmotorized events and activities that utilize the travel management system include equestrian endurance events, endurance runs or bike rides, dog trials, and wagon trail reenactments by schools or special interest groups. Hiking trails are increasingly in demand in the urban interface areas but also provide access to more remote recreation areas such as WSAs.

Visitor Satisfaction Surveys

In order for the BLM to comply with the Government Performance and Results Act and to better meet the needs of the public, a visitor satisfaction survey was conducted at 24 BLM recreation sites in 13 states during fiscal year 2011. The survey was developed to measure each site's performance to BLM Government Performance and Results Act-related goals. The survey collected visitor satisfaction data regarding visitor information (i.e., use of maps, signs, brochures), developed facilities, managing recreation use, resource management, BLM staff and customer service, and educational and interpretive materials. The CCD sites used in the national survey included Sand Mountain OHV Recreation

Area and Indian Creek Campground. Results of the survey for these two areas can be found on **Table 3-34**, Government Performance and Results Act Results Table.

Table 3-34
Government Performance and Results Act Results Table

Site	Overall Quality of Recreation Experience					Number of Respondents	Government Performance and Results Act Satisfaction Measure[1]
	Very Good	Good	Average	Poor	Very Poor		
Sand Mountain Recreation Area	39%	53%	8%	0%	1%	199	91%
Indian Creek	54%	38%	7%	0%	0%	94	93%

[1]Percentage of site visitors satisfied overall with appropriate facilities, services, and recreational opportunities.

Resource Changes

While the demands for undeveloped, dispersed recreation on BLM-administered lands had been increasing significantly over the last decade, the dispersed use of BLM-administered lands has been static over the last several years due to the economic downturn and negative employment situation. As the economy recovers, disposable incomes go up and populations increase in rural areas, the demand for recreational opportunities is expected to sharply rise again.

The influx of off-road recreational users from California will continue to escalate due to strict enforcement of vehicle registration and environmental regulations. This will continue to push OHV use into developed and dispersed areas within the planning area, resulting in an increased need for additional management as well as resulting in negative impacts on other resources in areas with intensive or unregulated use.

Increase in popularity of high performance and multi-passenger vehicles such as utility terrain vehicles (side-by-sides) will continue to change the requirements for recreation services. Easier accessibility to rugged, remote areas by large groups and families will impact areas that have seen low visitation in the past. Demands for destination touring verses designated riding areas will expand.

Population increases in areas of urban interface will escalate demands for access to BLM-administered lands near residential developments and the need to provide increased management and protection of resources. Areas with developed access such as the Faye-Luther Trail may experience negative impacts from overuse as well as conflicts from multiple user groups such as hikers, equestrians, and mountain bikers.

Existing facilities, including trailhead access to BLM-administered lands, maintenance, and public information, generally do not meet the needs of the recreating public within the planning area. This typically results in user-created

social trails or staging areas that account for the proliferation of new user-defined recreation opportunities in areas that may have significant resource values.

The BLM continues to view heritage tourism as an aspect of resource protection, education, recreation, and sustainable economic potential for local communities. Resources important to American heritage remain a part of the BLM-administered urban interface landscape and include rock art and paleontology, caves used by Native Americans, and mining towns ranging from an active county seat within the Virginia City National Historic Landmark to ghostly remnants scattered throughout the CCD.

3.3.5 Comprehensive Travel and Transportation Management

Travel and transportation management is a comprehensive approach to on-the-ground management and administration of travel and transportation networks of roads, primitive roads, primitive routes, trails, and areas. Travel and transportation management consists of implementation of travel and transportation planning decisions, route inventory and mapping, signing area and route designations, education and interpretation, law enforcement, easement acquisition, monitoring activities, and other measures necessary for providing access to and across BLM-administered lands for a wide variety of uses (including recreational, traditional, authorized, commercial, educational, and for other travel and transportation purposes), as well as all forms of motorized and nonmotorized access or use, such as foot, pack stock or animal-assisted travel, mountain bike, off-highway vehicle, and other forms of transportation. BLM Manual 1626, Travel and Transportation Management, (BLM 2011d) requires the establishment of a long-term, sustainable, multi-modal transportation system of open areas, roads, primitive roads, and trails that addresses public and administrative access needs to and across BLM-administered lands and related waters.

The transportation network in the planning area consists of federal and state highways, county roads, roads built to facilitate mineral and energy exploration, industrial development, two-track and single-track trails for OHVs, and single-track trails for hiking, biking, and equestrian use. An extensive network of official BLM roads consists of ditched and crowned gravel roads that are regularly maintained and an extensive array of unofficial roads and vehicle routes that were never formally constructed and rarely receive maintenance. Many are two-track vehicle trails that were created and are maintained simply by the passage of motor vehicles. The nonmotorized transportation network includes trails for equestrian, pedestrian, and cycling activities. Refer to **Section 3.5.6**, Facilities and Transportation Maintenance for detailed discussion of the existing road network.

While no travel management areas are identified within the planning area, the current management plan has addressed travel management allocations on a

case-by-case basis through land use plans or activity-level plans. Since the adoption of the Consolidated RMP in 2001, the following planning documents have also addressed travel management issues:

- *Southern Washoe County Plan Amendment (BLM 2001b):* Closed Fred's Mountain and Hungry Ridge to motorized travel, and designated all lands not designated as open or closed to motorized travel as limited to existing roads within the planning area.
- *Alpine County Plan Amendment (BLM 2007c)*: Designated 5,521 acres of BLM-administered lands as limited to designated roads and trails, 894 acres of the Faye-Luther Canyon as closed to motorized travel, 268 acres within the Indian Creek recreation area as closed to motorized travel, 5,143 acres in Bagley Valley as limited to designated roads and trails, and 378 acres as closed to motorized travel; designated 2,375 acres in Slinkard WSA as closed to motorized travel regardless of WSA status; and designated a preliminary network of roads, primitive roads, and trail networks on 4 miles of nonmotorized and 6.8 miles of motorized route.
- *Carson City Lands Bill (BLM 2009):* Restricted the use of motorized and mechanical vehicles on federal lands within the city as limited to roads and trails in existence at the time of passage of the act.

There is considerable overlap between travel management and all other uses on BLM-administered lands. For example, many people visit BLM-administered lands for recreation purposes. For these visitors, a route system may serve as either a means to reach a destination where the activity occurs (e.g., a road to a trailhead or parking area) or as the focus of the recreation activity itself (e.g., a four-wheel driving, hiking, or horseback riding trail).

Current Conditions

Primitive roads and two-track and single-track trails provide access to remote areas, usually by means of a four wheel-drive, all-terrain vehicle or motorcycle. Nonmotorized travel systems include equestrian and pedestrian-designated trail sections at Faye-Luther Canyon, Prison Hill Recreation Area, Indian Creek Recreation Area, Silver Saddle Ranch, Sand Mountain Desert Study Area, and Grimes Point Archaeological Area.

Off-Highway Vehicles

Historically, OHVs have been used in the planning area for recreation and leisure activities. OHVs and other motorized vehicles such as all-terrain vehicles, utility vehicles, and motorcycles have become indispensable tools for resource-related industries such as ranching, mineral exploration, and oil and gas production. OHV clubs and organizations are present in the communities within the planning area. These groups hold OHV endurance, race, and challenge course events such as the Vegas to Reno Off-Road Race, the longest off-road race event held in the United States. These groups also conduct

authorized OHV competitive race and nonspeed events through the Special Recreation Permit program.

Regulations in 43 CFR Part 8342.1 require the BLM to establish OHV designations for all BLM-administered lands to promote public safety, protect resources, and minimize conflicts between multiple use groups. Per BLM regulations, areas must be classified as Open, Limited, or Closed to motorized travel during the RMP planning process. The term OHV is commonly used by industry, government, and users and is the same as off-road vehicle. Off-road vehicle is the term used in regulations. For legislative purposes, 42 CFR Part 8340.0-5 defines an off-road vehicle as "any motorized vehicle capable of or designated for, travel on or immediately over land, water, or other terrain." In general, the OHV term refers to off-road motorcycles, all-terrain and utility-terrain vehicles, jeeps, specialized four-wheel drives such as rock crawlers, race trucks, and buggies, and snowmobiles. Certain authorized vehicles were excluded from this definition, including non-amphibious registered motor boats; any military, fire, emergency, or law enforcement vehicles while being used for emergency purposes; vehicles whose use is expressly authorized by the authorized officer, or otherwise officially approved; vehicles in official use; and any combat or combat support vehicle when used in times of national defense emergencies. The national objectives for OHV management are to provide for OHV use while protecting natural resources, promoting public safety, and minimizing conflicts among the various users of BLM-administered lands.

An *Open* designation is an area where all types of vehicle use are permitted at all times anywhere in the area, subject to various operating regulations and vehicle standards. A *Closed* designation is an area where OHV and other motorized uses are prohibited to protect resources, ensure visitor safety, or reduce user conflicts. A *Limited* designation is an area restricted at certain times, in certain areas, and to certain vehicular use. BLM-administered lands that have not been designated are generally managed as open areas (i.e., open to cross-country motorized travel) until a travel management plan has been completed. **Table 3-35**, Motorized Travel Designations in the Planning Area, lists the acreages that have been designated under various land use plans. Open areas include specifically designated OHV riding areas or those areas that are not considered closed or limited in the Lahontan RMP or the Walker RMP. OHV travel within WSAs is limited to cherry-stemmed roads and primitive routes that were identified at the time of the WSA designation. Motorized traffic is allowed on primitive routes to the degree that existed at the time the WSA was designated, however, due to the nature of the primitive routes, they are not considered part of the transportation system.

WSAs is limited to cherry-stemmed roads and primitive routes that were identified at the time of the WSA designation. Motorized traffic is allowed on primitive routes to the degree that existed at the time the WSA was designated,

Table 3-35
Motorized Travel Designations in the Planning Area

Travel Classification	Acreage*
Open, OHV designated areas**	28,819
Closed to motorized	31,822
Limited to designated roads trails	177,574
Limited to existing roads and trails	764,031
Limited by season	13,725
Undesignated***	3,789,891
Total	**4,805,862**

* Acreage based upon available data, actual acreage may vary based upon use of old documents versus GIS calculations.
** Areas designated open by Lahontan RMP or Walker RMP based upon being neither closed nor limited.
***Areas that have not been formally designated as open, closed, or limited through a planning decision and are managed like "Open" OHV Areas.

however, due to the nature of the primitive routes, they are not considered part of the transportation system.

Resource Changes

The increased development of private lands adjacent to BLM-administered lands in the urban interface will necessitate proactive management of trail and road systems and will influence travel management decisions and direction.

The use and popularity of OHVs should continue to grow well into the future, increasing the demand for specialized trails and designated OHV areas. The urban interface within the Sierra Front Field Office and dispersed areas throughout the Stillwater Field Office will continue to see an increase in off-road OHV use.

Technological advancements will continue to change the type of use and demands on travel management. For example the advent of all-terrain vehicles in the 1990s has had significant impact on single-track trails used by motorcycles. Today, the increasing popularity of utility terrain vehicles or side by sides as they are also known, is having an impact on trails created by all-terrain vehicles due to their wider wheel base.

Areas rich in cultural resources and areas popular for dispersed motorized and nonmotorized recreational use will need increased OHV and travel management focus on designated roads and trails so as to maintain or protect the resources.

The increase in environmental regulations, restrictions on motorized recreational activities, and loss of OHV riding areas in California will continue to impact lands in Nevada. More recently, the implementation of travel management plans on National Forest System lands in California and Nevada will further impact the planning area by increasing OHV use on BLM-

administered lands. Increases in the amount of cross-country riding and user created trails in areas such as Hungry Valley, Pine Nut Mountains, Wilson Canyon, Middle Gate, and Fairview Peak by motorcycle and four-wheel-drive clubs will continue to increase at an exponential rate.

Activities such as back-country touring and scenic driving by private sport utility vehicles and commercial operators has increased, necessitating the need for improved infrastructure such as road signage as well as the need for road/trail maps and web-based information. Increasing interest by commercial operators to provide guided back-country travel using high-end race style OHVs and utility terrain vehicles has created a new niche that needs to be addressed in travel management plans.

3.3.6 Lands and Realty

The BLM lands and realty program manages BLM-administered lands in a manner that directs and controls the use, development, and land tenure of the land, that protects the natural resources associated with BLM-administered lands and adjacent lands, whether private or administered by a government entity, that prevents unnecessary or undue degradation, and that coordinates, to the fullest extent possible, all BLM actions under the regulations with other public land resources, state and local governments, interested individuals, and appropriate quasi-public entities. The lands and realty program consists of three primary elements: land use tenure, withdrawals, and land use authorizations. Land tenure describes BLM ownership and jurisdiction of public lands. The BLM can acquire lands through purchase, exchange, or donation and dispose of land through exchange and sale. Withdrawn lands are those for which the BLM retains administrative authority, but the use of those lands is restricted or transferred to another federal agency for a particular public purpose. Land use authorizations are issued for the use and development of BLM-administered lands. The most common form of land use authorization is a ROW, which can be a linear feature, such as a road or transmission line, or a site feature, such as a communication tower, wind energy turbine, or solar energy production facility.

Current Conditions

The following section describes the current conditions and characterization of lands and realty within the planning area.

Land Tenure

BLM-administered land accounts for 54 percent of all surface lands within the planning area. Other federal lands account for an additional 25 percent. Surface land ownership within the planning area is summarized in **Table 3-36**, Surface Land Ownership.

Many of the most heavily used parcels of BLM-administered land on the CCD are within the urban interface. The urban areas of Reno/Sparks, Carson City,

Table 3-36
Surface Land Ownership

Land Status	Acres
BLM	4,803,300
Private	1,507,900
State of Nevada and California	25,500
Other federal (Tribal, Reclamation, National Wildlife Refuge, US Forest Service, and other federal lands)	2,305,800
Other	43,800
Water	252,800
Total	*8,939,100*

and Gardnerville/Minden experienced annual growth rates as high as 8 percent between 2000 and 2007. The growth rates of these urban areas have plateaued since 2007 and in some cases populations have declined (Nevada Department of Taxation 2012). Despite recent trends, the demands on BLM-administered lands, particularly in the urban interface, remain high. Community-level demands on BLM-administered lands include locations for future commercial and residential development, flood protection, and parks and open space. Some of the demands have been met through the sale of BLM-administered land with identified commercial or residential development potential, acquisition of environmentally sensitive lands, and leasing or conveying of lands under the Recreation and Public Purposes Act of 1926 for schools, parks, and other public purposes.

Current Consolidated RMP land tenure designations include the FLPMA Disposal, Recreation and Public Purposes Act Disposal, and Retention, which are defined as follows:

FLPMA Disposal: Public land parcels have potential for a FLPMA Disposal when they meet certain criteria established in the FLPMA, such as being difficult or uneconomical to manage and serving important public objectives such as community expansion. The FLPMA Disposal actions are usually in response to public request or application, but, they may be generated internally. A disposal results in a title transfer, wherein the lands leave the public domain through such instruments as a patent or deed. All disposal actions are coordinated with adjoining landowners, local governments, and current land users. **Figure 2-70**, Alternative A: Land Tenure, shows lands in the planning area that are designated for disposal within the Consolidated RMP.

FLPMA Disposals of land are primarily through sales. BLM-administered lands determined suitable for sale under the FLPMA are offered on the initiative of the BLM. The lands are not sold at less than fair market value. Lands determined suitable for a FLPMA sale must be identified in the RMP. Any lands to be disposed of by sale that are not identified in the current RMP require a plan

amendment before a sale can occur. Sales are managed under Section 203 of the FLPMA.

Exchanges are another form of the FLPMA Disposal. An exchange occurs when BLM-administered land or interest in land is swapped for nonfederal lands or interests in lands. Exchanges are only pursued with willing landowners. The exchange must occur within the same state and the values conveyed must not be greater than the values retained in the public domain. Through exchanges, non-federal parties can acquire lands with commercial, industrial, residential, or agricultural development or economic potential. In turn, the federal government acquires lands offering public recreation, open space, wildlife, and resource values. Moreover, the Director of the BLM, on behalf of the Secretary of the Interior, has the responsibility under CFR 2200.0-4 of determining that the exchange is in the public's best interest.

Recreation and Public Purposes Act Disposal: The Recreation and Public Purposes Act, as amended, allows for the disposal of parcels either directly through patent, or through an interim leasing arrangement to meet an approved Plan of Development prior to disposal through patent. Applicants under the Act are limited to nonprofit corporations and local governments. Under the Act, land is allowed to be leased and purchased for less than fair market value, and in some instances, for free.

Retention: Most BLM-administered land (4,626,400 acres) in the planning area is designated for retention. These lands will continue to be managed by the BLM for multiple use and sustained yield.

Acquisition is another means of land tenure adjustment. The BLM, through the FLPMA, is authorized to acquire lands or interests in lands through purchase, exchange, or donation. Acquired lands become BLM-administered lands. Lands are often acquired to facilitate various resource management objectives, such as preservation of important habitat for threatened or endangered species or securing access for important recreational values. Funding exists for such acquisitions through special programs such as the Land and Water Conservation Fund and the Southern Nevada Public Land Management Act.

Special Legislation can also have an effect on land tenure. Congress has the authority to pass legislation which directs the BLM to make land tenure adjustments. These land tenure adjustments are wholly dependent on the verbiage of the legislation, and thus cannot be summarized as each Act is unique.

The BLM has disposed of approximately 4,954 acres since January 1, 2001. The disposals were made up of 10 Recreation and Public Purposes Act patents (623 acres): 2 Desert Land Entries (380 acres), 7 land exchanges (2,420 acres), special legislation (728 acres), and 6 sales (803 acres). During that same timeframe, CCD acquired approximately 34,254 acres. The acquisitions were composed of 6 land exchanges (30,968 acres); 17 FLPMA (Southern Nevada Public Land

Management Act and Land and Water Conservation Fund funded) acquisitions (2,916 acres); 1 donation (30 acres); and 1 transfer from another agency (340 aces). The BLM has also acquired 1,873 acres of conservation easement.

The BLM has moved toward the consolidation of BLM-administered lands to benefit the public. To achieve this goal, candidates for land tenure adjustment through disposal, sale, exchange, possible special legislation, or acquisition include parcels that are difficult to manage or that do not have public access, relatively small parcels adjacent to other federal or state-managed lands, parcels that would increase conservation of natural resources, and parcels that increase access/use of BLM-administered lands. The majority of the BLM-initiated land tenure adjustments in the planning area have occurred near communities within the urban interface.

Withdrawals

Unlike a disposal or acquisition where there is a change in land ownership and associated transfer of title, a withdrawal places a title encumbrance on the land for the purpose of implementing a specific resource management objective, transfer of administrative jurisdiction from the BLM to another entity, or to meet a dedicated public purpose. Withdrawals are used to preserve sensitive environmental values, protect major federal investments in facilities, support national security, and provide for public health and safety. Withdrawal segregates a portion of BLM-administered lands and suspends certain operations of the public land laws, such as mining claims or approval of land use authorizations.

Types of withdrawals include administrative withdrawals, Presidential Proclamations, Engle Act, congressional withdrawals, and Federal Power Act withdrawals. Administrative withdrawals are those made by the President, Secretary of the Interior, or other authorized BLM authority. Withdrawals cannot be decided in an RMP. The President has the authority under 34 Statute 225, 16 USC 431 to designate objects or areas of historic significance, such as historic structures and national monuments. Congress also has the ability to mandate withdrawals via the passage of public laws. Congressional withdrawals include National Parks, Wilderness areas, and Wild and Scenic Rivers (WSRs). Certain livestock driveways can also be withdrawn. Federal policy (43 USC 1714) restricts all withdrawals to the minimum time and acreage required to serve the public interest, maximize the use of withdrawn lands consistent with their primary purpose, and revoke all withdrawals that are no longer needed.

There are currently 418,000 acres of withdrawal lands in the planning area.

Land Use Authorizations

The BLM issues ROWs, permits, and leases for the use, occupancy, and development of BLM-administered lands. Types of BLM land use authorizations include the following:

Rights-of-Way: ROWs are the most common form of land use authorization. They are issued under the regulations at 43 CFR Parts 2800 and 2880 for the use of BLM-administered land by private, commercial, and government entities. Facilities requiring ROW grants from the BLM include power lines, pipelines, roads, communication facilities, and utility-scale wind and solar energy testing and development projects. The BLM is responsible for managing approximately 1,443 ROWs within the planning area.

Communication Facilities: Communication facility applications are granted through a lease under the ROW program. Several sites within the planning area, typically higher elevation areas such as ridges or hill tops, host communications equipment for various public and private tenants such as phone companies, local utilities, and local, state, and federal agencies. The planning area has 110 authorized communication facilities at 51 designated sites.

Recreation and Public Purposes Act Leases: Leasing of BLM-administered land in accordance with the terms of the Recreation and Public Purposes Act is done for the benefit of state and local governments or qualified nonprofit organizations. Types of Recreation and Public Purposes Act leases include campgrounds, schools, parks, and historic monument sites.

FLPMA Permits and Leases: Section 302 of the FLPMA allows for the issuance of leases and permits for any use that is not specifically authorized under other laws or regulations and not specifically forbidden by law. Section 302 permits are short-term (3 years or less), whereas section 302 leases are more permanent, convey a possessory interest, and involve significant financial investment. Examples of these types of permits include apiaries, storage yards, or commercial filming. Examples of leases include ski resorts, State National Guard military use, or an orchard. Section 302 leases can be a tool to resolve trespass such as an unintentional residential or agricultural encroachment on BLM-administered land.

Unauthorized Use/Trespass: Trespass is unauthorized use of BLM-administered land and often requires the removal of facilities and reclamation, or authorization of the facilities under the appropriate land use authorization for continued use. Trespass is handled under the same regulations as other authorizations (43 CFR Parts 2800, 2880, and 2900). Alleged encroachment, which is the first step in identifying trespass, can be resolved without establishing a case file by amending a current land use authorization case to incorporate unauthorized facilities or through informal negotiation with the alleged trespasser. The BLM prioritizes the resolution of trespass cases based upon human health and safety and severity of resource damage. A total of seven realty trespass cases were established between 2001 and 2011.

The BLM also uses utility corridors as a planning-level tool to guide future land use authorizations. Corridors identify preferred areas for the placement or co-location of multiple linear ROWs. Facilities within corridors may include gas and

water pipelines, power lines, and communication lines such as telephone or cable. The BLM encourages the placement of new ROWs within existing corridors to the extent possible. However, factors such as origin, destination, purpose, compatibility, and saturation of an existing corridor may prevent or limit the routing of a new facility within an existing corridor. Likewise, the proposed placement of a ROW within a designated corridor does not guarantee the authorization of that ROW.

Section 368 of the Energy Policy Act of 2005, Public Law 109-58 (HR 6), enacted August 8, 2005, directed the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate, under their respective authorities, corridors on federal land in 11 western states for oil, gas, hydrogen pipelines, and power lines. There are 215,300 acres of Section 368 energy corridors within the planning area. (See **Figure 2-74**, Right-of-Way Energy Corridors).

Resource Changes

Land Tenure

The BLM will continue to pursue land tenure adjustments within the planning area on a case-by-case basis and respond to special legislation and applications or proposals from other federal agencies, state and local government and the general public as staff and priority workload allow. All proposals will be given full consideration of public benefits and land management goals.

An increase in demand for land tenure adjustments is anticipated. In addition to continuing interest in availability of BLM-administered lands for public and private enterprises, a number of proposals for federal legislation to transfer BLM-administered lands to local governments or other entities are currently under consideration. Increased demand for conveyances of BLM-administered land or interest in lands out of federal ownership is likely through special legislation or under current laws and regulation. Land acquisitions for public access purposes has not been a major focus for the CCD in recent years, in part due to limited opportunities; however, as the demand for securing public access for recreational use of BLM-administered lands near growing communities continues to increase, acquisitions related to access are anticipated to increase.

Areas with anticipated higher potential for land tenure adjustments include inholdings or lands adjacent to specially designated areas such as ACECs, Special Management Areas, WSAs, and existing or potential recreation sites. In addition, public lands interfacing with areas of increasing population growth, parcels that are landlocked, and parcels that are difficult or uneconomic to manage may be targeted for potential land tenure adjustments.

Withdrawals

A growing population increases the use of BLM-administered land, placing more pressure on public land resources. In response to this pressure, acres of land withdrawals could increase.

Land Use Authorizations

Demand for land use authorizations in the planning area is anticipated to increase in correlation with future residential and commercial development on adjacent private lands and in response to increasing population and energy demands within and beyond the CCD. **Table 3-37**, ROW Trends in Carson City District, shows authorizations granted and applied for between January 1, 2001, and December 31, 2013.

Table 3-37
ROW Trends in Carson City District

Calendar Year	ROWs Applied For	ROWs Authorized	Percent Authorized
2001	37	36	97%
2002	26	23	89%
2003	35	30	86%
2004	33	32	97%
2005	37	24	65%
2006	35	32	91%
2007	39	38	97%
2008	46	22	48%
2009	23	26	113%
2010	28	20	71%
2011	47	23	49%
2012	39	34	87%
2013	27	28	103%

Over the past 10 years, the BLM has averaged issuance of approximately 28 ROW authorizations per year with an average of 35 applied for annually. Issuance of permits varies depending on demand, but typically average between 1 and 3 per year. Communication facility lease applications, on both existing and new sites, are expected to continue to increase on BLM-administered lands within the planning area.

Management of current land use authorizations, through monitoring, compliance inspections, amendment, and renewals presents significant workload district wide, while new applications for ROWs, permits, and leases continue to be received for projects across the district. Urban interface areas adjacent to Reno, Sparks, Carson City, and Minden/Gardnerville are expected to see the greatest demand for new authorizations and trespass activities. These demands are expected to increase.

3.3.7 Renewable Energy

The potential for renewable energy resources in the planning area was not evaluated in the 2001 Consolidated RMP. Since adoption of that plan, the DOI, in conjunction with the US DOE, USDA, and US DOD, has developed policy for NEPA compliance for energy projects.

Wind and solar resource production is permitted via ROWs through the Lands and Realty Program, whereas geothermal resources are considered a leasable fluid mineral resource. Therefore, geothermal resources are addressed in **Section 3.3.3**, Geology and Minerals.

Current Conditions

The only renewable energy facilities on BLM-administered land in the planning area are for geothermal power. However, there has been interest in ROW applications for wind and solar energy facilities. Isolated locations within the planning area may be suitable for wind power development provided that suitable topographic locations, access to the power grid, and transmission line ROWs could be developed economically. The planning area may be suitable for solar power development provided that accessibility to suitable topographic locations, cost reduction in installation and distribution of electricity, access to the power grid and transmission line ROWs, and technological advancement in more efficient systems are obtainable.

Wind

The BLM currently has three authorized wind testing projects listed in **Table 3-38**, Current Wind Testing Projects in the Planning Area. These projects could result in up to 11,297 acres of potential wind development if the testing data show that the areas are viable and the proponents proceed with energy development.

Table 3-38
Current Wind Testing Projects in the Planning Area

Serial Number	Customer Name	Project Name and Area	Case Type
NVN 090984	Comstock Wind Energy, LLC	SW Virginia Range testing	Testing Type 2
NVN 090986	Carson River Wind Energy, LLC	Talapoosa/Eagle Ridge	Testing Type 2

The projects are set to expire at the end of 2015. Under current wind energy regulations, testing projects cannot be renewed unless the application to renew is accompanied by an application for development (and a Plan of Development).

The BLM also has a number of pending wind testing applications where no authorization has been granted. Many projects are currently awaiting decisions to be made on resource concerns surrounding raptors (including eagles) and two types of sage-grouse and the protection of its habitat.

Solar

National Renewable Energy Laboratory data shows that portions of the planning area have high potential for solar energy, especially Lyon and Mineral Counties (NREL 2013). Luning Solar was issued a ROW grant for a 575-acre project on July 15, 2010, but construction has not yet started. The BLM also has a pending ROW application for a solar development near Naval Air Station Fallon. However, the BLM-administered land that the proposed plan would affect is in a possible land tenure adjustment area; thus, grant processing has been on hold pending land status decisions.

Biomass and Hydropower

There are no biomass production facilities and no pending applications for biomass production within the planning area. There are numerous ways of using organic matter to directly generate power and heat, process it into fuels, or convert it to organically derived chemicals and other materials. Biomass sources are quite varied and include agricultural food and feed crops, crop waste and residue, wood waste and residues, animal waste, and municipal wastes.

Although there are some hydropower facilities on withdrawn lands, there are no hydropower facilities on BLM-administered lands within the planning area. The potential for additional hydropower generation in the planning area is low, except for retrofitting existing water pipelines.

Resource Changes

Wind

It is difficult to predict what effect pending decisions regarding Greater sage-grouse will have on wind projects. Applicants have already been withdrawing applications and cancelling projects in areas that are expected to be designated as key sage-grouse habitat.

Solar

The planning area has high potential for solar energy. The 2012 BLM Solar Programmatic EIS identified solar variance areas within the planning area. Variance areas are BLM-administered lands outside of solar energy zones that are available for utility-scale (more than 20 megawatt) solar energy development, but where the development would be considered on a case-by-case basis and in accordance with the variance process described in the Solar Programmatic EIS (BLM 2012L). However, major power lines for distribution remain a challenge. As described above, the BLM has been approached about the co-location of solar and geothermal projects. Due to solar having a relatively quick turnaround from application to development (1 to 3 years in some instances), whereas geothermal having a longer development timeline to production (typically 5 to 7 years), it is possible that hybrid solar-geothermal projects in the same lease area will be seen in the near future.

As solar energy generating equipment becomes less expensive and new technologies emerge, collocation of solar on roof-tops will likely become more prevalent. Communication facilities on the CCD often use solar panels on mountain tops with no power lines as a viable alternative, or even as back-up for power line failures. It can be reasonably expected that this type of solar use (ancillary to existing and proposed projects) will continue in the future.

Biomass and Hydropower

The BLM has been approached regarding a reservoir/fore bay approach to hydroelectric power. The reservoir/fore bay approach involves the storage of water to run through turbines to a lower reservoir during peak surges – with pumping occurring in off-times to replenish the upper reservoir from the fore bay, thereby producing energy. However, no formal application has been received.

Due to water rights allocation issues and the arid climate, hydropower is not expected to experience any new development potential in the planning area.

3.4 SPECIAL DESIGNATIONS

This section is a description of the special designation areas in the planning area and follows the order of topics addressed in **Chapter 2**:

- Areas of Critical Environmental Concern
- Back County Byways
- National Trails
- Wild and Scenic Rivers
- Wilderness Study Areas

3.4.1 Areas of Critical Environmental Concern

An ACEC is defined in the FLPMA, Public Law 94-579, Section 103(a) as an area within the BLM-administered lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, geologic, paleontological, or scenic values, to fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards. Regulations for implementing the ACEC provisions of the FLPMA are found at 43 CFR Part 1610.7-2.

The ACEC designation is an administrative designation that is accomplished through the land use planning process. It is unique to the BLM in that no other agency uses this form of designation. Nominations for the establishment of an ACEC can be made internally by the BLM or externally by the public or special interest groups, and only BLM-administered lands are included in ACEC boundaries. During the planning process, the BLM evaluates each nominated area to determine if it meets the relevance and importance criteria found in 43

CFR Part 1610-7-2(a)(b) and as defined in BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988a).

ACECs differ from other special management designations in that designation by itself does not automatically prohibit or restrict other uses in the area. The special management attention is designed specifically for the relevant and important values and, therefore, varies from area to area. Restrictions that arise from an ACEC designation are determined at the time the designation is made and are designed to protect the values or serve the purposes for which the designation was made. The BLM identifies goals, standards, and objectives for each proposed ACEC as well as general management practices and uses, including necessary constraints and mitigation measures. The EIS identifies a reasonable range of alternatives that includes current management of existing ACECs, as well as management for proposed ACECs. In addition, ACECs are protected by the provisions of 43 CFR Part 3809.1-4(b)(3), which require an approved plan of operations for activities resulting in more than 5 acres of disturbance under the mining laws.

Current Conditions

Existing ACECs

There are 6 ACECs totaling 21,800 acres of BLM-administered land in the planning area (**Figure 2-94**, Alternative A: Areas of Critical Environmental Concern). The size of each area and the values it is designed to protect are listed in **Table 3-39**, Areas of Critical Environmental Concern. Currently, activity-level management plans for most of the ACECs have not been completed or are in need of updating to reflect the impacts from surrounding development or resource uses. During the planning process, existing ACECs are being reevaluated to ensure the relevance and importance criteria are still present and require continued management attention; whether threats of irreparable damage to the values have been identified; and whether current management is sufficient to protect these values.

Table 3-39
Areas of Critical Environmental Concern

ACEC	Acres	Relevant and Important Value
Carson Wandering Skipper	330	Biological
Incandescent Rocks Natural Scenic	1,075	Scenic
Pah Rah High Basin (Dry Lakes) Petroglyph	3,881	Cultural
Steamboat Hot Springs Geyser Basin	40	Unique Geologic Feature
Stewart Valley Fossil Site	16,000	Paleontological
Virginia Range Williams Combleaf	473	Biological
Total	*21,799*	

Carson Wandering Skipper. The Carson Wandering Skipper ACEC is a 330-acre site approximately 25 miles north of the Reno-Sparks area along Winnemucca Ranch Road. The significance of this site revolves around the federally endangered Carson wandering skipper, a small butterfly that occupies grassland habitat on alkaline substrate in California and Nevada. This area is one of only four known populations for this subspecies that provides the essential habitat for their existence. The ACEC serves to protect the habitat from agricultural use and the expanding residential and commercial development from Reno and Sparks to the south. This site was designated an ACEC by the Southern Washoe County Plan Amendment signed in 2001 (BLM 2001b).

Incandescent Rocks Natural Scenic. The Incandescent Rocks ACEC is a 1,072-acre site located in southern Washoe County approximately 25 miles north of the Reno-Sparks area and 5 miles west of Pyramid Lake. The significance of the site centers on the rhyolitic outcrops and ridges that are characterized by red, yellow, orange, and purple hues that appear to fluoresce or glow as light reflects off the walls. The ACEC was designated through the Reno Management Framework Plan in 1983 (BLM 1983) and incorporated into the Lahontan Resource Management Plan in 1984 (BLM 1984b). An ACEC management plan was completed in 1988 with the objective of preserving and protecting the natural integrity and scenic resources of the area (BLM 1988a). Potential threats to the resource were identified as being OHV use and mineral exploration and extraction.

Pah Rah High Basin (Dry Lakes) Petroglyph. The Pah Rah High Basin (Dry Lakes) Petroglyph ACEC is a 3,881-acre site north of Highway 80 East and approximately 6 miles northeast of Sparks, Nevada. The significance and relevance of this site is primarily cultural but also includes historical and scenic values. Evidence indicating the site was used by Native Americans for over 3,500 years includes petroglyphs, rock rings, stone artifacts, as well as seasonal and residential camps. This site is culturally significant to both the Southern Washoe and Northern Paiute tribes. The objective of the ACEC, which was established by the Southern Washoe County Plan Amendment in 2001 (BLM 2001b), is to protect the site from urban expansion, increased recreational use of OHVs, theft of artifacts, and acts of vandalism.

Steamboat Hot Springs Geyser Basin. The Steamboat Hot Springs Geyser Basin ACEC is a 40-acre site northeast of Washoe Lake and 0.5 mile west of Highway 395 between Carson City and Reno. The ACEC was designated in the 1983 Reno Management Framework Plan (BLM 1983) and was established to protect and interpret the unique geyser field and related thermal features found at Steamboat Hot Springs. At one time, the geysers were considered to be the third most active geyser area in the US, but the formerly active geysers have reportedly become inactive resulting in the cessation of hot water flowing upon the surface. Steamboat Hot Springs also contains the federally endangered Steamboat buckwheat, and the BLM sensitive species Altered andesite

buckwheat. Both species are restricted to substrates derived from hot springs deposits in the Steamboat Hills. These species indirectly benefit from being within the ACEC; however, there are no special management goals for the plants within the ACEC management plan.

Stewart Valley Fossil Site. The Stewart Valley ACEC is a 16,000-acre paleontological site in the east-central part of Mineral County within the Stillwater Field Office. The ACEC was officially designated as a Research Natural Area in the land use planning process through the Walker Resource Management Plan in 1986 (BLM 1986c). The site is situated within a basin formed by the uplifted fault-block system typical of the Basin and Range physiographic province. The ancient lake bed that was formed by the uplifting is filled with sediments from the Miocene age and includes fossil specimens of mammals, clams, snails, fish, insects, pollen, and leaves. An ACEC management plan was completed in September 1990, with the objective of protecting fossil resources while allowing the continuation of authorized scientific study (BLM 1990). The plan restricted recreational activities, limited vehicles to designated roads and trails, prohibited the hobby or commercial collection of fossils, and provided for a mineral entry withdrawal of 1,420 acres for the most sensitive portion of the ACEC. Due to a 20-year regulatory limitation, the withdrawal automatically expired on January 9, 2010.

Virginia Range Williams Combleaf. The Virginia Range Williams Combleaf ACEC is a 473-acre site northeast of Washoe Lake 2 miles east of Highway 395 between Carson City and Reno. This site was designated an ACEC by the 2001 Southern Washoe County Plan Amendment (BLM 2001b) and was established for the Williams combleaf, a plant of the mustard family that is a State of Nevada critically endangered species and a BLM sensitive species. Essential habitat encompasses barren sandy or clay soils around the margins of seasonal pools or lakes. The objective of the ACEC designation was to preserve the habitat from indiscriminant OHV use, livestock grazing, and water diversions. A conservation agreement was entered into between the BLM and USFWS in 1997 to provide long-term protection for Williams combleaf as an action to preclude listing the species under the Endangered Species Act, however the agreement has expired.

Potential ACECs

In accordance with BLM Manual 1613, Areas of Critical Environmental Concern (BLM 1988a), the Interdisciplinary Team reviewed internal and external nominations received during the RMP revision process to determine whether any areas should be considered for designation as ACECs. Areas determined to meet the relevance and importance criteria, as defined by 43 CFR Part 1610.7-2(a)(1) and 43 CFR Part 1610.7-2(a)(2), and guidance in BLM Manual 1613 (BLM 1988a), are provided temporary management to protect human life and safety or significant resource values from degradation until the area is fully evaluated through the RMP process.

Twenty-two nominations were determined to meet relevance and importance criteria to be considered as potential ACECs. The areas and associated values are displayed in **Table 3-40**, Potential Areas of Critical Environmental Concern. Details of the evaluation process can be found in the Areas of Critical Environmental Concern Report on the Application of the Relevance and Importance Criteria (BLM 2013b).

Table 3-40
Potential Areas of Critical Environmental Concern

Potential ACEC	Acres	Relevant and Important Value(s)
Black Mountain/Pistone Archaeological District	3,414	Cultural
Carson Wandering Skipper[1]	330	Wildlife
Churchill Narrows Buckwheat Botanical	6,428	Botanical
Clan Alpine Greater Sage-Grouse	98,428	Wildlife
Desatoya Greater Sage-Grouse	105,058	Wildlife
Dixie Valley Toad	413	Wildlife
Fox Peak Cultural	48,391	Cultural
Greater Sand Mountain	17,066	Unique Feature, Historical, Cultural, Biological
Grimes Point Archaeological	15,877	Cultural
Incandescent Rocks Scenic[1]	1,103	Scenic
Lassen Red Rock Scenic	757	Scenic
Namazii Wunu Cultural	158,264	Cultural
Pah Rah High Basin (Dry Lakes) Petroglyph[1]	5,260	Cultural
Pine Nut Bi-State Sage-Grouse	100,415	Wildlife
Pine Nut Mountains Williams Combleaf Botanical	317	Botanical
Ruhenstroth Paleontological	2,334	Paleontological
Sand Springs Desert Study Area	55	Historic
Steamboat Buckwheat Botanical	80	Botanical
Stewart Valley Paleontological[2]	15,930	Paleontological
Tagɨm aša Cultural	81,753	Cultural
Virginia City National Landmark Historic District	14,700	Historical
Virginia Mountains Greater Sage-Grouse	105,206	Wildlife
Total	*781,571*	

Source: BLM GIS 2014a
[1]Potential ACEC is also an existing ACEC but the boundary for evaluation was expanded
[2]Potential ACEC is also an existing ACEC but the boundary for evaluation was reduced

3.4.2 Back Country Byways

The BLM began a National Back Country Byway program in 1989 to focus on enhancing recreational opportunities. A Scenic Byway System was created 2 years later under Section 1047 of the Intermodal Surface Transportation Efficiency Act of 1991. The Intermodal Surface Transportation Efficiency Act recognized the BLM Back Country and Scenic Byways as a component of the national scenic byway system.

Current Conditions

The BLM manages one back country byway in the planning area: the Fort Churchill to Wellington Back Country Byway (**Figure 2-99**, Alternative A: National Trails and Back Country Byways). This byway is a 67-mile paved, gravel, and natural surface road that provides a scenic, though in some sections, a very challenging drive through the foothills of the Pine Nut Mountains. The byway begins at Fort Churchill, 35 miles east of Carson City. Fort Churchill was established in 1860 to protect the Pony Express mail line. In 1957, the fort became part of the Nevada State Park system. Leaving Fort Churchill the Back Country Byway heads west on Nevada State Route 2B (graded gravel) for 21 miles along the Carson River to Dayton. The Back Country Byway then turns south at Dayton and extends 29 miles through the rugged Pine Nut Mountains, climbing steeply above Eldorado Canyon and passing through the Como Mining District, finally dropping down to Wellington on Nevada State Route 208. These roads can be rough and muddy. Four-wheel drive or high clearance vehicles are recommended for the climb over the Pine Nut Mountains and it takes approximately 4 to 5 hours to drive the length of the Back Country Byway. In addition to its proximity to Carson City, Reno, and the Tahoe area, active promotion of this byway has been via maps, brochures, and interpretive kiosks at either ends of the byway. Local visitors familiar with the area constitute the majority of recreation use. These visitors are generally comfortable with the experience and enjoy the seclusion and the panoramic scenery of the Pine Nut Mountains and the Sierras to the west and the experience, opportunities, and benefits that come from the local areas accessible via the byway. However, outdoor enthusiasts unfamiliar with the area can become intimidated by the type II and III road conditions and limited signage. Hazardous road conditions along this route include a narrow running surface, deep ruts, steep rocky slopes, and soil types that become extremely muddy and slippery during times of both inclement weather and light rain. The route is impassable during the winter season.

Resource Changes

Multiple-use resource activities have remained limited within the corridor of the byway. Visual intrusions along the byway do not disrupt the overall character of landscape. However, impacts of dispersed recreation, including OHV use, are becoming apparent and can be attributed to the popularity of the area during the hunting season.

3.4.3 National Trails

The National Trails System is the network of scenic, historic, and recreation trails created by the National Trails System Act of 1968. These trails provide for outdoor recreation needs, promote the enjoyment, appreciation, and preservation of outdoor areas and historic resources, and encourage public access and citizen involvement.

National Historic Trails are extended trails that closely follow a historic trail or route of travel of national significance. Designation identifies and protects historic routes, historic remnants, and artifacts for public use and enjoyment. Trails must meet the following three criteria listed in Section 5(b)(11) of the National Trails System Act:

- The trail must follow actual documented route of historic use.
- The trail must be of national significance.
- The trail must possess significant potential for public recreation or interpretation.

Many of the pioneer trails and other historic routes that are important in our Nation's past have been designated by Congress as national historic trails. National historic trails are specifically designated areas in the US containing the route of nationally and historically significant trail and areas adjacent to the trails to be utilized for scenic, historic, natural, cultural, or developmental purposes. National historic trails along roadless segments have a generally greater potential for public recreational use or historic interpretation and appreciation. Today, only Congress can designate new national historic trails.

National recreation trails provide for a variety of outdoor recreation uses in or near urban areas and are established by the Secretary of the Interior.

Current Conditions

The BLM has two congressionally designated national historic trails: the California National Historic Trail and the Pony Express National Historic Trail (see **Figure 2-99**, Alternative A: National Trails and Back Country Byways).

While most of the old wagon roads and routes are not open to motorized traffic, visitors can drive along modern highways or roads that either retrace segments of the original trail or closely parallel it.

The Pony Express National Historic Trail extends over 1,900 miles from Saint Joseph, Missouri, to Sacramento, California, with the segment from New Pass (eastern Churchill County) to Woodfords, California, bisecting the planning area. The trail was used for mail delivery service with riders on horseback for 18 months between April 1860 and October 1861, prior to the establishment of the transcontinental telegraph line. The purposes of the National Historic Trail are to identify, preserve, and explain the sites, route, and history of the Pony Express for all people to experience and understand and to commemorate the rapid mail delivery that linked eastern and western states (NPS 1999). Trail resources, qualities, values, and setting are described in the 1999 Comprehensive Management Plan (NPS 1999).

Although the exact tread of this short-lived horse trail does not remain at any point along this approximately 130 miles of route within the planning area (92.2

miles on BLM administered land), the corridor is relatively well-known and mapped. There are no identified high-potential route segments in the planning area. In addition, two extant stations on BLM-administered lands in Churchill County remain at Cold Springs and Sand Springs; both are listed on the National Register of Historic Places. The 1999 Comprehensive Management Plan describes Cold Springs and Sand Springs as follows (NPS 1999, Appendix F, p. 266):

> Cold Springs Station was hurriedly constructed by Bolivar Roberts, J. G. Kelly, and their crew in March 1860 as they prepared for the first run of the Pony Express. The station was repeatedly attacked by Indians. When Richard Burton reached the station in October 1860, he found "a wretched place, half built and wholly unroofed; the four boys, an exceedingly rough set, ate standing, and neither paper nor pencil was known among them." Today, remnants of thick stone walls, complete with windows, gun ports, and a fireplace, identify the station. The ruins of a corral can be found nearby. As in Burton's day, the structure has no roof. The station has been structurally stabilized for preservation and safety reasons.
>
> Boliver Roberts and crew also built Sand Springs Station in March 1860. Travelers found a reliable source of water at Sand Springs, but its poor quality often poisoned animals and probably made people ill. Richard Burton recorded his negative reaction to the place: it was "roofless and chairless, filthy and squalid, with a smoky fire in one corner, and a table in the center of an impure floor, the walls open to every wind, and the interior full of dust." In addition to the Pony Express, the site served as a telegraph, freight, milling, and ranching center. Structural ruins from many of these activities still exist and the station remains have been stabilized.

The California National Historic Trail extends from the vicinity of Omaha, Nebraska, and Saint Joseph, Missouri, to various points in California, and it includes dozens of trail segments. Two major segments pass through the CCD and parallel the Carson and Truckee Rivers. In all, nearly 300 miles of route cross the planning area (25.3 miles on BLM-administered land), with several segments of trail ruts and traces evident.

The only designated national recreation trail within the planning area is the Grimes Point Interpretive Trail, which is a 0.75-mile, self-guided interpretive trail (see **Figure 2-99**, Alternative A: National Trails and Back Country Byways). It was constructed by the Youth Conservation Corps and designated Nevada's first national recreation trail in 1978. The trail is situated within the Grimes Point Archaeological Area 12 miles east of Fallon off of Highway 50 and is easily accessible by the traveling public. Hikers can view examples of petroglyph rock art at one of the largest known petroglyph sites in the US. The

rock art was created by Native Americans an estimated 8,000 to 9,000 years ago along the ancient Lake Lahontan shoreline.

3.4.4 Wild and Scenic Rivers

Wild and scenic rivers (WSRs) are streams or segments of streams designated by Congress under the authority of the Wild and Scenic Rivers Act of 1968 (Public Law 90-542, as amended; 16 USC 1271-1287) for the purpose of preserving the stream or stream section in its free-flowing condition, preserving water quality, and protecting its outstandingly remarkable values. Outstandingly remarkable values are identified on a segment-specific basis and may include scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.

Section 5(d)(1) of the Wild and Scenic Rivers Act directs federal agencies to consider potential WSRs in their land and water planning process. To fulfill this requirement, the BLM evaluates streams when developing or revising its RMPs. In order to fulfill its obligations under Section 5(d)(1) of the Wild and Scenic Rivers Act, the CCD is considering the eligibility and suitability of streams in the planning area for inclusion in the National Wild and Scenic Rivers System (NWSRS).

Determination of Wild and Scenic River Eligibility

The initial step in the eligibility phase of the WSR analysis is to generate an inventory of all streams within the evaluation area. Every known stream with a perennial or intermittent flow regime within the planning area was identified using a variety of BLM and other data sources. Some waterways were further segmented based on differences in level of development, physiographic character, land status, or the existence of in-channel diversions or dams.

The stream segments were then evaluated to determine whether they meet the dual criteria of being free-flowing and possessing one or more outstandingly remarkable values, as defined in the Wild and Scenic Rivers Act. Eligible segments were preliminarily classified as wild, scenic, or recreational based on water quality and level of human development along the river corridor.

The Wild and Scenic River Eligibility Report (BLM 2013c) details stream segments determined to be eligible for inclusion in the NWSRS, as defined by the Wild and Scenic Rivers Act of 1968. The final eligibility report also lists all streams within the planning area that were evaluated and found to be not eligible, along with supporting rationale. The report is available at the CCD in Carson City, Nevada, and on the CCD RMP Revision website.

Determination of Wild and Scenic River Suitability

Three stream segments along the East Fork of the Carson River were inventoried and found to be eligible for inclusion in the NWSRS and are carried forward to the suitability phase of the WSR river analysis. The suitability phase considers tradeoffs between corridor development and stream protection by

applying 13 criteria to each eligible segment. The Wild and Scenic Rivers Suitability Report details the suitability study process and the draft suitability determinations for each segment (February 2013). A final determination of suitability will be issued in the record of decision for the RMP.

Current Conditions

There are no streams in the planning area designated as a Wild and Scenic River. The Humboldt-Toiyabe National Forest has performed a WSR eligibility study and has determined the following segments contiguous with the planning area to be eligible for inclusion in the NWSRS; a suitability study has not yet been completed (Forest Service 2007):

- East Fork of the Carson River from the headwaters downstream to the diversion dam in Nevada near the Lahontan National Fish Hatchery
- West Walker River from the headwaters to the town of Walker
- East Walker River from the headwaters downstream to the BLM/Forest Service border in Nevada.

After evaluating all streams identified during the inventory phase, the East Fork of the Carson River, separated into three segments, was determined to be free-flowing and possess one or more outstandingly remarkable values necessary to be eligible for inclusion in the NWSRS. The three stream segments are carried forward for suitability analysis (**Figure 2-105**, Alternative A: Wild and Scenic Rivers). **Table 3-41**, Eligible Stream Segments, shows those eligible segments in the planning area being studied for suitability analysis, the identified outstandingly remarkable values associated with each segment, and the preliminary classification assigned to each segment.

Table 3-41
Eligible Stream Segments

East Fork Carson River Segment	Length on BLM-administered Land (miles)	Area on BLM-administered Land (acres)	Tentative Classification	Outstandingly Remarkable Values
Segment 1	1.51	400	Wild	Recreation, Scenic, Fish
Segment 2	1.03	400	Recreational	Recreation, Scenic, Fish, Geologic
Segment 3	1.97	600	Scenic	Recreation, Scenic, Fish, Geologic

Sources: BLM GIS 2014b

Resource Changes

A discussion of trends specific to each eligible segment can be found within the Wild and Scenic River Suitability Report.

3.4.5 Wilderness Study Areas

In 1964, Congress passed the Wilderness Act, thereby establishing a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most land considered for, and designated as, wilderness was managed by the National Park Service and Forest Service. With the passage of the FLPMA in 1976, Congress directed the BLM to inventory, study, and recommend BLM-administered lands under its administration that should be designated wilderness.

Section 603 of the FLPMA specifically required the BLM to provide Congress with recommendations as to the suitability or nonsuitability of roadless areas greater than 5,000 acres and roadless islands for wilderness designation. Congress gave the BLM 15 years to complete the wilderness inventory, which was done on a state-by-state basis. Only Congress can decide which areas, if any, will be designated as wilderness and added to the National Wilderness Preservation System. In 1991, the Nevada BLM issued its final wilderness study reports that included discussion and recommendations for 110 WSAs throughout Nevada (BLM 1991). The recommendations were based on the findings of the 15-year wilderness study process that included each area's resource values, present and projected future uses, and manageability as wilderness; the environmental consequences of designating or not designating the areas as wilderness; mineral surveys; and public input. Until Congress acts on the recommendations and either designates them as wilderness or releases them for other uses, these areas are managed according to BLM Manual 6330, Management of Wilderness Study Areas (BLM 2012e) to preserve their wilderness values. Activities that would impair wilderness suitability are prohibited in WSAs. There are six primary provisions of the FLPMA with regard to interim management of WSAs:

- WSAs must be managed so as not to impair their suitability for preservation as wilderness.
- Activities that are permitted in WSAs must be temporary uses that create no new surface disturbance nor involve permanent placement of structures.
- Grazing, mining, and mineral leasing uses that existed on October 21, 1976, may continue in the same manner and degree as on that date, even if this would impair wilderness suitability of the WSAs.
- WSAs may not be closed to appropriation under the mining laws to preserve their wilderness character.
- Valid existing rights must be recognized.
- WSAs must be managed to prevent unnecessary or undue degradation.

In summary, WSAs must be managed in a manner that would not impair the suitability of the area for preservation as wilderness and to prevent unnecessary or undue degradation. Except for grandfathered uses and valid existing rights, permitted activities in WSAs are temporary uses that create no new surface disturbance and do not involve placement of permanent structures. Grandfathered uses include grazing, mining, and mineral leasing conducted in the manner and degree in which these uses were being conducted on October 21, 1976, as long as they do not cause unnecessary or undue degradation of the lands under wilderness review. Only Congress can designate a WSA as wilderness or release it from the protective mandate of Section 603 of the FLPMA. The status of these WSAs will not change as a result of this RMP revision.

The BLM's authority to conduct wilderness reviews, including establishing new WSAs, expired in 1991. However, the BLM has authority under Section 201 and 202 of the FLPMA to maintain an inventory of all BLM-administered lands and their resources, including wilderness characteristics, and to consider such information during land use planning. Through the land use planning process, the BLM will consider all available information to determine the mix of resource use and protection that best serves the FLPMA multiple use and sustained yield mandate. Wilderness characteristics findings are discussed in **Section 3.2.12**, Lands with Wilderness Characteristics.

Current Conditions

Nine WSAs lie completely or partially within the decision area (**Figure 2-104**, Alternatives A, B, C, D, and E: Wilderness Study Areas. Augusta Mountains, Burbank Canyon, Carson-Iceberg, Clan Alpine, Desatoya, Gabbs Valley, Job Peak, Slinkard, and Stillwater). The findings of the 1991 wilderness study report for areas within the planning area are shown in **Table 3-42**, Wilderness Study Areas. The acreages shown in the table are only for the portion of the WSA in the decision area. As such, acreage figures differ slightly from the 1991 study report and recommendation. The Augusta Mountains WSA lies within three field offices and is managed by the Humboldt River Field Office in the Winnemucca District. A portion of the Desatoya WSA lies within the Battle Mountain District Office and is managed by that district.

With the increase in demand for consumptive and non-consumptive resources and an increase in urbanization and residential development, the WSAs provide unique niches that are still mostly preserved in their natural and primitive state. With the exception of cherry-stemmed roads or primitive routes (linear transportation features that were created solely by the passage of vehicles that were identified at the time of the WSA designation), these areas are closed to motorized travel. Examples of allowable uses include hunting, camping, equestrian use, and hiking.

Table 3-42
Wilderness Study Areas

WSA	Total Acres	Acres Recommended Suitable for Wilderness Designation	Acres Recommended Not-Suitable for Wilderness Designation
Augusta Mountains[1]	46,400	0	46,400
Burbank Canyons	12,700	0	12,700
Carson-Iceberg	500	500	0
Clan Alpine Mountains	195,700	68,000	127,700
Desatoya Mountains	42,200	34,300	7,900
Gabbs Valley Range	80,500	0	80,500
Job Peak	89,400	0	89,400
Slinkard	2,400	0	2,400
Stillwater Range	94,200	0	94,200
Total	*564,000*	*102,800*	*461,200*

Source: BLM GIS 2014a
Note: Acres are for BLM-administered lands in the decision area only
[1]The Humboldt River Field Office manages the Augusta Mountains WSA

Augusta Mountains WSA

The Augusta Mountain WSA (NV-030-108) is located in three Nevada counties: southeast Pershing, northeast Churchill, and western Lander. The WSA is approximately 60 miles southeast of Winnemucca, Nevada, and a 5-hour drive from Reno, Nevada. The WSA includes 89,400 acres of BLM-administered lands (46,400 acres on BLM-administered lands in the decision area) and no private or state inholdings. The boundary follows the Home Station Ranch Roads on the north and west sides and utilizes two mine access roads on the south and east sides. At its maximum dimensions, the Augusta Mountain WSA ranges from 17 miles in a north-south direction to 13 miles in an east-west direction. The elevation ranges from 3,400 feet to 8,400 feet.

The WSA straddles a north-south ridge of the Augusta Mountain Range. The northern portion is a landscape of silicic ashflow tuff canyons and drainages. Isolated patches of pinyon-juniper are scattered through the area. The central section encompasses Cain Mountain, a limestone peak, which is the highest point of the WSA. The mountain drains in all directions via rugged, deep drainages, Favret Canyon being the largest. The canyons have fossils and are blocked by intermittent waterfalls, with dense pinyon-juniper stands in the upper reaches.

The southern portion of the WSA is uniformly hilly with shallow southwest draining washes and gullies and gently sloping foothills vegetated with low sagebrush and rabbitbrush. There are approximately 1,000 acres of pinyon-juniper woodland covering slopes above 6,600 feet.

Burbank Canyon WSA

The Burbank Canyons WSA (NV-030-525a) is primarily in Douglas County, Nevada, 5 miles northwest of Wellington and 15 miles southeast of Gardnerville. Approximately 1,065 acres along the eastern edge of the study area are in Lyon County, Nevada. Boundaries of the WSA coincide with roads and private property boundaries in Red Canyon on the north, along the foot of the Pine Nut Mountains on the east, in Rickey and Wedertz Canyons on the south, and along the ridge of Bald Mountain on the west. The WSA was designated as a scenic area and is closed to OHV travel, which would remain in place should the WSA be released by Congress from consideration as wilderness.

Carson-Iceberg WSA

The Carson-Iceberg WSA (NV-030-532) lies in Alpine County near the middle of the eastern edge of California, approximately 30 miles southeast of South Lake Tahoe and 90 miles east of Sacramento. This WSA includes 550 acres of BLM-administered lands and no state or private inholdings. It is bounded on the west and south sides by the Humboldt-Toiyabe National Forest and the Carson Iceberg Wilderness, on the north and southeast sides by private lands, and on the northeast by an unpaved road on BLM-administered lands.

The WSA comprises a mixed coniferous forest on both sides of the East Fork of the Carson River in the Eastern Sierra Nevada. The river flows northerly through a rugged, winding canyon for one-and-a-half miles in the WSA. The meadows of Silver King Valley flank the WSA to the east at an elevation of 6,400 feet, while the 7,000-foot western side of the WSA is surrounded by higher-elevation coniferous forest in the 154,000-acre Carson Iceberg Wilderness.

Clan Alpine WSA

The Clan Alpine Mountains WSA (NV-030-102) is in Churchill County in west central Nevada. The WSA includes 195,700 acres of BLM-administered lands. Although private lands form a portion of the WSA boundary, there are no private inholdings. The WSA is bounded by County Road 376, private lands, and roads on the east, and a road and section lines on the north. Three roads and a power line comprise the southern boundary, while a combination of section lines and dirt roads form the boundary on the west.

Desatoya WSA

The Desatoya Mountains WSA (NV-030-110/060-288) lies along the Churchill County/Lander County line, with the majority of the WSA found in the southeast corner of Churchill County, Nevada. The WSA includes 51,300 acres of BLM-administered lands (42,200 acres in the decision area). There are 120 acres of private inholdings. The area is bounded by the Carroll Summit Highway (Old US Highway 50) and a section line on the south, and section lines and a short stretch of US Highway 50 on the west. A power line and three dirt roads

comprise the northern boundary, while a combination of private property lines and dirt roads form the boundary on the east.

Gabbs Valley WSA

The Gabbs Valley Range WSA (NV-030-407) is located in Mineral County, 30 miles east of Hawthorne, Nevada. The WSA contains 80,500 acres of BLM-administered lands and one 40-acre private inholding. Three other private parcels are nearly surrounded by the WSA and were excluded (cherry-stemmed) from the WSA. The WSA is bounded on the northwest by roads and mining disturbance around Poinsettia Spring Mine, and on the northeast side by a combination of the main Finger Rock Wash Road, lesser roads, mining disturbance near roads, and by a private property boundary. The remaining boundary around the southern end of the unit is composed of a combination of State Highway 23, the main road in Petrified Wash, lesser roads, mining disturbances, and private property boundaries. The WSA is approximately 16 miles in length from north to south and varies in width from 3 to 15 miles east to west.

Job Peak WSA

The Job Peak WSA (NV-030-127) is in Churchill County in west-central Nevada. The WSA includes 90,200 acres of BLM-administered lands (89,400 acres in the decision area). There are no private inholdings within its boundary. The WSA is bounded by County Road 399, the Mountain Well road, and the West Job Canyon road on the west, while the Poco Canyon road and 4 miles of unnamed dirt roads constitute the northern boundary. County Road 380 and a portion of the Dixie Valley fault scarp form the eastern boundary. On the south the boundary follows the Elevenmile Canyon road, the Sheep Canyon road and a fence line connecting these roads. The Job Peak WSA includes roughly the southern third of the Stillwater Mountain Range.

Slinkard WSA

The Slinkard WSA (NV-030-531/CA-010-105) is in northern Mono County and northeastern Alpine County, approximately 7 miles north and west of Topaz, California. This WSA includes 6,300 acres of BLM-administered land (2,400 acres in the decision area); 422 of these acres are split-estate lands (surface managed by the BLM, subsurface owned by non-BLM entity). There are neither state lands nor private inholdings within the WSA. The portion of Slinkard WSA within the decision area is closed to motorized travel (BLM 2007c).

The northern boundary of this WSA follows the Humboldt-Toiyabe National Forest boundary east until it intersects State Highway 89. The boundary follows the meandering highway to the vehicle route that enters the northern end of Slinkard Valley. The boundary proceeds south along the vehicle route and veers west and south in an irregular pattern around private land. The boundary turns and proceeds west for 1 mile along the northwestern tip of the Carson-Iceberg Wilderness. The boundary turns north and follows private land, contour

features including canyons, and on the Mono/Alpine County line until it reaches the Humboldt-Toiyabe National Forest boundary 0.75 mile south of Monitor Pass.

This WSA lies at the extreme eastern edge of the Sierra Nevada geomorphic province and consists of a north-south trending mountain range, which is dissected by numerous drainages and canyons. The eastern slope is rugged and steep, while the western slope is more gentle and moderate. Elevation ranges from 6,800 feet to 8,938 feet. A tributary of Slinkard Creek is in the northern end of the unit. Vegetation in the unit consists of Great Basin shrubs and perennial grasses. Dense stands of pinyon-juniper, white fir, quaking aspen, and Jeffrey pine occupy the unit.

Stillwater WSA

The Stillwater Range WSA (NV-030-104) is in Churchill County in west-central Nevada. The WSA includes 94,600 acres of BLM-administered lands (94,200 acres in the decision area) and 620 acres of private inholdings within its boundaries. The WSA is bounded by County Road 399 and section lines on the west and the Copper Kettle and White Rock Canyon roads, as well as 3 miles of unnamed dirt roads, on the north. County Road 380 and private lands form the eastern boundary, and the southern boundary follows the Cox and Silver Hill Canyon roads. The Stillwater Range WSA includes roughly the central third of the Stillwater Mountain Range.

Resource Changes

Over the years, bills have been introduced in both chambers of Congress that would release all current WSAs that have been identified as not suitable for wilderness designation, most recently in 2011 (HR1581 and SB1087, Wilderness and Roadless Area Release Act of 2011).

In 2009, Douglas County submitted the Douglas County Conservation Bill to Congress, which contained a proposal to designate the Burbank Canyons WSA as a wilderness area.

3.5 SOCIAL AND ECONOMIC FEATURES

This section describes the social and economic features of the planning area and includes the following subsections:

- Tribal Interests
- Public Health and Safety
- Interpretation and Environmental Education
- Social and Economic Conditions
- Environmental Justice

3.5.1 Tribal Interests

The BLM is mandated to consult with Native American tribes concerning the identification of cultural values, religious beliefs, and traditional practices of Native American people that may be affected by actions on federal lands. The BLM has developed several sets of guidelines for consulting with Native American groups and evaluating cultural resources, with an emphasis on traditional use values. BLM Manual 8120 (BLM 2004c) and Handbook H-8120-1 (BLM 2004d) provide consultation requirements and procedural guidance to ensure that the consultation record demonstrates "that the responsible manager has made a reasonable and good faith effort to obtain and consider appropriate Native American input in decision making." BLM Handbook H-8110 offers guidelines for determining authorized uses of a cultural resource, including considerations for traditional use values.

The BLM administers lands within the aboriginal territory of people identified based on commonality and differences in language and culture as Washoe, Northern Paiute, and Western Shoshone. Six tribal governments have reservations within the planning area, and four additional tribes hold reservation lands beyond the planning area boundary (see **Table 3-43**, Tribal Reservations within and near the Planning Area). Each of the 10 groups is a federally recognized Native American tribe (25 USC 479a). Each tribe, along with the California Native American Heritage Commission and the Inter-Tribal Council of Nevada, maintains a general concern for protection of and access to areas of traditional and religious importance, as well as the welfare of plants, animals, air, landforms, and water on reservation and BLM-administered lands. **Table 3-43** includes the geographic areas that CCD utilizes for consulting with tribal leaders and staff, recognizing that each tribe's ancestral use areas may extend beyond the listed locations.

The Carson City Consolidated RMP (2001) and subsequent plan amendments do not specifically identify Native American interests as a topic separate from cultural resources. In the Carson City Consolidated RMP, "the view of Native Americans will be considered prior to BLM decisions or approvals that could result in changes in land use, physical changes to lands and resources, changes in access, or alienation of lands." This captures some of the intent of current laws, regulations, and policies, but it does not describe the means for identifying and managing traditional and sacred sites, or for obtaining and utilizing the perspective of tribal people.

Topics consistently identified by tribes include access to natural, medicinal, and sacred resources and places. Traditional Cultural Properties and sacred sites, such as Black Point Petroglyph, Grimes Point, Hidden Cave, and several potential Traditional Cultural Properties in the Stillwater Range, have been identified by tribal representatives as areas that are important to a respective tribal cultural heritage and to families within the tribes.

Table 3-43
Tribal Reservations within and near the Planning Area

Tribe	Cultural Division(s)	General Location	Headquarters/ Established	CCD Geographic Area of Specific Concern
Bridgeport Paiute Indian Colony	Northern Paiute	Mono County, CA (outside of planning unit)	Bridgeport, CA (Reservation: 1972)	Stillwater Field Office and Sierra Front Field Office – Southern Lyon and Western Mineral Counties
Fallon Paiute-Shoshone Tribe	Northern Paiute and Western Shoshone	Churchill County, NV	Stillwater, NV (Reservation: 1902)	Stillwater Field Office and Sierra Front Field Office – Northeastern Lyon and Western Churchill Counties
Lovelock Colony	Northern Paiute	Pershing County, NV (outside of planning unit)	Lovelock, NV (Colony: 1910) Ties to Fort Bidwell, CA (Reservation: 1897)	Stillwater Field Office only – Northern Churchill County
Pyramid Lake Paiute Tribe	Northern Paiute	Washoe, Storey and Lyon Counties, NV	Nixon, NV (1859)	Sierra Front Field Office only – Northern Storey and Northern Lyon Counties; Washoe County north of I-80
Reno-Sparks Indian Colony	Northern Paiute, Washoe, Western Shoshone and other Tribes	Washoe County, NV	Reno, NV (Colony: 1917; Hungry Valley Community: 1986)	Sierra Front Field Office only – Northern Storey County and Washoe County from Truckee Meadows north
Susanville Indian Rancheria	Northern Paiute, Washoe, Atsugewi, Achumawi and Maidu	Plumas County, CA (outside of planning unit)	Susanville, CA (Allotments: 1923) Allotments	Sierra Front Field Office only – Plumas and Lassen Counties (CA); Washoe County west of Peterson Mountain and north of Fort Sage Mountains
Walker River Paiute Tribe	Northern Paiute	Churchill, Lyon, and Mineral Counties, NV	Schurz, NV (Reservation: 1859)	Stillwater Field Office and Sierra Front Field Office – Eastern Lyon, Western Churchill, and Northern Mineral Counties
Washoe Tribe of Nevada and California	Washoe	Alpine County, CA; Carson City and Douglas Counties, NV	Carson City, NV (Stewart Community: 1990; Carson Colony: 1916) Dresslerville, NV (Colony: 1917)	Sierra Front Field Office only – Alpine, Plumas, and Lassen Counties (CA); Washoe County west

Table 3-43
Tribal Reservations within and near the Planning Area

Tribe	Cultural Division(s)	General Location	Headquarters/ Established	CCD Geographic Area of Specific Concern
			Woodfords, CA (Colony: 1887) Pine Nut Mountain, NV Allotments: 1893-1930 Washoe-Paiute Timber Reserve, NV: 1859-1870	of Virginia Mountains; Carson City and Storey Counties; Douglas and Lyon Counties west of the Pine Nut Mountain crest
Yerington Paiute Tribe	Northern Paiute	Lyon County, NV	Yerington, NV (Colony: 1917; Campbell Ranch: 1936; Reservation: 1941) Washoe-Paiute Timber Reserve, NV: 1859-1870	Sierra Front Field Office and Stillwater Field Office – Lyon, Southern Storey, and Eastern Douglas Counties
Yomba Shoshone Tribe	Western Shoshone	Nye County, NV (outside of planning unit)	Reese River Valley, NV (Reservation: 1937)	Stillwater Field Office only – Eastern Churchill, Eastern Mineral, and Western Nye Counties

Each tribe maintains interest in specific cultural and traditional resources, tribal access locations, and heritage properties. Tribal concerns within the planning area may include, but are not limited to, specific places on the landscape where spiritual and ceremonial events occur or have previously occurred, known and unknown burial and cemetery sites, pre-contact or historic-era cultural resources, hot springs and geysers, and localities with difficult-to-find or special plant, animal, or mineral resources.

All tribes in the planning area have interest in access to ranges that contain pinyon pine nut gathering locations. This includes the Pine Nut Mountains, Desatoya Range, Stillwater Range, Clan Alpine Mountains, Wassuk Range, Virginia Range, and ranges beyond the planning area boundaries. Due to the 3- to 5-year production cycle of nut production, the tribal members go where there are pine nuts available, and specific locations that yield pine nuts one year will not be the location of use the following few years. Gathering includes both green and ripe cone harvesting. Some ranges, such as the Virginia and Flowery Ranges, have been used historically, but changes to land status and fire management have reduced the potential for using these locations for pine nut gathering.

The BLM manages the sensitive tribal information collected through consultation, including electronic and hard copy files, by utilizing a geospatial layer consistent with the management of BLM-administered lands. The geospatial layer of historic and current acquired tribal information would

facilitate the avoidance or mitigation for future projects, including visual effects on sacred sites and traditional cultural properties, during the planning phase of potential future projects.

Resource Changes

Trends

The desired condition of traditional places and resources on federal lands is that they remain stabilized and not adversely affected by natural and cultural processes, and that they are managed to allow maintenance of traditional connections. Like cultural resources discussed above in **Section 3.2.9**, the general current trend of the traditional places in the planning area is that those near the urban interface are subject to greater potential for damage, resource removal, or alteration from agents caused by people and their equipment. Those resources farther from urban or developed areas are relatively stabilized and are not, in large measure, being adversely affected.

Based on historic trends, large-scale and intense wildland fires can and will occur in western Nevada. Such fires, if they sweep through pinyon woodlands, would have an effect on the significant traditional resources of that area. Interest in mining gold and other minerals has gone up in recent years on both private and BLM-administered lands as the value of these commodities has increased. Current federal law and BLM management, regulations, and policies permit mining wherever it is legally allowable and where it does not adversely affect critical resources. However, as mining activities increase there could be more conflicts between proposed mining actions and traditional resources.

Qualitative observation indicates a downward trend in condition of known traditional places and resources that are not associated with formal surface-disturbing management proposals. Illegal removal of artifacts, alteration of rock art and constructed features, ground disturbance associated with recreational activity, limited law enforcement, and intensive grazing practices all contribute to the downward trend.

Forecast

Based on current management practices, improved access to BLM-administered lands, and increased urbanization, the forecast would be to continue this downward trend of traditional place and resource conditions due to the following factors:

- Greater potential for traditional place and resources being removed or damaged, due to increases in recreational and commercial usage, and limited law enforcement presence
- A likelihood for continued large-scale wildfires in the planning area resulting in resource damage

- Continued activities that result in damage or destruction of traditional places and resources on private, state, and non-BLM-administered lands
- Continued permitting of authorized actions by BLM (e.g., mining, grazing, and energy development) that contributes to traditional places and resources being affected.

3.5.2 Public Health and Safety

Abandoned Mines

Nevada is estimated to have approximately 165,000 abandoned mines, 50,000 of which are considered to be safety hazards. The Nevada Bureau of Minerals has identified and ranked approximately 8,000 abandoned mines according to the level of hazard they represent. More than 6,000 of these sites have been secured. Physical hazard sites are being secured at a rate of approximately 300 to 400 per year. Some abandoned mine sites also present an environmental hazard.

In March 1999, the BLM initiated the formation of an Interagency Nevada Abandoned Mine Lands Environmental Task Force (Abandoned Mine Task Force), which includes 10 state and federal agencies, to begin remediating environmental problems associated with abandoned and inactive mines. In certain mining districts, the planning area has numerous abandoned mine workings. Structures such as shafts, adits, winzes, tunnels, and pits pose safety hazards to the public. Hazardous materials and dynamite are also safety hazards at abandoned mine sites.

In 1999, the Abandoned Mine Taskforce identified 33 complex cleanup sites statewide, including nine within the planning area. The three highest ranked sites within the planning area were the Veta Grand Mine (high hazard ranking), the Nylene Mine (moderate hazard ranking), and the Seneca Gold site (moderate hazard ranking). These three sites have been cleaned up and are currently being monitored for effectiveness.

Several abandoned mine sites within the planning area continue to pose a physical safety hazard, the most significant of which is the American Flat Mill near Virginia City, Nevada. A 2008 audit of the site by Department of the Interior, Office of the Inspector General found the property to be a high-risk liability to the US Government. Presently, the BLM is preparing final plans for the demolition of the American Flat Mill which is anticipated to occur over the next few years.

Petroleum Waste and Hazardous Substances

Unauthorized disposal of petroleum waste and releases of hazardous substances occurs on BLM-administered land throughout the planning area, usually as a result of unauthorized dumping or in association with active or abandoned

mining or mill site claims. The BLM follows the National Contingency Plan (40 CFR Part 300) when dealing with releases of hazardous substances, which generally involves the timely removal of the hazardous substance. Removal of petroleum waste is performed in accordance with state and local laws and regulations, which also generally involve the timely removal of petroleum waste. A release could require a "removal" action for one drum of liquids, costing a few hundred dollars, up to a "remedial" action involving extensive studies and costing thousands (or millions) of dollars.

Because releases are not authorized on BLM-administered land and are generally removed upon discovery, an inventory of sites where hazardous substances and petroleum waste have been released is not maintained in the land use plan. If a parcel of land is to be disposed of, an evaluation pursuant to section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act is prepared. If a parcel of land is to be acquired, an evaluation is conducted in order to comply with the standards and practices for "all appropriate inquiry" pursuant to sections 101(35)(B)(i)(I) and 101(35)(B)(ii) of the Act.

Solid Waste

Unauthorized disposal of solid waste occurs on BLM-administered land throughout the planning area. As defined by the Resource Conservation and Recovery Act (42 USC 6901), solid waste includes any solid, liquid, semi-solid, or contained gaseous material that is deemed to be a waste. In the planning area, solid waste commonly includes abandoned piles of household garbage, bags of yard waste, discarded appliances, old barrels, lead from target shooting, used tires, and demolition debris that can threaten the health of humans and the environment. A few commonly found illegally dumped items such as vehicles, boats, trailers, and motor homes can be considered either solid waste or hazardous waste depending on the item's condition and when it was reported and cleaned up. For example, rubber car tires or an intact fiberglass boat found in the desert does not pose much of a threat as a solid waste, but once the rubber tire or fiberglass has been burned, it becomes a hazardous waste. Concentrations of lead deposited by target shooters at informal shooting sites can also become a hazardous waste.

The number of solid waste illegal dump sites has not been quantified across the planning area. The majority of illegal solid waste dumping occurs on BLM-administered land in close proximity to the urban interface, but it is also common along transportation corridors, recreational shooting areas, and in nondesignated camping areas, which are dispersed throughout the planning area.

Recreational Shooting

Recreational shooting is commonplace throughout the planning area and is especially prevalent near areas of high population density. There are no designated shooting areas on BLM-administered lands and only a few public

shooting areas managed by local agencies. There are many sites on BLM-administered land historically known for dispersed target shooting. The BLM has made attempts in certain areas to make target shooting safer for the public and environment, often by encouraging target shooting in places where other recreational use is low. The BLM relies on the public to encourage safe shooting practices.

While recreational shooting is a legitimate activity on BLM-administered land, it poses a significant safety risk if not managed correctly. Conflicts arise regularly between shooting and other activities on BLM-administered land and with nearby private and tribal landowners. These conflicts include shooting across roads or trails, not having a backstop, shooting too close to homes or buildings, shooting in areas where there are high levels of other recreation activities, and shooting in sensitive areas like ACECs.

The use of airsoft and paintball guns has also increased in the planning area. These uses pose a risk of damage to sensitive resources (e.g., cultural resources) and may be restricted in those areas for protection of the resource.

Outdoor shooting ranges provide recreational facilities for shooting sports enthusiasts. Recently, there has been a growing public concern about the potential negative environmental and health effects of range operations. In particular, the public is concerned about potential risks associated with past and continued use of lead shot and bullets at outdoor ranges. The risk also exists in other areas where there is an accumulation of lead deposited by target shooting. Historically, the three major sources for human exposure to lead are lead-based paint, lead in dust and soil, and lead in drinking water. The main human exposure to lead associated with shooting ranges is through lead-contaminated soil. However, other pathways are discussed below, along with lead's detrimental effects on humans and animals. Lead can be introduced into the environment at shooting ranges in one or more of the following ways. Each of these pathways is site-specific and may or may not occur at each individual range:

- Lead oxidizes when exposed to air and dissolves when exposed to acidic water or soil.
- Lead bullets, bullet particles, or dissolved lead can be moved by storm water runoff.
- Dissolved lead can migrate through soils to groundwater.

Littering, unsafe target shooting, and illegal dumping have become major issues on federal lands where recreational shooting occurs (Responsive Management 2009). Many shooting areas are littered with garbage from illegal dumping. Some shooters leave behind fragments of clay pigeons and spent shotgun shells, as well as metal, plastic, and glass objects brought out for use as targets. Environmental

and property damage (e.g., release of refrigerants the atmosphere, the shooting of trees and signs) is also a significant problem.

There are no BLM rules regulating shooting or setting a standard for acceptable responsibility while shooting. Most of the counties in the planning area have limited ordinances regulating shooting activates. For example, Washoe County has the most restrictive regulations and prohibits shooting within 5,000 feet of an occupied dwelling.

Another significant risk associated with recreation shooting is wildland fire. Between 2000 and 2010, 34 percent of human-caused fires started on BLM-administered lands in Nevada were found to be caused by shooting (BLM, 2011a). The BLM has had numerous witnessed fire starts due to shooting with copper-jacketed lead and other ammunition. Due to the popularity of recreation shooting in the wildland-urban interface, wildland fires caused by shooting pose a significant threat to communities, recreational areas, grazing areas, and wildlife habitat. The increased popularity and use of explosive targets on BLM-administered lands has also been identified as a major factor in human caused fires.

Resource Changes

Abandoned Mines
It is expected that identifying and sealing, fencing, and signing unsafe abandoned mine sites and openings will continue at approximately the same rate as in recent years. Contaminated site remediation will occur based on hazard ranking and available funding. Abandoned mine closure may increase with the assistance of the mining industry, particularly in areas where renewed activity in former mining areas becomes economical.

Petroleum Waste and Hazardous Substances
The frequency of hazardous materials incidents in the past has mirrored the rate of economic activity and population growth, with economic boom and population growth usually resulting in more illegal dumping and more materials transportation accidents and accidental spills.

Solid Waste
Illegal dumping of solid waste is increasing as the local population grows and as dump fees at permitted sites increase.

Recreational Shooting
Requests for shooting closures are expected to increase in high-use areas, with increasing conflicts between users and concerns over safety.

3.5.3 Interpretation and Environmental Education

Interpretation is the voice for all BLM resource management programs. A well-developed program supports the goals and objectives of all resources and

programs by serving customers, promoting land health, and enhancing the public's enjoyment, understanding, and appreciation of the BLM-administered lands' natural and cultural resources and their management. An interpretive program reaches out to visitors across varied landscapes and serves visitors who are exploring many facets of BLM-administered lands.

Management issues are addressed within the interpretive story in a way that relates those issues to the visitors' experiences. Interpretive planning is done collaboratively with internal and external groups, and clear measurable objectives are established to gauge the cost/benefit and the program's effectiveness. The BLM's interpretive program aims to respect and serve people with diverse backgrounds and abilities.

The BLM reaches out to youth and adults with interpretive and environmental education experiences that inspire them to protect the landscape and support the district's multiple use and sustained yield management goals. This is accomplished through presentations, hands-on projects, and outreach using various types of media, including interpretive signs and Internet resources. The BLM has a draft district environmental education and interpretive strategy and is currently developing a long-range interpretive plan.

Current Conditions

Key Features

In addition to the visitor center in Carson City and interpretive signs located throughout the field office, the BLM runs eight outreach programs and projects for both adults and children. These programs are led solely by the BLM or in conjunction with local organizations and educational institutions.

Take It Outside-Let's Move Outside: The BLM served over 1,100 people in 2011 and over 3,500 people in 2012 with its Let's Move Outside on BLM's Carson City District environmental education program series for children, families, and the general public. These programs provide fun and easy ways for children and adults to exercise, see more of their BLM-administered lands, and learn about the natural world. Visitors learned facts about the forest, collected seeds for restoration projects, toured a cave used by Native Americans for 9,000 years, visited the Sand Springs Desert Study Area, and helped clean up BLM-administered lands on the Carson River and Truckee River Clean Up days.

Truckee River Environmental Education Days: In 2011 and 2012, CCD staff partnered with The Nature Conservancy and USFWS to present four Truckee River Environmental Education Days for 900 fourth grade students from Washoe and Lyon Counties at The Nature Conservancy's McCarran Ranch Preserve east of Reno. Staff and volunteers operated five stations addressing wetlands, ecosystems and invasive species, plant diversity, river morphology, and water quality.

Hidden Cave Tours: On the second and fourth Saturday of each month, BLM staff delivers free interpretive tours of the Hidden Cave archaeological site. Special tours led by BLM-trained volunteer docents can be arranged for 12 or more people through the Churchill County Museum. The BLM, University of Nevada, and Churchill County Museum produced an educational video about Hidden Cave that will be used to bring the story of Hidden Cave to students and members of the general public unable to physically tour the cave.

Reno Rodeo Reading Roundup: For the last 12 years, BLM fire staff have partnered with the Reno Rodeo Association and the Reno Rodeo Foundation to present Reno Rodeo Reading Roundup assemblies emphasizing the importance of reading to at-risk first graders at 25 schools annually.

Junior Explorer: BLM staff is developing an Indian Creek Recreation Area Junior Explorer Activity book for use by campers, day users, and local students.

Hands on the Lands and Take It Outside: The BLM, The Nature Conservancy, local school districts, and other partners are developing outdoor classroom opportunities at sites along the Truckee River, Indian Creek Recreation Area, Swan Lake, and Faye Luther Creek.

Curtz Lake Interpretive Trail: BLM staff constructed a 1.5-mile interpretive loop with 13 interpretive wayside exhibits.

In addition to these programs, the BLM has multiple Developed Interpretive Sites, including Fairview Earthquake Faults, Sand Springs Desert Study Area, Cold Springs Pony Express Station, Hidden Cave Interpretive Trail, Grimes Point Interpretive Trail, Indian Creek Recreation Area and Faye-Luther Trail.

Resource Changes

The BLM plans to continue these outreach efforts into the future and will continue developing their district-wide environmental education and interpretive strategy and their long-range interpretive plan.

3.5.4 Social and Economic Conditions

This section discusses the social and economic conditions of the planning area. These conditions are discussed in greater detail in the Carson City Resource Management Plan Socioeconomic Baseline Assessment Report (BLM 2013a).

Economic and demographic statistics are primarily reported by county. For these reasons, demographic, economic, and social data are presented for the socioeconomic study area, which includes all lands within the eight counties in Nevada and three in California that compose the planning area. State context is provided for comparison when available, and detailed descriptions of individual counties and municipalities are presented as appropriate. US Census Bureau data presented includes 2010 census data, when available, and American Community Survey data. American Community Survey estimates are based on

data collected over a 5-year time period (2006-2010). The estimates represent the average characteristics of population and housing between January 2006 and December 2010 rather than a single point in time. The American Community Survey is referenced within this document as US Census Bureau (USCB; USCB 2010c). However, for comparison purposes to present conditions, the 5-year average presents a skewed representation due to the massive upheaval in the US economy reflected in the 2008 to 2009 recession, which continues to have an influence.

It is important to note that large proportions of county lands and county populations lie outside of the planning area, particularly for Washoe and Nye Counties in Nevada and all counties in California. For this reason, statistics used in this report are actually representative of the larger geographic area beyond the CCD. It is likely that the counties containing the most BLM-administered land within the planning area are the most intensively used and would be most affected by changes in resource management. Similarly, the counties with the most BLM-administered land are likely to be the most affected by funding to states and counties through federal payments.

Important general social and economic indicators for local communities are population trends, demographics, employment, personal income, and ethnic and racial makeup of the area. Indicators specific to BLM-administered land are recreational use; mineral and energy resources, including alternative energy development; nonmarket values, such as the importance of open spaces and ecosystem services; and agriculture and livestock grazing. Current, historic, and forecast population statistics, housing, and education level are presented in the demographic data. Economic characteristics discussed include employment levels and industries, major employers, income, government revenues and expenditures, and dependence on BLM-administered resources.

The BLM contains natural high desert landscapes and social and economic conditions unique to western Nevada. Within portions of the Sierra Front Field Office, such as Carson City, Washoe County, and Douglas County, BLM-administered lands are at an interface of rapidly growing suburban populations. In these areas, BLM-administered lands play an important role for recreation opportunities for area residents, to provide contributions to quality of life such as the preservation of open space, and to provide for the social and spiritual values for Native American tribes. Protection of BLM-administered lands and private property from wildfire is also an important issue in this area. Within the Stillwater Field Office, more traditional uses of BLM-administered lands, such as livestock grazing and mineral extraction, are of greater importance. Increasingly, renewable energy is of growing importance throughout the planning area.

Regardless of the region, most residents have a strong connection to public lands – administered by the BLM, the Forest Service, and other entities – that surround and encompass their community, and view them as playing a significant

role by providing economic opportunities, recreation, open space, a connection to the western historic landscape, and other intangible benefits. Some of these connections are discussed below under Affected Groups and Individuals. Recreation and Visitor Services (**Section 3.3.4**), Tribal Interests (**Section 3.5.1**) and Livestock Grazing (**Section 3.3.2**) discuss the varying types and levels of public uses of planning area lands in greater detail.

Current Conditions

The following section provides brief summaries of the demographic and economic trends for each of the 11 study area counties. The county descriptions below are primarily derived from county websites, data from the US Census Bureau, and input from economic workshops completed in June 2012.

Throughout this report, data is often representative of entire counties, regardless of whether or not the entire county exists within the planning area. Therefore, the data and descriptions for counties completely or mostly contained within the planning area will be more representative of the CCD than those counties only partially contained.

Nevada

In total, eight counties in Nevada are wholly or partially within the planning area. Four Nevada counties are 100 percent within the planning area: Carson City (100,630 acres), Douglas County (473,760 acres), Mineral County (2,439,500 acres), and Storey County (168,690 acres). Of the remaining four counties within the planning area in Nevada, Lyon County is 99 percent within the planning area (1,279,160 acres), Churchill County is 86 percent in the planning area (2,757,846 acres), Washoe County is 34 percent within the planning area (1,430,920 acres), and only 1 percent of Nye County is within the planning area (194,040 acres). Less than 10 percent of the land in each of the three California counties are within the planning area: Alpine County (40,160 acres out of 474,580 acres), Lassen County (53,780 acres out of 3,026,010 acres), and Plumas County (2,390 acres out of 1,675,820 acres). See **Table 3-44**, Percent of Counties within the Planning Area, below.

Land area and population are not necessarily correlated. There are many large counties completely contained within the planning area that have a relatively low population density. In contrast, only 34 percent of Washoe County lies within the planning area, but the majority of the population within the planning area resides in this county. Another consideration would be correlation between population and land ownership, as demonstrated by the differences between the two field offices. The Sierra Front Field Office contains the majority of the metropolitan population and privately owned lands, while the Stillwater Field Office is comprised of mostly BLM-administered land and rural population centers.

Table 3-44
Percent of Counties within the Planning Area

County	Approximate Acres in Planning Area	Approximate Percent of County in Planning Area
Nevada		
Carson City	100,630	100
Churchill County	2,758,190	86
Douglas County	472,900	100
Lyon County	1,276,600	99
Mineral County	2,442,090	100
Nye County	194,060	1
Storey County	168,830	100
Washoe County	1,431,360	34
California		
Alpine County	40,130	0.1
Lassen County	53,770	0.1
Plumas County	2,380	0.1

Source: BLM 2012f

Carson City

Carson City Consolidated Municipality, located on the western edge of the planning area, is the state capitol of Nevada. The municipality extends only to the city limits, which includes a rural section that reaches up the eastern slope of the Sierra Nevada Mountains, terminating in the center of Lake Tahoe. Carson City began as a mining town during the Comstock Lode in the 1860s, and secured itself as a commercial center after the construction of the Virginia and Truckee Railroad in 1869 (Carson City, Nevada 2012). After experiencing cycles of economic gains and losses from fluctuations in the mining industry and the removal of the Virginia and Truckee Railroad in 1950, the economy of Carson City now relies on public administration, education and healthcare, and entertainment and recreation, with almost half of the population employed by those sectors (USCB 2010b).

In 2010, the population of Carson City was 55,274, a 73 percent increase from 1980. The population density is approximately 382 people per square mile (USCB 2012). Carson City has a long history and attracts many visitors to the area annually to experience the unique historic and recreation opportunities in the area, which include hiking, camping, hunting, fishing, OHV use, and historic train rides on the rebuilt Virginia and Truckee Railroad (Carson City, Nevada 2012).

Churchill County

Churchill County is a rural county located in western Nevada. The county seat of Fallon was established in 1908 in conjunction with the development of the Bureau of Reclamation Newlands Irrigation Project. Due to this project, the area developed an economy based on agriculture, growing mostly alfalfa and

cantaloupes, a tradition that continues today (Fallon Convention and Tourism Authority 2012). The Stillwater National Wildlife Refuge is located in Churchill County. Geothermal exploration has occurred in Churchill County and several power plants have been developed. There is also a strong military presence in Churchill County. Fallon is home to the Naval Air Station Fallon, where the Navy houses its Top Gun training program. Naval Air Station Fallon has a strong economic impact on the surrounding area, due to its relatively large size in a sparsely populated area. In addition, the Marine Corps Mountain Warfare Training Center, located in Bridgeport, California, also utilizes BLM-administered land in Churchill County to perform training exercises. Approximately 3.5 percent of the labor force in Churchill County is in the armed forces, compared with 0.5 percent for the State of Nevada (USCB 2010c).

In 2010, the population of Churchill County was 24,877 people, a 79 percent increase from 1980. The population density is low, with 5 people per square mile (US Census Bureau 2012). Aside from the military, the major employment sectors are education and health care, entertainment and recreation, and agriculture (USCB 2010c). Recreation plays a major role in this county, with many people visiting the area for birding, horseback riding, shooting ranges, and OHV areas. Sand Mountain recreation area is particularly popular and receives over 50,000 visitors per year (Fallon Convention and Tourism Authority 2012).

Douglas County

Douglas County is located on the southwestern edge of the CCD, changing in terrain from the shores of Lake Tahoe, over the eastern slope of the Sierra Nevada Mountains, and down into the Carson Valley. Genoa, one of the oldest permanent settlements in Nevada, is located in Douglas County and was established in 1851 as a trading post for wagon trains. Due to fertile soils on the valley floor, Douglas County has some of the most productive agricultural areas in the state and is able to support the population centers of Minden and Gardnerville. Many retirees also come to Douglas County for the scenic values and temperate climate, while many tourists frequent the area for recreation and gaming opportunities (Douglas County, Nevada 2012). These populations support the two largest employment sectors in the area: education and health care and entertainment and recreation (USCB 2010c).

In 2010, the population of Douglas County was 46,997 people, a 142 percent increase from 1980. The population density is approximately 66 people per square mile (USCB 2012). Recreation opportunities range from fishing and river rafting to horseback riding and all-terrain vehicle tours. Hiking and biking are also major recreation activities. Over the past several years, Douglas County has seen an increase in demand for healthier tourism activities, prompting the creation of urban bike paths and mountain biking trails.

Lyon County

Lyon County is located in western Nevada, bordering California on its southern edge. It first prospered in the mid-1800s as an agricultural and commercial center to support the booming Comstock Lode. The City of Fernley flourished in the early 1900s as part of the Newlands Reclamation Project that brought water to parts of western Nevada for agriculture. The economy still relies heavily on agriculture, both in rural areas and near the population centers of Fernley and Yerington (City of Fernley, Nevada 2012). Manufacturing and construction are also important employment sectors in Lyon County (USCB 2010c). In the 1950s, the Anaconda Mine opened just west of Yerington and was the third largest open pit copper mine in the world until it shut down in 1978 (City of Yerington, Nevada 2012). Lyon County has transformed from mostly rural areas to suburban areas as the Northern Nevada region continues to grow. For 3 out of the past 10 years, it has been one of the fastest growing counties in the US (Lyon County, Nevada 2012).

In 2010, the population of Lyon County was 51,980 people, a 282 percent increase since 1980. The population density is approximately 26 people per square mile (USCB 2012). Due to the close proximity to various lakes and rivers, freshwater fishing and boating are popular recreation activities, as are camping, visiting historic sites, and range shooting. There is a possibility that the Anaconda Mine will be reopened in the near future for resumed production; however, there is a current effort by the EPA and the mine's current owner to clean up the toxic remains at the site before that can occur.

Mineral County

Mineral County is located in southwestern Nevada, bordering California. The region gained prominence during the 1860s when gold was discovered in Aurora, Nevada. Hawthorne was founded in 1883 in response to the construction of the southern extension of the Virginia and Truckee Railroad. In 1911, Mineral County was annexed from Esmeralda County, and Hawthorne became the county seat. Hawthorne remains the county seat and is the largest population center in the county (Mineral County, Nevada 2012). Mining has been historically very important to area, and there continues to be active mining operations as well as a high potential for future mineral extraction. In 1930, the Naval Ammunition Depot, now called the Hawthorne Army Depot, was established. The depot is used for ammunition storage and maintenance and, at its peak during 1945, employed over 5,600 people (NDEP 2012b). Although the current employment levels are much lower and it is now run by a private contractor, the depot remains vital to the economy of Hawthorne and Mineral County. The Marine Corps Mountain Warfare Training Center, located in Bridgeport, California, also utilizes BLM-administered land in Mineral County to perform training exercises.

In 2010, the population of Mineral County was 4,772 people, a 23 percent decrease from 1980. The population density is approximately 1 person per

square mile, the lowest in the study area (USCB 2012). Walker Lake, just north of Hawthorne, provides many recreation opportunities, including fishing and boating. Hunting, rock hounding, and OHV tours are also popular activities.

Nye County

Nye County is located in the southwestern part of the state and is the third largest county in the contiguous US. In 2010, the population of Nye County was 43,946 people, a 385 percent increase from 1980. The population density is approximately 2 people per square mile. The majority of the population lives in Pahrump, a bedroom community for Las Vegas with a population of over 36,000 (USCB 2012). Over 93 percent of the county is public land, managed mostly by the BLM, US Forest Service, Department of Energy, and the Department of Defense. Nye County also encompasses part of Death Valley National Park and includes Ash Meadows National Wildlife Refuge. While some of this land is closed to public use for safety and security purposes, there are vast acres of land available for public recreation, including hiking, camping, hunting, and fishing (USFWS 2012).

The majority of the land and population in Nye County lies outside of the planning area. Only 1 percent of Nye County is within the planning area, with the only population center being Gabbs, which had a population of 269 people in 2010 (USCB 2010a). The land that does lie within the planning area is largely rural, and it is estimated that less than 1,000 people live in this area. Due to the remote location, attracting tourism and pass-through visitor services is a low priority in this area. However, mining is an important economic priority in this area; the Premier Chemicals Mine near Gabbs is a major employer in that community.

Storey County

Storey County is located in west central Nevada, between Lake Tahoe and Pyramid Lake. It is the second smallest county in Nevada, with a largely rural population. Storey County is home to Virginia City, the epicenter of the Comstock Lode. While the time of economic prosperity was relatively short-lived, the character of the old mining days still lives on in Virginia City. Tourism plays a major role in the economy of Storey County, as does manufacturing and construction. This is primarily due to a $30 million dollar reconstruction, renovation, and expansion of the historic Virginia and Truckee Railroad. Storey County also contains one of the largest industrial parks in the nation and hopes to continue attracting major businesses to the area (Storey County, Nevada 2012).

The population of Storey County was 4,010 people in 2010, a 166 percent increase since 1980, although far short of the population during the Comstock Lode. The population density is approximately 15.3 people per square mile (USCB 2012). With over 16,000 acres of BLM-administered land, there are many opportunities for hiking, camping, mountain biking, OHV use, hunting, and

fishing. Storey County has begun promoting OHV events to diversify and stabilize the economy of the Virginia City area.

Washoe County

Washoe County is located in western Nevada, along the eastern slope of the Sierra Nevada mountain range and adjacent to the California border. The county encompasses both rural agricultural regions and bustling metropolitan areas, creating a wide variety of economic sectors and tourism opportunities. The majority of the population and economic activity in the county is based in the Reno-Sparks metropolitan area, which has many casinos, an international airport, the University of Nevada Reno, and the headquarters for many mining and energy companies (The Chamber, Reno-Sparks-Northern Nevada 2012). In this area, tourism, education, and management and professional services are the main sectors of the economy. Washoe County also contains many acres of agricultural land in the central and northern parts of the county, which plays a smaller role in the economy (USCB 2010c).

The population of Washoe County was 421,407 in 2010, a 117 percent increase since 1980. The population density is 66.9 people per square mile (USCB 2012). The county contains the eastern slope of the Sierra Nevada mountain range and provides access to Lake Tahoe, the Truckee River, and Pyramid Lake. This makes it ideal for recreation activities like fishing, boating, and rafting, in addition to many opportunities for hiking, camping, and biking.

Though only 34 percent of Washoe County lies within the planning area, this area contains the major population and economic centers. The above descriptions accurately depict the area within the planning area.

California

The following California counties contain fragments of land that are managed by the CCD but are surrounded by lands managed by other BLM district offices. For each county, less than 10 percent of the land is managed by the CCD. The descriptions below describe the entire county, which may not present an accurate representation of the lands comprised by the CCD.

Alpine County

Alpine County is located in eastern California, just south of Lake Tahoe and bordering Nevada. It is the smallest county in California in both size and population. Alpine County was formed when prospectors and pioneers came to the eastern Sierra looking for silver after the Comstock Lode began in 1859, forming temporary mining towns and a producing a sudden spike in population. When very little silver was discovered, most people left, dropping the population to a few hundred people by the 1920s. In the past few decades, however, outdoor recreation and tourism have increased the population and created a new, steady source of economic activity (Alpine County Chamber of Commerce 2012).

The population of Alpine County was 1,175 people in 2010, which is a 7 percent increase since 1980, but a 3 percent decrease from 2000. The population density of the area is approximately 2 people per square mile (USCB 2012). There are no incorporated towns in Alpine County. Much of the economy is supported by tourism, primarily based on two major ski resorts and the outdoor recreation industry. About 96 percent of the land is under public ownership, providing plenty of space for snow sports, hunting, fishing, camping, and rafting in the area. Education and healthcare and public administration are also strong sectors of the economy in Alpine County.

Lassen County

Lassen County is located in northeastern California, north of Lake Tahoe and bordering Washoe County in Nevada. White Americans began passing through the area during the gold rush of 1849 and created a flurry of economic activity until the mineral resource was diminished after a few decades. Once the gold rush was over, lumber became the primary export and economic driver of the area from the early 1900s until early in the 21st century, when the last major timber mill closed down. Utilizing the location in the mountains and the basin and range, the main economic driver of the region is now outdoor recreation and the tourism industry (Lassen County, California 2001). Education and public administration are also significant contributors to the economy. Although less so than in previous years, forestry continues to play a prominent role in the local economy (USCB 2010c).

The population of Lassen County was 34,895 people in 2010, a 61 percent increase since 1980 but only a 3 percent increase since 2000. The population density is approximately 8 people per square mile (USCB 2012). Recreation plays an important role in the local economy, including water skiing, boating, and fishing on Eagle Lake; OHV use, horseback riding, and BLM wild mustang roundups in high desert areas; and hiking and camping in Lassen Volcanic National Park.

Plumas County

Plumas County is located in eastern California, north of Lake Tahoe and south of Lassen County. Multiple forks of the Feather River flow through the county, and were the epicenter of the gold rush that occurred here from the 1850s through the early 1900s. Once the gold supply was depleted and the construction of the Western Pacific Railroad was completed in 1910, timber sales became the largest economic driver in the area (Plumas County, California 2012). While timber still plays a role in today's economy, tourism, construction, and education and health care are the main employment sectors in the county (USCB 2010c).

The population of Plumas County was 20,007 in 2010, a 15 percent increase from 1980 and a 4 percent decrease from 2000. The population density is approximately 8 people per square mile (USCB 2012). Similar to the other

California counties in the planning area, there are vast acres of BLM-administered land for recreation activities during all season. Snow sports, like skiing and snowmobiling, are popular in winter, while camping, boating, biking, and fishing are popular in the summer. Plumas County is also adjacent to Lassen Volcanic National Park.

Affected Groups and Individuals

In addition to those living within the planning area, there are specific groups for whom management of BLM-administered lands is of particular interest. These include recreational users, Native Americans, military installations, recreational outfitters and vendors, private livestock grazing lessees and area ranchers, mineral estate owners, and renewable energy leaseholders. Furthermore, special interest groups and individuals who represent resource conservation or resource use perspectives constitute additional groups who have an interest in planning area management.

Recreational Users

Recreational visitors to the planning area include recreationists whose destination is western Nevada, those who are traveling through the area to get to Las Vegas, Reno, central California, Salt Lake City, or locations across the west, and residents of the region (particularly in the Stillwater Field Office). Approximately 709,340 people live within the study area, and many of these residents utilize BLM-administered lands for recreational activities such as OHV use, mountain biking, camping, fishing, and hunting.

Native Americans

Native Americans have a unique relationship with BLM-administered lands based on traditional uses and cultural values. The value they place on BLM-administered lands includes the special spiritual contribution and foundation the lands provide to the culture. BLM-administered lands are considered critical for the social and spiritual survival of Native Americans.

Military

Naval Air Station Fallon and Hawthorne Army Depot have an important economic presence in the planning area. BLM-administered land is utilized for training exercises and by military personnel. Workshop participants stressed the continued importance of coordination with Naval Air Station Fallon and other military operations and the BLM to coordinate on land use.

Recreational Outfitters and Vendors

Recreational outfitters in the area include guides as well as organizers of special events that occur on an annual basis in the planning area. Outfitters and vendors are particularly concerned with the management directing motorized and mechanized use and the issuance of special recreation permits.

Ranchers and Livestock Grazing Lessees

Ranching and agriculture are a part of the planning area's history, culture, and economy. Ranchers face such challenges as fluctuating livestock prices, increasing equipment and operating costs, fluctuating water availability, and changing federal regulations. Additional income sources are often necessary to continue ranching, and ranchers or their family members may also work in other sectors of the economy. Agriculture and livestock grazing are historic uses of BLM-administered lands in some parts of the planning area. In 2010, farm jobs accounted for 5.3 percent of total employment in Lassen County, California, and zero percent in Storey County, Nevada, with an average of 0.9 percent for the study area as a whole (Headwaters Economics 2012).

Private Landowners

Landowners with property adjacent to BLM-administered lands are an important group to consider in the planning process. Local private landowners are concerned about how the development on BLM-administered lands may impact the quality or quantity of local natural resources, especially water. Protection of adjacent BLM-administered lands from wildland fire is a concern for residents for both public safety and protecting private property. Additional planning issues of importance to some private landowners include rural lifestyle preservation, preservation of open space, and BLM-administered land recreation opportunities.

Mineral Resources

Development of mineral resources is of historical importance in the planning area and of continued importance for some local communities. Mineral estate leases cover the various extractable minerals found within the planning area, notably gold, silver, and copper. Leaseholders are particularly interested in keeping restrictions on leasing minimal in order to keep the costs and delays of production low.

Renewable Energy Leaseholders

Due to increasing fossil fuel prices and federal incentives for renewable energy development, interest in nontraditional energy leasing opportunities on BLM-administered lands is of increasing importance. Geothermal energy in particular is of growing importance in the planning area, although some resources are also available for wind and solar development. Renewable energy leaseholders would be interested in management direction that supports development of these resources in a timely, cost-efficient manner. Geothermal energy is managed under the fluid leasable program, while solar and wind projects are managed as ROW authorizations.

Right-of-way Holders

The BLM currently manages ROWs for land uses such as roads, power lines, natural gas pipelines, water lines, telephone lines, communication sites, and ditches and canals on BLM-administered land. Renewable energy rights for wind

and solar are also granted as ROW authorizations. ROW holders are primarily concerned with continued access to ROW lands. Requests for ROWs are likely to increase in the next 20 years due to increased interest in renewable energy and the potential for growth and development. As energy development continues, energy ROWs, such as electric transmission lines, and regulations that allow for ROW access and use are likely to increase in importance.

Individuals and Groups Who Prioritize Resource Protection

Various individuals and groups at the local, regional, and national levels are interested in how the BLM manages public lands. Many of their concerns are in regard to wildlife, water quality, and visual quality. They value BLM-administered lands for open space, wildlife, recreation, and scenic qualities, among other aspects. Non-profit organizations with a stake in wildland preservation, such as The Wilderness Society, have cited the importance of including an assessment of the nonmarket benefits provided by BLM-administered lands in the socioeconomic analysis for the RMP/EIS. Non-market benefits include ecosystems services such as clean air and water, as well as the values of open space for the local community.

Decision Area Demographics

In 2010, the study area total population was 709,340, ranging from 1,175 in Alpine County, California, to 421,407 in Washoe County, Nevada. The population density for the study area in 2010 varied from approximately 1.3 people per square mile in Mineral County, Nevada, to 382.1 persons per square mile in Carson City, Nevada. The average population density for the 11 counties in the study area was 16.1 persons per square mile, less than state averages for both Nevada and California, which were 24.6 and 239.1 persons per square mile, respectively. This is an increase from 2000, when the population density was 13.3 for the study area. In 2000, the population densities ranged from 1.4 persons per square mile in Mineral County, Nevada, to 362.6 persons per square mile in Carson City, Nevada.

In 2010, the vast majority of the population in the study area resided in Washoe County in the city of Reno (225,221 people) and the surrounding metropolitan area (including Sparks, 90,264 people, and Sun Valley, 19,299 people). Other population centers in the study area include Carson City, with a population of 55,274 in 2010, and the city of Fernley in Lyon County, with a population of 19,386 in 2010 (USCB 2010a).

From 2000 to 2010, the population within the study area increased by 20.5 percent, showing a slower rate of growth from the two previous decades. The majority of the counties showed positive growth, with the highest being 50.7 percent in Lyon County, Nevada. Mineral County in Nevada and Alpine County and Plumas County in California all decreased in population between 2000 and 2010. Overall, the study area increased in population by 115.3 percent between 1980 and 2010, with the greatest population growth in Nye County, Nevada

(385.7 percent), and the greatest population loss in Mineral County, Nevada (23.2 percent). The growth in the study area within the 30-year period was greater than that of California (57.4 percent increase) and less than that of Nevada (237.4 percent increase). See **Table 3-45**, Study Area Population Totals (1980–2010).

Table 3-45
Study Area Population Totals (1980–2010)

Location	1980	1990	1980–1990 Percent Change	2000	1990–2000 Percent Change	2010	2000–2010 Percent Change	1980–2010 Percent Change
Nevada								
Carson City	32,022	40,443	+26.3	52,457	+29.7	55,274	+5.4	+72.6
Churchill County	13,917	17,938	+28.9	23,982	+33.7	24,877	+3.7	+78.8
Douglas County	19,421	27,637	+42.3	41,259	+49.3	46,997	+13.9	+142.0
Lyon County	13,594	20,001	+47.1	34,501	+72.5	51,980	+50.7	+282.4
Mineral County	6,217	6,475	+4.1	5,071	-21.7	4,772	-5.9	-23.2
Nye County	9,048	17,781	+96.5	32,485	+82.7	43,946	+35.3	+385.7
Storey County	1,503	2,526	+68.1	3,399	+34.6	4,010	+18.0	+166.8
Washoe County	193,623	254,667	+31.5	339,486	+33.3	421,407	+24.1	+117.6
State	800,493	1,201,833	+50.1	1,998,257	+66.3	2,700,551	+35.1	+237.4
California								
Alpine County	1,097	1,113	+1.5	1,208	+8.5	1,175	-2.7	+7.1
Lassen County	21,661	27,598	+27.4	33,828	+22.6	34,895	+3.2	+61.1
Plumas County	17,340	19,739	+13.8	20,824	+5.5	20,007	-3.9	+15.4
State	23,667,902	29,760,021	+25.7	33,871,648	+13.8	37,253,956	+10.0	+57.4
Study Area	*329,443*	*435,918*	*+32.3*	*588,500*	*+35.0*	*709,340*	*+20.5*	*+115.3*

Source: USCB 1980, 1990, 2012

Population within the study area is expected to increase for all counties from 2015 to 2030 based on projections from the Nevada State Demographer's Office and the California Department of Finance, Demographic Research Unit. Populations are expected to increase by approximately 20 percent across the entire study area, with Nye County, Nevada, having the strongest growth (22 percent) and Alpine County, California, having the weakest growth (less than 1 percent). All other Nevada counties are expected to grow by between 8 and 16 percent between 2015 and 2030, which is equal to the expected growth of both states (approximately 15 percent each). All California counties are expected to grow by less than 10 percent. See **Table 3-46**, Study Area Population Projections (2015–2030).

Table 3-46
Study Area Population Projections (2015–2030)

County	2015	2020	2025	2030	% Change 2015-2030
Nevada					
Carson City	58,690	61,844	63,684	65,993	+12.4
Churchill County	28,513	29,753	30,534	31,628	+10.9
Douglas County	49,428	50,891	52,500	53,724	+8.7
Lyon County	57,862	64,561	67,458	70,592	+22.0
Mineral County	4,983	5,144	5,258	5,403	+8.4
Nye County	49,328	51,163	53,017	55,432	+12.4
Storey County	4,457	4,659	4,836	5,022	+12.7
Washoe County	445,260	473,616	494,788	517,889	+16.3
State	2,901,525	3,069,272	3,211,722	3,363,707	+14.8
California					
Alpine County	1,170	1,171	1,171	1,173	+0.3
Lassen County	35,503	36,317	37,380	38,434	+8.3
Plumas County	20,039	20,157	20,363	20,390	+1.8
State	38,926,281	40,817,839	42,721,958	44,574,756	+14.5
Study Area	*711,190*	*755,233*	*799,276*	*830,989*	*+14.6*

Source: Nevada State Demographer's Office 2011; California Department of Finance, Demographic Research Unit 2012

Household Characteristics

Housing

For most of the counties in the study area, the number of housing units changed considerably between 2000 and 2010. The most dramatic change was in Lyon County, Nevada, the number of housing units increased by 57.9 percent. The only county to have a (1.3 percent) decrease in housing was Mineral County, Nevada. The percent change in the remaining Nevada counties ranged from 10.6 percent in Carson City to 40.3 percent in Nye County. With the exception of Lyon County, they all fell below the state average of 41.9 percent increase. In California, both Alpine County and Plumas County were above the state average of 12 percent, with an increase in housing units of 16.2 and 16.3 percent, respectively, while Lassen County increased by only 5.9 percent. Over the entire study area, the number of housing units increased by 26.3 percent.

In 2010, housing vacancy rates within the study area ranged from a low of 9.0 percent in Carson City, Nevada, to a high of 71.8 percent in Alpine County, California. All of the counties in California were well above the state average of 8.1 percent, with Lassen County at 20.9 percent and Plumas County at 42.3 percent. While these rates seem extremely high, a large portion of the vacancies are due to vacation homes and second residences, which make up 90 percent of vacant homes in Alpine County, 50 percent in Lassen County, and 80 percent in Plumas County (USCB 2010a). For the counties in Nevada, the vacancy rate was

comparable to the state average of 14.3 percent, ranging from 9 percent in Carson City to 20.8 percent in Mineral County. The overall vacancy rate for the study area was 14.6 percent.

Employment of Residents

Employment is a key economic indicator, as patterns of growth and decline in a region's employment are largely driven by economic cycles and local economic activity.

Based on the data representing 2006-2010 averages, the arts, entertainment, recreation, accommodation, and food industry and the retail trade industry are second and third largest employment sectors within the study area (15.2 percent and 12.2 percent, respectively), surpassed by the education, health care, and social assistance industry (18.1 percent). This indicates that tourism plays a large role in the local economies within the planning area, particularly in Nye, Washoe, and Douglas Counties in Nevada, where almost 30 percent of the workforce is employed within these sectors. The economic contribution from the use of BLM-administered lands provides significant input into these sectors, especially to the more rural counties, and will be affected by future land management decisions.

The construction sector provides a sizeable contribution (8.7 percent) to the employment in the study area. This industry employs around 14 percent in both Storey and Nye Counties in Nevada and just over 12 percent in Plumas County, California. While construction sector figures include building for residential and commercial development, these numbers also include infrastructure for energy development, which may include development on BLM-administered lands.

The agriculture, forestry, fishing and hunting, and mining industries have a relatively small impact in the study area, employing only 1.8 percent of the work force; only the information sector has a smaller impact. On an individual county basis, however, the agriculture, forestry, fishing and hunting, and mining industries play a much larger role. In Nevada, 7.8 percent of Nye County's overall employment is within this sector, as well as 6.0 percent of Churchill County's overall employment. In California, it accounts for 7.1 percent of employment in Plumas County and 5.1 percent in Lassen County. These are all rural counties and may be impacted to a greater extent by changes in BLM land administration than larger, more diversified counties.

Income Distribution

The study area population represents a wide range of income levels. Overall median household income increased for all counties between 2000 and 2006-2010 (not adjusted for inflation). Alpine County, California, had the highest median household income at $63,478 per 2006-2010 averages, and Mineral County, Nevada, had the lowest at $35,446 (USCB 2010c). Per capita income follows similar trends from 2000 to 2006-2010, with all counties increasing per capita income in that time period. The average increase in per capita income

across the study area was $6,066, with the highest increase in Plumas County, California (over $9,000), and the lowest increase in Lyon County, Nevada (under $2,500), (USCB 2000; USCB 2010c).

When compared to state averages, most counties in the study area fell below the average income for both median household income and per capita income in both 2000 and 2006-2010. In 2000, the only counties in Nevada with a median household income greater than the state average ($44,581) were Douglas County ($51,849), Storey County ($45,490), and Washoe County ($45,815). The only counties with a per capita income greater than the state average ($21,989) were Douglas County ($35,239), Storey County ($23,642), and Washoe County ($24,227). In California, all of the counties fell below the state average for median household income ($47,493). Only Alpine County ($24,431) had a greater per capita income than the state average ($22,711), (USCB 2000). Overall, the study area had a median household income of $40,808 and a per capita income of $20,677.

The 2006-2010 results were similar. In Nevada, the counties with a median household income greater than the state average ($55,726) were Douglas County ($60,721) and Storey County ($61,525). The counties with a per capita income greater than the state average ($27,589) were Douglas County ($35,239), Storey County ($31,079), and Washoe County ($29,687). In California, Alpine County was the only county to surpass the state average in either median household income or per capita income (USCB 2010c). Overall, the study area averaged a median household income of $51,579 and a per capita income of $26,743.

Local Economic Activity Affected by Public Land Uses

The BLM's management of public lands contributed more than $112 billion to the national economy in 2010 and supported more than 500,000 American jobs in 2010 (BLM 2011b). Local economies realize direct and indirect benefits from expenditures and revenues generated by a variety of activities in the BLM CCD decision area. The BLM estimates that management of activities on public lands supports more than 5,000 and 22,800 direct and indirect jobs in Nevada and California, respectively. Refer to **Table 3-47**, Direct and Indirect Jobs in Nevada and California Supported by BLM's Management of Public Lands (Fiscal Year 2010).

Activities that tend to have the greatest economic influence include recreation, mining and energy resource development, and livestock grazing. BLM-administered lands cover approximately 54 percent of total land area in the study area (BLM 2012f). Additional BLM-administered lands managed by other district offices contribute to the economy of some area counties. Activities that are directly and indirectly impacted by BLM management decisions are discussed in the sections below.

Table 3-47
Direct and Indirect Jobs in Nevada and California Supported by BLM's Management of Public Lands (Fiscal Year 2010)

Economic Area	Nevada		California	
	Direct Jobs	Total Jobs	Direct Jobs	Total Jobs
Minerals	125	221	4,473	13,843
Geothermal and Wind Energy	193	393	399	1,041
Timber	22	47	110	281
Grazing	200	352	34	71
Recreation	2,702	4,096	4,586	7,634
Total	**3,242**	**5,110**	**9,602**	**22,870**

Source: BLM 2011b

Activities Directly Impacted by BLM Management

The BLM collects revenues from recreation and commercial activities that take place on the land that it administers in Nevada and California, and a portion of these revenues are redirected back to the state and county governments. These revenues are collected from facilities, such as fees from campgrounds, from BLM recreation permits (special, competitive, organized group activity, and event use permits), mining leases and mineral revenues, grazing fees, and forestry (e.g., wood products, seeds, and timber) sales. **Table 3-48**, CCD Receipts (Fiscal Year 2011), shows the revenues collected by the BLM CCD in 2011. Additional revenues are also collected from royalty payments.

Table 3-48
CCD Receipts (Fiscal Year 2011)

Resource	Total
Recreation fees*	$864
Grazing Fees**	$132,400
Leases & Rights-of-way	$1,326,110
Salable Mineral Materials	$62,916
Forestry	$27,294

Source: BLM 2012g
*This number includes organized group event receipts and commercial receipts
**This figure includes 97,168 AUMs billed in calendar year 2011. Base cost per AUM in the planning area is $1.35 (plus additional fees for grazing other's cattle). Multiplied by the total number of AUMs, this means there was approximately $132,400 collected in grazing fees within the planning area.

Market and Commodity Values

Recreational Use

The BLM provides recreational opportunities for both local residents and tourists from outside the area, and these recreational opportunities represent an important contribution. Recreation was identified as a key use of BLM-administered lands in economic workshops. The BLM supports a variety of activities, including camping, hiking, horseback riding, off-road vehicle driving,

and target shooting. Migrating and resident wildlife provide plentiful opportunities for observation, photography, and hunting. Former mining towns offer historic recreation opportunities.

The BLM collects recreation data by recreational activity for each field office and maintains this data in BLM's Recreation Management Information System. **Table 3-30**, Visitor and Visitor Use Days (2006-2013) in the Planning Area, provides data for the study area. A visit is defined as one person's trip, or visit, for one day, to planning area public lands. A visitor day represents one person engaging in an activity for 12 hours of use. Approximately 1,063,080 recreational users visited the planning area in 2013. Based on Recreation Management Information System data, the most popular of activities in the planning area are OHV travel, camping, picnicking, nonmotor sports, hunting, snowmobile and other motorized travel and specialized nonmotor sports, events and activities. Percentages for all activities are shown in **Table 3-49**, Activities of Visitors to the CCD (Fiscal Year 2013). Much of the recreation occurs as dispersed recreational use in undeveloped areas (e.g., OHV use, hunting, fishing, and snowmobiling). Notable developed recreation sites include Sand Mountain Recreation Area, Prison Hill Recreation Area, Silver Saddle Ranch, Wilson Canyon, Hungry Valley Recreation Area, Pah Rah Hills, Jumbo Grade/Virginia City, Lemmon Valley, Indian Creek/East Fork of the Carson River SRMA, and the Walker Lake SRMA.

Table 3-49
Activities of Visitors to the CCD (Fiscal Year 2013)

Activity	Percent
Off-Highway Vehicle Travel	34.2
Camping & Picnicking	30.8
Non-Motorized Travel	16.2
Hunting	8.1
Snowmobile & Other Motorized Travel	3.3
Specialized Non-Motor Sports, Events & Activities	3.3
Driving For Pleasure	3.0
Interpretation, Education & Nature Study	2.1
Fishing	1.6
Winter/Non-Motorized Activities	0.4
Boating/Non-Motorized	0.2
Boating/Motorized	0.1
Specialized Motor Sports, Events & Activities	0.1
Swimming & Other Water Based Activities	>0.1

Source: BLM 2012h

In addition to visitor information, the CCD collects information on SRPs issued in the planning area. The BLM requires SRPs for commercial uses, competitive events, organized groups, and recreation use within certain special areas. SRPs allow specified recreational uses of BLM-administered lands and related waters with applicable stipulations. SRPs for competitive events and other organized

groups in the planning area based on most recent fiscal years are shown in **Table 3-50**, SRPs for Competitive Events and Organized Groups.

Table 3-50
SRPs for Competitive Events and Organized Groups

	Approximate Number of Annual Events	Approximate Number of Participants	Approximate Additional Number of Spectators	Permit Fees
Stillwater Field Office	10	1,100	Not available	$5,530
Sierra Front Field Office	47	2,905	4,510	$17,150
Carson City District	57	4,005	Not available	$22,680

Source: BLM 2012h

Fee recreation areas represent direct economic contributions in the form of fees collected as well as areas with concentrated recreational use where vendors and outfitters can promote local businesses. Notable designated fee sites in the planning area include Sand Mountain Recreation Area and Walker Lake Recreation Area. The Sand Mountain Recreation area contributed over $200,000 in fees in 2011(see **Table 3-51**, Sand Mountain Recreation Area – Pass Sales and Revenue 2006-2013). This recreation area, managed by the Stillwater Field Office, is located within Churchill County and features 4,795 acres of sand dunes and is used primarily by OHV riders. It should be noted that recreational use of the area and associated economic contributions vary by season, with the peak use in October/November and at a slightly lower level in April/May. In addition to fees collected from permits, spending with local vendors and outfitters represents a contribution to the local economy. In 2011, gross income of Sand Mountain vendors was estimated at over $64,000 (BLM 2012h). Fees from permits at Walker Lake recreation area in 2011 were estimated at an additional $2,344.

Table 3-51
Sand Mountain Recreation Area – Pass Sales and Revenue 2006-2013

FY	Permits			Revenue		
	Annual	Weekly	Total	Annual	Weekly	Total
2006	1,792	4,895	6,687	$161,286	$195,781.00	$357,067
2007	1,609	4,798	6,408	$144,826	$ 91,937.00	$336,763
2008	1,685	3,941	5,626	$151,636	$157,629.00	$309,265
2009	1,605	4,373	5,977	$144,408	$174,918.00	$319,326
2010	1,255	3,343	4,599	$112,979	$133,732.00	$246,711
2011	923	2,604	3,527	$82,090	$103,640	$185,730
2012	782	2,209	2,991	$69,074	$88,039	$157,834
2013	584	2,141	2,725	$57,590	$95,858	$153,448

Source: BLM 2012h
[1]Number of permits sold calculated by dividing total revenue for type of permit by cost of permit. Special Recreation Permit-Individual Permits are $90 annually, or $40 weekly

In addition to the recreation data presented for the CCD in the tables above, it is likely that recreation on other federal and state lands in and around the study area contributes to the local economy. Notable areas for recreation outside of the planning area include Lake Tahoe and Humboldt-Toiyabe National Forest.

Recreational activity has important economic value both in terms of the satisfaction it provides local residents and the economic activity it generates for the regional economy. While hunting and fishing fees are collected by the state, visitors who travel to the region for these activities may contribute to the local economy. A 2007 study found that nonwildlife based outdoor recreation resulted in $1.5 billion and $24.6 billion in trip expenses and sporting equipment in Nevada and California, respectively. Wildlife based recreation contributions resulted in an additional $344 million and $3,540 million in retail sales in Nevada and California, respectively. Economic stimulus occurs as nonresidents spend money in the local economy, generating jobs, income, and additional spending by local residents. Indirect expenditures added additional economic benefits throughout the state (Outdoor Industry Foundation 2007). In the planning area in 2011, gross income from guide services for hunting and other activities in the planning area was estimated at over $56,000 (BLM 2012h).

Mineral and Energy Resources

In addition to federal minerals underlying BLM-administered lands, the BLM is also responsible for administering federal mineral estate underlying lands managed by other agencies, or on reserved mineral estate underlying private lands. Generally, mineral management programs include locatable minerals (e.g., metals and gypsum), leasable minerals (e.g., fluid leasables such as oil and gas and geothermal, and solid leasables such as potash), and salable mineral materials (e.g., common varieties of sand and gravel, clay, and rock). The economic contributions of different categories of resources in the planning area are examined below. Renewable energy is discussed in a separate section below.

Locatable Minerals. Hard rock mineral extraction has historically played an important role in the economy for some counties in the planning area. Many of the towns in the planning area were formed as a result of mining booms in the early 20th century. Because mining has fluctuated over time in response to changing demand for minerals and resource availability, the boom and bust cycles have played a role in the local economies. Today, mineral extraction of gold, silver, and copper continues to contribute to some local economies Headwaters Economics 2012). Socioeconomic issues in the planning area associated with mining include use of water and lack of adequate housing for employees.

Currently, mining in the planning area is concentrated in Mineral, Churchill, and Nye Counties. Storey County also has high potential but high constraints on development due to the prevalence of cultural and historic resources. Mining represented less than 2 percent of total employment in all planning area

counties with the exception of Nye County, where approximately 10 percent of employment was attributed to metal ore mining in 2010 (Headwaters Economics 2012). As previously stated, this data is county-wide and may represent activity outside of the CCD.

Minerals found in the planning area include gold, silver, copper, iron, and tungsten. Industrial minerals such as diatomite, limestone, clay, and salt are also found in the planning area. BLM-administered mineral resources are discussed in detail in **Section 3.3.3**, Geology and Minerals. Presently within the planning area there are 24 authorized exploration or mining Plans of Operation (required for any mining of locatable minerals or locatable mineral exploration causing surface disturbance of more than 5 acres) and 37 authorized exploration Notices (required for locatable mineral exploration surface disturbance of less than 5 acres). New development of mineral resources within existing claims and outside of current permitted mine boundaries at idle and active mine sites is possible as new ore deposits and extensions of existing ones are discovered. Development would continue at a rate determined by the price of minerals in the market place and technological advances that lower the price to mine and process ore. Unlike leasable minerals, no federal royalties are collected or dispersed associated with locatable minerals.

Leasable Minerals (Excluding Geothermal). The counties in California and Nevada that compose the study area are not major producers of leasable minerals. Nevada is currently not a major producer of leasable minerals compared to other western states. Oil production in Nevada has decreased since the early 1990s and has leveled at less than 500,000 barrels per year (Nevada Commission of Mineral Resources 2011). Drilling for oil and gas resources within the planning area in Washoe, Lyon, Churchill, and Mineral counties has been conducted on a limited basis from the early 1900s until present, and no economic oil or gas deposits have been found to date. There is no reason to believe that oil and gas would constitute an economic resource within the planning area in the future. However, it is likely that oil and gas exploration will continue to occur on a limited basis as new potential targets are identified within the planning area (BLM 2011c).

Leasable minerals do not represent a significant source of income or employment in the study area based on most recent data. Oil and gas extraction and coal mining provided less than 2 percent of total employment for all planning areas counties based on 2010 data (Headwater Economics 2012). Constraints limiting development in the area include the lack of a transportation pipeline for extracted product.

Salable Minerals. Deposits located in the planning area include construction sand and gravel, aggregate, and decorative rock. Mineral material production from BLM-administered land in the planning area planning area is discussed in detail in **Section 3.3.3**, Geology and Minerals. Materials are sold to individuals and

corporate entities through negotiated sales. Federal, state, and local governments and nonprofit organizations are permitted free use of these materials for qualified purposes. Common use areas are generally broad geographic areas from which the BLM can make disposals of mineral materials to many persons with only negligible surface disturbance. A community pit is a small defined area from which the BLM can make disposals of mineral materials to many persons. Demand for and creation of pits was highest at the peak of the housing boom due to the need for construction materials.

Renewable Energy

Renewable energy, particularly geothermal resources, represents a growing sector of importance in the planning area. The study area contains potential resources for renewable energy production, including geothermal, solar (photovoltaic and concentrating solar power applications) and wind. On January 16, 2009, Secretarial Order 3283 was issued to facilitate the Department of the Interior's efforts to achieve the goal Congress established in Section 211 of the Energy Policy Act of 2005. By 2015, the Department of the Interior will approve nonhydropower renewable energy projects on BLM-administered lands with a generation capacity of at least 10,000 megawatts of electricity.

Solar. One solar ROW grant has been issued in the planning area, for a 575-acre project. The BLM also has a pending ROW application for solar development near Naval Air Station Fallon. However, the BLM-administered land the proposed project would use is in a possible land exchange area (BLM 2011c). A Programmatic Solar EIS has been developed by the BLM Washington Office, but no priority development areas for utility-scale solar energy facilities were identified in the planning area (BLM 2011c). Lack of major power lines for distribution of energy is a constraint to energy development in the planning area.

Wind. The BLM currently has two authorized wind testing projects listed in **Table 3-38**, Current Wind Testing Projects in the Planning Area. These projects could result in up to 11,296.74 acres of potential wind development if the testing data show that the areas are viable and the proponents proceed with energy development. Under current wind energy regulations, testing projects cannot be renewed unless the application to renew is accompanied by an application for development (and a plan of development). Key constraints to development include special wildlife, particularly sage-grouse and raptors. Constraints to development in Storey County also include cultural and historic resources.

Geothermal. Up to 75 percent of all geothermal lease acres on BLM-administered in the US are in Nevada, and the CCD sits atop one of the most active geothermal resource areas; the 2003 BLM/National Renewable Energy Laboratory study identified the CCD as one of the BLM planning areas with the highest potential for geothermal resources and highly favorable for geothermal

development (BLM 2011c). As of February 2013, there were 148 geothermal leases totaling approximately 299,195 acres located in the planning area (BLM 2013f). Six areas are identified within the planning area with active geothermal power production of approximately 208 megawatts of electricity (enough to power about 200,000 homes). These include Steamboat Hills near Reno; Dixie Valley; Wabuska; and Soda Lake, Stillwater, and Salt Wells near Fallon. Another three areas have active exploration projects with proposed future energy production, including Southern Gabbs Valley, Northern Edwards Creek Valley, and the Hazen area. Additional areas that have active geothermal leases but minimal or no exploration include Soda Springs Valley near Luning; Rhodes Salt Marsh near Mina; Teels Marsh southwest of Mina; and the west Stillwater Range northeast of Fallon (BLM 2011c).

Federal Lease Revenue

Lease holders competitively bid, pay an initial bonus, and subsequently pay rent for the right to develop the resources on BLM-administered lands. These funds are collected and subsequently distributed to the federal and state government and are known as lease revenue and, in the case of rents, lease royalties. Lease revenues and royalties to the state and county provide an additional economic benefit of mineral resource extraction. Federal mineral lease revenues are collected by the Office of Natural Resources Revenue within the Department of the Interior. Approximately 50 percent of the revenues are transferred to the Nevada or California State Treasurer, as appropriate. Nevada received close to $8,345,000 in federal lease revenue and royalties disbursement in Fiscal Year 2011, while California received $86,654,000 from total onshore leases (Office of Natural Resources Revenue 2012). This portion, in turn, is distributed to counties, cities, and school districts.

Revenues from mineral resources extraction in the planning area provide benefits to local communities. The contribution of geothermal lease revenue directly to study area communities is shown in **Table 3-52**, Study Area Federal Mineral Lease Revenues Disbursement, Geothermal Lease Revenue (Fiscal Year 2011). Total lease revenues and royalties reported for Nevada in 2011, including direct and indirect geothermal energy production, oil and gas production, potassium, sand, and gravel, were $17.43 million. For California, total revenues and royalties were over $230 million. However, the majority of production occurred in other regions of the state outside of the planning area. Distribution of royalties for area counties is included in **Table 3-52**. A breakdown of specific royalty revenue information is not available by county. However, based on the statewide breakdown and local resources, royalty and revenues from indirect geothermal production represents a large portion of the contributions from area counties.

Table 3-52
Study Area Federal Mineral Lease Revenues Disbursement, Geothermal Lease Revenue (Fiscal Year 2011)

County	Total
Nevada	
Carson City	$0
Churchill County	$879,578
Douglas County	$0
Lyon County	$6,626
Mineral County	$64,331
Nye County	$48,308
Storey County	$0
Washoe County	$28,026
State	$1,450,232
California	
Alpine County	$0
Lassen County	$12,232
Plumas County	$0
State	$2,208,258
Study Area	$1,039,101

Source: ONRR 2012

Payments in Lieu of Taxes

Payments in Lieu of Taxes are federal payments to local governments that help offset losses in property taxes due to nontaxable federal lands within their boundaries. Congress appropriates Payments in Lieu of Taxes annually, and the BLM administers disbursement to individual counties. Payments in Lieu of Taxes payments are determined according to a formula that includes population, the amount of federal land within the county, and offsets for certain federal payments to counties, such as timber, mineral leasing, and grazing receipts. Payments in Lieu of Taxes are transferred to state or local governments, as applicable, and are in addition to other federal revenues, including those from grazing fees. The study area counties received nearly $4.0 million in Payments in Lieu of Taxes in 2012 (**Table 3-53**, Study Area Payments in Lieu of Taxes (Fiscal Year 2012)).

Table 3-53
Study Area Payments in Lieu of Taxes (Fiscal Year 2012)

Location	Payments in Lieu of Taxes Amount
Nevada	
Carson City	$119,008
Churchill County	$ 2,151,359
Douglas County	$632,761

Table 3-53
Study Area Payments in Lieu of Taxes
(Fiscal Year 2012)

Location	Payments in Lieu of Taxes Amount
Lyon County	$ 1,972,328
Mineral County	$ 659,099
Nye County	$2,898,375
Storey County	$ 35,804
Washoe County	$ 3,296,556
State	$ 23,917,845
California	
Alpine County	$ 147,988
Lassen County	$1,259,819
Plumas County	$398,336
State	$ 40,272,053

Source: US DOI 2012

Non-market Values

Some of the most important socioeconomic factors associated with planning area BLM-administered lands are the nonmarket values offered by public lands management. Non-market values are the benefits derived by society from the uses or experiences that are not dispensed through markets and do not require payment. For example, there are unique and sensitive natural and cultural resources on BLM-administered lands, including Native American traditional uses and the special spiritual contribution and foundations BLM-administered lands provide to Native American cultures. These values enhance the quality of life and enjoyment of place, thereby improving regional and local economic conditions. Proximity to undeveloped natural lands and the resources they harbor, including scenic vistas and recreational and wildlife viewing opportunities, add nonmarket value to the area. Two examples of nonmarket benefits available from public land resources include the enhancement value of open space and ecosystem services, as discussed below.

Open Space: Enhancement Value and Attracting Non-labor Income

Open space can be an important contributor to quality of life for communities adjacent to BLM-administered lands providing scenic views, recreational opportunities, and other benefits. In addition, nonmarket resources may provide indirect economic benefits. Enhancement value is the tendency of open space to enhance the property value of adjacent properties. BLM-administered may provide enhanced value to adjacent private parcels. Open space is generally seen as an enhancement value, especially if the open space lands are not intensively developed for recreation purposes (Fausold and Lilieholm 1996).

Additionally, open space may attract new residents who in turn bring new sources of income to the area. Communities adjacent to public lands offer a high

level of natural amenities that often attract retirees and others with nonlabor sources of income, as well as sole proprietors and telecommuters who bring income from other regions into the local economy. These new residents, in turn, spur economic development. Residents who rely on nonlabor income become both a pool of customers and clients for new business and a potential source of investment capital (Haefele et al. 2007).

Ecosystem Services

Ecosystem services are those goods that an ecosystem provides for human use. Examples include provision of fresh water and air, regulation of wastes, maintenance of biodiversity, formation of soil, and protection from natural hazards. Recent models have been created to assess the economic benefits of ecosystem services so that these economic values can be incorporated into the planning process. Some recent studies have created models to assess the monetary value of ecosystem services. A study based in the Pike San Isabel National Forest of Colorado's Front Range, for example, determined the total value of ecosystem services to be $2,208 per acre per year in 2008 (Bacigalupi 2010).

Similarly, environmental restoration efforts (i.e., clean up and restoration of abandoned mines lands) can have economic values to local communities. As lands and water quality improves, the value of these resources for all other land uses will increase.

Agriculture and Livestock Grazing

Agriculture and livestock grazing have traditionally played a role in the study area and continue to be important today. There were 2,317 farms totaling over 1.6 million acres in the study area in 2007 (USDA 2007). BLM management actions have the potential to influence farming due to the purchase of farmland and through management practices influencing livestock grazing practices on BLM-administered lands as discussed in detail below.

Livestock grazing, grazing authorizations, and livestock uses are measured in AUMs. An AUM is the amount of dry forage required to sustain 1 "animal unit" for 1 month; this equates to a forage allowance of 26 pounds per day. For authorization calculation purposes, an animal unit is 1 cow and her calf, 1 horse, or 5 sheep or goats. Depending on the composition and weight of animals in the herd, actual forage use may vary. The BLM-administered range in the planning area is permitted at a level of 156,731 AUMs of forage with 6,222 suspended use AUMs (BLM 2011c). Within the planning area, there are 111 allotments and 52 permittees. The allotments vary in size from 120 to 512,449 public acres, with grazing allocations ranging from 29 to 11,410 AUMs in each allotment (BLM 2011c). Allotments are being reviewed by the Sierra Front-Northwestern Great Basin Resource Advisory Council developed standards to review rangeland health and management. For the 111 allotments, there are 67 permits,

35 of which have been renewed through an environmental assessment and grazing decision.

Permit values fluctuate based on market forces but generally depend on the number of AUMs and other terms of the lease or permit. Permit values may vary widely, depending on the location and the estimated average value of replacement forage. In 2012, the average fee per AUM on private lands in Nevada was $13.00 (BLM 2012j). Based on 156,731 active (including temporarily suspended) AUMs in the planning area, the total annual grazing value of all traditional leases would be approximately $2,037,503. Under the current federal rate of $1.35 per AUM, the comparative total annual grazing fee would be $211,587, which is $1.8 million less than the private grazing fee for all authorized grazing in the planning area. Based on input received from local community members at economic workshops, livestock grazing is viewed as an important economic sector in the Stillwater Field Office and of lesser importance in the Sierra Front Field Office. It should be noted that other grazing costs (e.g., herding, maintenance of facilities, and lost animals) can be substantially higher on BLM-administered lands. A 2010 study found that when these costs are taken into account, costs for grazing on private lands are actually $1.20 per AUM less than equivalent grazing on BLM-administered lands (Rimbey and Torrell 2011).

Resource Changes

The population within the planning area is projected to experience an increase for all counties by approximately 20 percent across the entire planning area from 2015 to 2030. Counties within Nevada are expected to grow by less than 1 percent to 22 percent, while all California counties are expected to grow by less than 10 percent. This is a growth in population is slightly slower but consistent with the overall growth of Nevada and California over the past few decades.

It is also expected that the major drivers of the economy will remain consistent or increase in the future based on the continued improvement of the US economy. These include tourism, recreation, mineral exploration, and agriculture and livestock grazing. The expansion of geothermal energy production in the area is also expected to bolster the economy in the future. The social values of the CCD are also expected to remain consistent, such as the desire for open space and rural lifestyles.

3.5.5 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, requires that federal agencies identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Guidance for evaluating environmental

justice issues in land use planning is included in the BLM Land Use Planning Handbook, Appendix D (BLM 2005a).

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. It focuses on environmental hazards and human health to avoid disproportionately high and adverse human health or environmental effects on minority and low-income populations. Low-income populations are defined as persons living below the poverty level based on total income of $11,139 for an individual and $22,113 for a family household of 4 for 2010 (USCB 2010d). Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-White persons are defined as minority populations.

Current Conditions

Low-income Populations

The planning area is characterized by a range of incomes. In Nevada, estimates from 2010 indicate that Nye, Mineral, and Carson City Counties had relatively high percentages of persons below poverty level (14.2, 11.4, and 9.6 percent, respectively) when compared to the state average of 8.6 percent. In California, Lassen County was slightly above the state average (10.2 percent), with 10.5 percent of its population below poverty level. In contrast, Churchill, Douglas, Lyon, Storey, and Washoe Counties in Nevada and Alpine and Plumas Counties in California were at or below their respective state averages in 2010 for percent of individuals below poverty level.

Estimates from 2010 indicate that Douglas, Storey, and Washoe Counties in Nevada had per capita incomes ($35,239, $31,079, and $29,683, respectively) that were above the state level of $27,589. The remaining counties in Nevada and all study area counties in California were below the respective state per-capita income level. Likewise, there was a range in median household income, from a high of $63,478 in Alpine County, California, to a low of $35,446 in Mineral County, Nevada (USCB 2000; USCB 2010c).

Minority Populations

The social and economic context of the study area is based on the study area counties. **Table 3-54**, Study Area Population by Race/Ethnicity (2010), describes the estimated 2010 racial and ethnic composition of the study area. In 2010, approximately 73.5 percent of Nevada's population was identified as White and not of Hispanic or Latino origin. People of Hispanic or Latino descent (of any race) accounted for 26.5 percent of the total state population (USCB 2010a). In California, 40.1 percent of the population was identified as White and not of Hispanic or Latino origin. People of Hispanic or Latino

Table 3-54
Study Area Population by Race/Ethnicity (2010)

Population	Nevada									California				*Study Area*
	Carson City	Churchill	Douglas	Lyon	Mineral	Nye	Storey	Washoe	State	Alpine	Lassen	Plumas	State	
Hispanic or Latino ethnicity of any race	11,777	3,009	5,103	7,674	436	5,967	228	93,724	716,501	84	6,117	1,605	14,013,719	*135,724*
	21.3%	12.1%	10.9%	14.8%	9.1%	13.6%	5.7%	22.2%	26.5%	7.1%	17.5%	8.0%	37.6%	*19.1%*
Not Hispanic or Latino, by Race														
White alone	39,083	19,030	39,094	40,634	3,271	34,663	3,532	278,213	1,462,081	852	23,270	17,015	14,956,253	*498,657*
	70.7%	76.5%	83.2%	78.2%	68.5%	78.9%	88.1%	66.0%	54.1%	72.5%	66.7%	85.0%	40.1%	*70.30%*
Black or African American alone	1,003	366	174	363	182	836	40	9,088	208,058	0	2,790	181	2,163,804	*15,023*
	1.8%	1.5%	0.4%	0.7%	3.8%	1.9%	1.0%	2.2%	7.7%	0.0%	8.0%	0.9%	5.8%	*2.12%*
American Indian or Alaskan Native alone	1,096	991	759	1,061	666	592	57	5,782	23,536	210	999	460	162,250	*12,673*
	2.0%	4.0%	1.6%	2.0%	14.0%	1.3%	1.4%	1.4%	0.9%	17.9%	2.9%	2.3%	0.4%	*1.79%*
Asian alone	1,139	633	699	701	49	547	66	21,288	191,047	7	337	127	4,775,070	*25,593*
	2.1%	2.5%	1.5%	1.3%	1.0%	1.2%	1.6%	5.1%	7.1%	0.6%	1.0%	0.6%	12.8%	*3.61%*
Native Hawaiian and Other Pacific Islander alone	91	41	60	124	6	179	12	2,358	15,456	0	163	18	128,577	*3,052*
	0.2%	0.2%	0.1%	0.2%	0.1%	0.4%	0.3%	0.6%	0.6%	0.0%	0.5%	0.1%	0.3%	*0.43%*
Some Other Race	67	25	64	79	2	53	2	673	4,740	1	363	18	85,587	*1,347*
	0.1%	0.1%	0.1%	0.2%	>0.1%	0.1%	>0.1%	0.2%	0.2%	0.1%	1.0%	0.1%	0.2%	*0.19%*

Source: USCB 2010a

Note: The sum of the five race groups may add to more than the total population because individuals may report more than one race.

descent (of any race) accounted for 37.6 percent of the total state population (USCB 2010a). As a whole the study area is less diverse than the state populations; in the study area as a whole, approximately 70.3 percent of the total population was identified as White and non-Hispanic/Latino origin in 2010. Hispanics/Latinos of any race accounted for 19.1 percent of the total study area population. Of this group, the majority identified themselves as white (9.3 percent of total population), or some other undefined race (8 percent of total population).

Carson City and Washoe County in Nevada were the most diverse counties in the planning area, with approximately 22.2 and 21.3 percent of the population of Hispanic/Latino origin, respectively. All other counties in the planning area had a smaller proportion of people who identified themselves as Hispanic/Latino, ranging from 5.7 percent in Storey County, Nevada, to 17.5 percent in Lassen County, California. All counties in the planning area were below the Nevada state level of 26.5 percent and California state level of 37.6 percent of Hispanic/Latino origin (USCB 2010a).

People in the majority of the planning area identified themselves as White. A total of 70.3 percent of the population of non-Hispanic-Latino descent identified themselves as White. Other races represent a significantly smaller segment of the population.

A total of 12,673 people (1.8 percent of the study area population) identified themselves as American Indian or Alaskan Native alone, and 15,023 people (2.1 percent) identified themselves as Black or African-American alone. A total of 25,593 people (3.6 percent) identified themselves as Asian alone, and 3,052 people (0.43 percent) identified themselves as Native Hawaiian and Other Pacific Islander alone (USCB 2010a). Based on population projections for the Nevada portion of the study area, persons of Hispanic origins of any race are expected to increase 49 percent between 2015 and 2030 (Nevada State Demographer's Office 2011). This information is not yet available for the study area counties in California.

Native American Populations

Native Americans (and Alaskan Natives) account for a small percentage of the study area population, with the exception of Alpine County, California, and Mineral County, Nevada, where the population is 17.9 and 14 percent American Indian or Alaskan Native, respectively. The BLM manages lands within the aboriginal territory of people identified based on commonality and differences in language and culture as Washoe, Northern Paiute, and Western Shoshone. Six tribal governments have reservations within the planning area and four additional tribes hold reservation lands beyond the CCD boundary (see **Table 3-55**, Tribal Reservations in and near the CCD). Each of the 10 groups is a federally recognized Native American tribe (25 USC 479a). Each tribe, as well as

Table 3-55
Tribal Reservations in and near the CCD

Tribe	Cultural Division(s)	General Location	CCD Geographic Area of Specific Concern
Bridgeport Paiute Indian Colony	Northern Paiute	Mono County, CA (outside of planning unit)	Stillwater and Sierra Front Field Offices – Southern Lyon and Western Mineral Counties
Fallon Paiute-Shoshone Tribe	Northern Paiute and Western Shoshone	Churchill County, NV	Stillwater and Sierra Front Field Offices – Northeastern Lyon and Western Churchill Counties
Lovelock Colony	Northern Paiute	Pershing County, NV (outside of planning unit)	Stillwater Field Office only – Northern Churchill County
Pyramid Lake Paiute Tribe	Northern Paiute	Washoe, Storey, and Lyon Counties, NV	Sierra Front Field Office only – Northern Storey and Northern Lyon Counties; Washoe County north of I-80
Reno-Sparks Indian Colony	Northern Paiute, Washoe, Western Shoshone and other Tribes	Washoe County, NV	Sierra Front Field Office only – Northern Storey County and Washoe County from Truckee Meadows north
Susanville Indian Rancheria	Northern Paiute, Washoe, Atsugewi, Achumawi, and Maidu	Plumas County, CA (outside of planning unit)	Sierra Front Field Office only – Plumas and Lassen Counties (CA); Washoe County west of Peterson Mountain and north of Fort Sage Mountains
Walker River Paiute Tribe	Northern Paiute	Churchill, Lyon, and Mineral Counties, NV	Stillwater and Sierra Front Field Offices – Eastern Lyon, Western Churchill, and Northern Mineral Counties
Washoe Tribe of Nevada and California	Washoe	Alpine County, CA; Carson City and Douglas Counties, NV	Sierra Front Field Office only – Alpine, Plumas, and Lassen Counties (CA); Washoe County west of Virginia Mountains; Carson City and Storey Counties; Douglas and Lyon Counties west of the Pine Nut Mountain crest
Yerington Paiute Tribe	Northern Paiute	Lyon County, NV	Stillwater and Sierra Front Field Offices – Lyon, Southern Storey, and Eastern Douglas Counties
Yomba Shoshone Tribe	Western Shoshone	Nye County, NV (outside of planning unit)	Stillwater Field Office only – Eastern Churchill, Eastern Mineral, and Western Nye Counties

Source: BLM 2011c

the California Native American Heritage Commission and the Inter-Tribal Council of Nevada, maintains a general concern for protection of and access to areas of traditional and religious importance, and the welfare of plants, animals, air, landforms, and water on reservation and BLM-administered lands.

Policies established in 2006 by the BLM and Forest Service, in coordination with federal tribes, ensure access by traditional native practitioners to area plants. The policy also ensures that management of these plants promotes ecosystem health for BLM-administered lands. The BLM is encouraged to support and incorporate into their planning traditional native and native practitioner plant-gathering for traditional use (Boshell 2010).

Environmental Justice Populations and RMP Analysis

Due to the low percentage of individuals in minority groups or low income populations in the planning area overall, it is not likely that considerations for environmental justice populations will require modification of RMP alternatives or mitigation measures. For all geographic areas examined in the study area, the percentage of minority individuals or individuals below poverty level does not exceed the national average by 20 percentage points or more, or 50 percent of the total population, meaning that the counties do not have a minority population according to Council on Environmental Quality guidelines. Impacts on regional and local environmental justice populations will be addressed in the RMP/EIS following standards and guidelines set forth in Executive Order 12898 and BLM Land Use Planning Manual H-1601-1, Appendix D (BLM 2005).

3.5.6 Facilities and Transportation Maintenance

The BLM's transportation system represents one of the most critical assets to the accomplishment of the BLM's mission to manage public lands. It affords entry for public access and provides the infrastructure that supports uses ranging from recreation to commercial activity and is the primary means of access to lands under BLM jurisdiction.

Current Conditions

Federal, State, and County Roads

A network of federal, state, and county roads provide local access throughout the CCD. Highways 395 and 50 and Interstate 80 provide major access to the CCD from all directions.

Traffic volumes on the road network are highly variable. The highest volume counts are found on major roadways in or near the largest communities, but BLM recreation sites and back road throughways within the planning area also experience heavy seasonal traffic flow.

BLM Roads

BLM roads provide public and administrative (e.g., agency and permittee) access to public lands, through public lands, and to inholdings of private land within the

planning area. Reasonable administrative access is made available to persons engaged in valid uses, such as mining claims, mineral leases, livestock grazing, and recreation. Most use of BLM roads would be described as casual use, where foot, pack stock, and mechanized and motorized vehicle travel is appropriate, restricted, or not allowed, depending on resource objectives and use considerations.

Road System Maintenance

The BLM maintains 789 miles of roads throughout the CCD (**Figure 3-13**, BLM Maintained Roads) as part of the CCD Transportation Plan. The BLM maintains roads under standards set forth in BLM 9100 Series Manuals and the CCD RMP. Maintenance provides for resource protection, accommodation of permitted users, and protection of the BLM's investment. The BLM uses the road maintenance intensities described in **Table 3-56**, Road Maintenance Intensities. Road system maintenance has focused on maintaining major recreational access roads, which generally receive most of the traffic volume. Approximately 225 lane miles of road are maintained annually within the planning area, depending on road conditions and funding availability. Road maintenance generally consists of shaping, providing drainage, blading, and grading. It is usually performed in the summer or fall. Additional corrective maintenance or water drainage work (e.g., installation of culverts, drains, or other water-management devices) is performed as needed, such as after periods of heavy rainfall. Snow is not removed.

Maintenance is scheduled on an annual, 5-year, and 10-year cycle. Transportation plan meetings are held quarterly to update the CCD Transportation Plan. Road specifications statistics and work order requirements are tracked as a locational asset through BLM's Facility Asset Management System. The district engineer serves as data steward. Repair emergencies and special case maintenance priorities are assigned according to severity of disrepair and effect on the BLM administration's or permit holder's mission. Roads included in the planning area Transportation Plan are classified as Level 3 roads with the exception of approximately 12 lane miles of Level 1 and 2 paved roads at major recreation sites. Recent weather-related emergency repairs combined with declining funding for personnel and equipment has prevented BLM from maintaining all of the 5- and 10-year roads at the Level 3 standard.

Functional Road Classification Types for BLM System Roads

Based on BLM Manual Section 9113 (Roads), roads on BLM-administered lands are classified into three classes by the amount of traffic movement: collector, local, and temporary resource roads.

Collector Roads (Level 4 or 5)—These BLM-administered roads normally provide primary access to large blocks of land and connect with or are extensions of a public road system. They accommodate mixed traffic and serve many uses. They

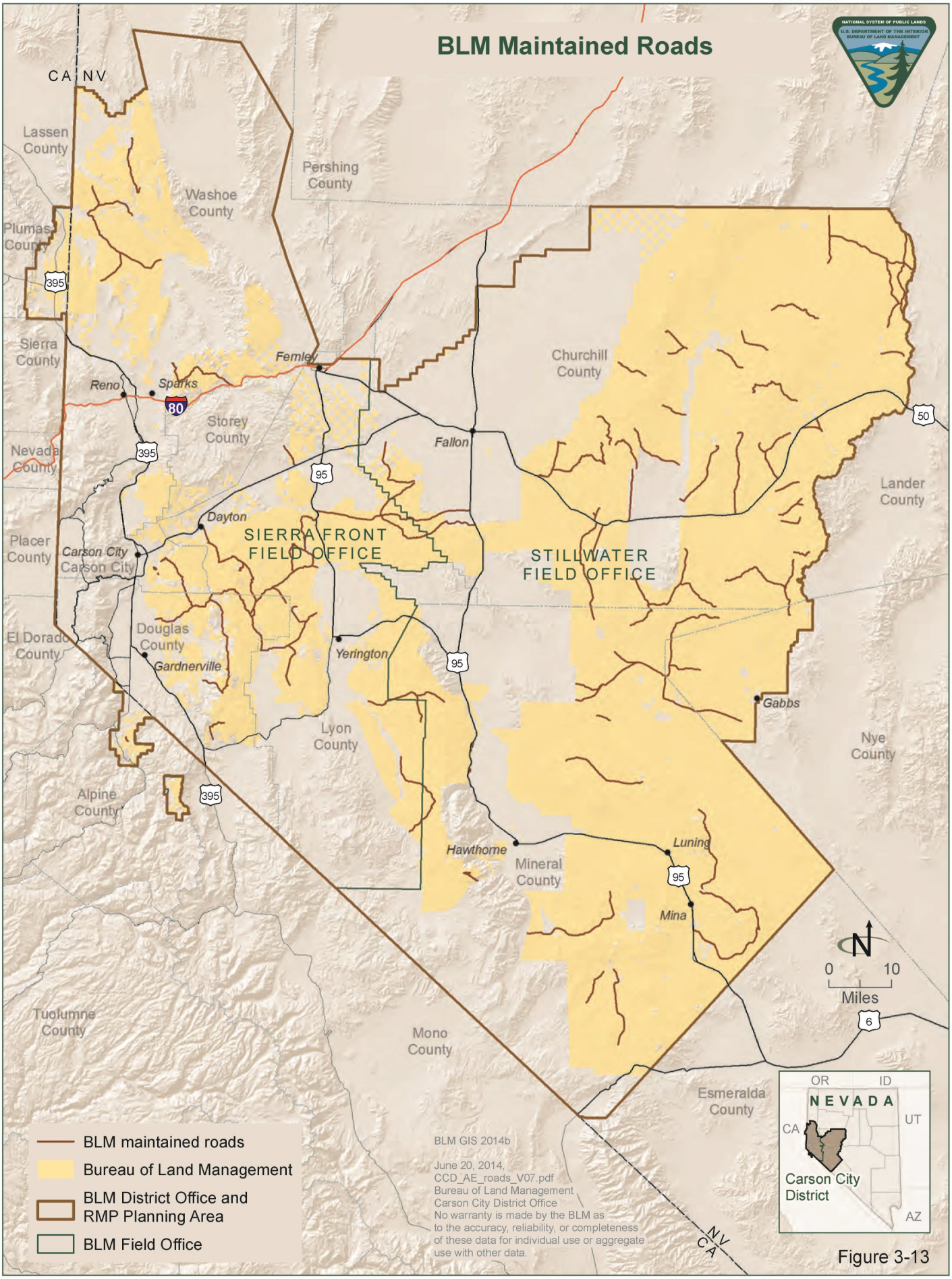
BLM Maintained Roads
CA NV
Lassen County
Pershing County
Washoe County
Plumas County
Sierra County
Reno
Sparks
Fernley
Churchill County
Storey County
Nevada County
Fallon
Lander County
Dayton
Placer County
Carson City
Carson City
SIERRA FRONT FIELD OFFICE
STILLWATER FIELD OFFICE
El Dorado County
Douglas County
Gardnerville
Yerington
Gabbs
Lyon County
Nye County
Alpine County
Hawthorne
Mineral County
Luning
Mina
Tuolumne County
Mono County
Esmeralda County
0 10
Miles
OR
ID
NEVADA
CA
UT
AZ
Carson City District
BLM maintained roads
Bureau of Land Management
BLM District Office and RMP Planning Area
BLM Field Office
BLM GIS 2014b
June 20, 2014, CCD_AE_roads_V07.pdf
Bureau of Land Management
Carson City District Office
No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
NV
CA

Figure 3-13

Table 3-56
Road Maintenance Intensities

Maintenance Level	Description
Level 1	Assigned to roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic. The objective is to remove these roads from the transportation system.
Level 2	Assigned to roads where the management objectives require the road to be opened for limited administrative traffic. Typically, these roads are passable by high clearance vehicles.
Level 3	Assigned to roads where management objectives require the road to be open seasonally or year round for commercial, recreational, or administrative access. Typically, these roads are natural or aggregate surfaced but may include low use bituminous surfaced road. These roads have a defined cross section with drainage structures (e.g., rolling dips, culverts, or ditches). These roads may be negotiated by passenger cars traveling at prudent speeds. User comfort and convenience are not considered a high priority.
Level 4	Assigned to roads where management objectives require them to be open all year (except that they may be closed or have limited access due to snow conditions) and which connect major administrative features (such as recreational sites, local road systems, administrative sites) to county, state, or federal roads. Typically, these roads are single or double lane, aggregate or bituminous surface, with a higher volume of commercial and recreational traffic than administrative traffic.
Level 5	Assigned to roads where management objectives require the road to be open all year and are the highest traffic volume roads of the transportation system.

generally receive the highest volume of traffic of all roads in the BLM road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the BLM.

Local Roads (Level 4 or 3)—These BLM roads normally serve a smaller area than collectors and connect to collectors or public road systems. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer users. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrain, where operating speed is reduced by terrain, may be single-lane roads with turnouts. Environmental impacts are reduced because steeper grades, sharper curves, and lower design speeds than would be permissible on collector roads are allowable.

Resource Roads (Level 2)—These BLM roads are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental

compatibility and minimizing BLM costs with minimal consideration for user cost, comfort, or travel time.

Airports and Railroads

Within the planning area, there are 29 private and public Federal Aviation Administration designated airports and 6 heliports. This includes three public airport leases on BLM-administered lands and several private airstrips that are used year-round by public and private entities. These airstrips are necessary for small aircraft to cover expansive distances safely.

The BLM has over 200 miles of operational railroads crossing public and private lands, mainly in Churchill, Lyon, Mineral, Storey, and Washoe Counties. Original railroad ROWs held by Western Pacific, Central Pacific and Southern Pacific Railroad companies in this area are now controlled by the Union Pacific Railroad Company. The Virginia and Truckee Historic Railway is a tourism-oriented railroad administered by the Nevada Commission for the Reconstruction of the V&T Railway. It runs between Gold Hill and Carson City, crossing public and private lands within Storey County, Lyon County, and Carson City. There are plans to extend the railway to other parts of this area. There is currently no outstanding access issues associated with railroads within the planning area.

Resource Changes

Maintenance costs are rising, and they will continue to impact the number of miles of BLM Roads that are maintained each year. With flat federal budgets and rising fuel and equipment costs for contractors, it is likely that this trend will continue in the future.

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Chapter 4

Environmental Consequences

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Chapter 4, Environmental Consequences, presents the direct, indirect, and cumulative environmental, social, and economic impacts on the human and natural environment that are projected to result from implementing the alternatives presented in **Chapter 2**. Irretrievable or irreversible commitment of resources and unavoidable adverse impacts are presented at the end of the chapter.

Impact analyses and conclusions are based on interdisciplinary team knowledge of the resources and planning area, information provided by experts in the BLM, other agencies' monitoring data, and information contained in pertinent literature. The baseline used for the impact analysis is the current condition or situation, as described in **Chapter 3**, Affected Environment. Analysis assumptions have also been developed to help guide the determination of effects (see **Section 4.1.1**, Analytical Assumptions). Because the Draft Resource RMP/EIS provides a broad management framework and exact locations of development or management are often unknown, the analysis in this chapter presents best estimates of impacts. Impacts are quantified to the extent practical with available data. In the absence of quantitative data, best professional judgment provides the basis for the impact analysis.

The land use planning-level decisions that the BLM is making with this RMP are programmatic decisions based on analysis that can only be conducted on a broad scale. Because of the broad scope, impact analysis of planning-level decisions is speculative with respect to projecting specific activities. Subsequent documents tiered to this RMP would generally contain a greater level of detail and would be subject to the NEPA analysis and compliance process. Subsequent tiered activity- and project-level plans are more definitive than plans found in an RMP. An activity plan typically describes projects in detail that would lead to on-the-ground action and focuses on single resource programs. Activity plans, such

as travel management plans, are generally more site-specific and less speculative than the RMP analyses. A project-specific plan is prepared for a project or several related projects. Project-level plans, such as stream restoration plans, contain specific proposed actions, and site- or area-specific analysis is conducted. Activity plans may contain information that is as detailed or specific at a project level.

4.1.1 Analytical Assumptions

Several assumptions were made to facilitate the estimation of the effects of the alternatives. These assumptions are made only for the purpose of analysis and do not represent potential RMP decisions. The assumptions do provide reasonably foreseeable projected levels of development that could occur within the planning area. These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative described in **Chapter 2**. The following are general assumptions applicable to all resource categories. Any specific resource assumptions are provided in the *Methods of Analysis* subheading for that resource.

- Sufficient funding and BLM personnel will be available for implementing the final decision.
- Implementing actions from any of the RMP alternatives will comply with all valid existing rights, federal regulations, BLM policies, and other requirements.
- Implementation-level actions necessary to execute the land use plan-level decisions in this RMP will be subject to further environmental review, including the NEPA, as appropriate. However, the RMP/EIS provides the necessary NEPA analysis for some large-scale implementation decisions, including the issuance of leases for fluid minerals such as oil, gas, and geothermal resources.
- Local climate patterns of historic record are expected to remain similar for the planning period of the RMP; related conditions for plant growth may show variability (e.g., extreme winter or summer or extended fire seasons) during the same time period.
- Stipulations will apply, where appropriate, to all surface-disturbing activities (and occupancy) associated with land use authorizations, permits, and leases issued on BLM-administered lands. The BLM administers 4.8 million surface acres within the decision area. Stipulations also apply to fluid mineral leasing on lands overlying federal mineral estate, which includes federal mineral estate underlying BLM-administered lands, privately owned lands, and state-owned lands.
- The functional capability of all developments will be maintained.
- The discussion of impacts is based on the best available data. Knowledge of the planning area and professional judgment, based on

observation and analysis of conditions and responses in similar areas, are used to infer environmental impacts where data are limited.

- Acreage figures and other numbers used in the analyses are approximate projections for comparative and analytic purposes only. Readers should not infer that they reflect exact measurements or precise calculations.
- Acreages were calculated using GIS technology, and there may be slight variations in total acres between resources. These variations are negligible and will not affect analysis.

4.1.2 General Methodology for Analyzing Impacts

Direct, indirect, and cumulative impacts are considered in this effects analysis, consistent with direction provided in 40 CFR 1502.16.

- *Direct impacts* are caused by an action or implementation of an alternative and occur at the same time and place.
- *Indirect impacts* result from implementing an action or alternative but are usually later in time or removed in distance and are reasonably certain to occur.
- *Cumulative effects* are defined in **Section 4.2**, Cumulative Impacts.

Effects are quantified where possible using GIS and other applications. In the absence of quantitative data, best professional judgment prevailed; impacts are sometimes described using ranges of potential impacts or in qualitative terms. Only management programs with impacts are discussed. The standard definitions for terms referring to impact duration that are used in the effects analysis are as follows, unless otherwise stated:

- *Short-Term Effect*: The effect occurs only during or immediately after implementation of the alternative. For the purposes of this RMP, short-term effects would occur during the first 5 years.
- *Long-Term Effect*: The effect could occur for an extended period after implementing the alternative. The effect could last several years or more and could be beneficial or adverse. For the purposes of this RMP, long-term effects would occur beyond the first 5 years and perhaps over the life of the RMP.

For ease of reading, impacts presented are direct, long-term, and occur within the larger planning area unless they are noted as indirect, short-term/temporary, or localized. Analysis shown under Alternative A may be referenced in the other alternatives with such statements as "impacts would be the same as or similar to, Alternative A" or "impacts would be the same as Alternative A, except for . . ." as applicable.

4.1.3 Incomplete or Unavailable Information

The CEQ established implementing regulations for the NEPA requiring that a federal agency identify relevant information that may be incomplete or unavailable for an evaluation of reasonably foreseeable significant adverse effects in an EIS (40 CFR 1502.22). If the information is essential to a reasoned choice among alternatives, it must be included or addressed in an EIS. Knowledge and information is and would always be incomplete, particularly with infinitely complex ecosystems considered at various scales.

The best available information pertinent to the decisions to be made was used in developing the RMP. Considerable effort has been taken to acquire and convert resource data into digital format for use in the plan—both from BLM sources and from outside sources.

Certain site-specific information was unavailable for use in developing this plan, usually because inventories have either not been conducted or are not complete. Some of the major types of data that are incomplete or unavailable include the following:

- Field inventory of cultural resources
- Field inventory of paleontological resources
- Field inventory of vegetation composition
- Field inventory of soils and water conditions
- Field inventory of wildlife and special status species occurrence and condition
- Filed inventories for riparian and wetland areas
- Field inventories for non-native species, invasive species or noxious weeds

The BLM has information to support planning-level decisions, although the data is incomplete for specific areas. For these resources, estimates were made concerning the number, type, and significance of these resources based on previous surveys and existing knowledge. In addition, some impacts cannot be quantified given the proposed management actions. Where this gap occurs, impacts are projected in qualitative terms or, in some instances, are described as unknown. Subsequent project-level analysis will provide the opportunity to collect and examine site-specific inventory data required to determine appropriate application of RMP-level guidance. In addition, ongoing inventory efforts by the BLM and other agencies in the planning area continue to update and refine information used to implement this plan.

Impacts on climate change from allowable uses on BLM-administered lands and impacts on resources resulting from a changing climate are addressed qualitatively using the latest studies and predictive models. These models predict

climate changes at a scale that is much larger (generally by multi-state regions of the US) than at an RMP planning area level. Therefore, there is incomplete information related to what climate changes may occur in specific areas of the Carson City District planning area. In the future, as tools for predicting climate changes in a management area improve and changes in climate affect resources and necessitate changes in how resources are managed, the BLM may be required to reevaluate decisions made as part of this planning process and to adjust management accordingly.

This RMP is also based on the concept of adaptive management, so it is dynamic enough to account for changes in resource conditions (such as changes due to climate change or large-scale wildfire), new information and science, and changes in regulation and policies. The RMP may be amended to respond to these factors. No incomplete or unavailable information was deemed essential to a reasoned choice among the alternatives portrayed in this EIS.

4.2 CUMULATIVE IMPACTS

The CEQ regulations implementing the NEPA define *cumulative impacts* as "…[T]he 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 (federal or non-federal) or person undertakes such actions." Cumulative impacts can result from minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Guidance for implementing the NEPA requires that federal agencies identify the timeframe and geographic boundaries within which the potential cumulative effects of actions would be evaluated with specific past, present, and reasonably foreseeable actions.

The CEQ regulations explain "significance" as it relates to environmental analysis and requires consideration of both context and intensity of impacts. The degree of intensity or severity of impacts is included in the analysis of direct, indirect, and cumulative effects. CEQ regulations include the following considerations for evaluating intensity:

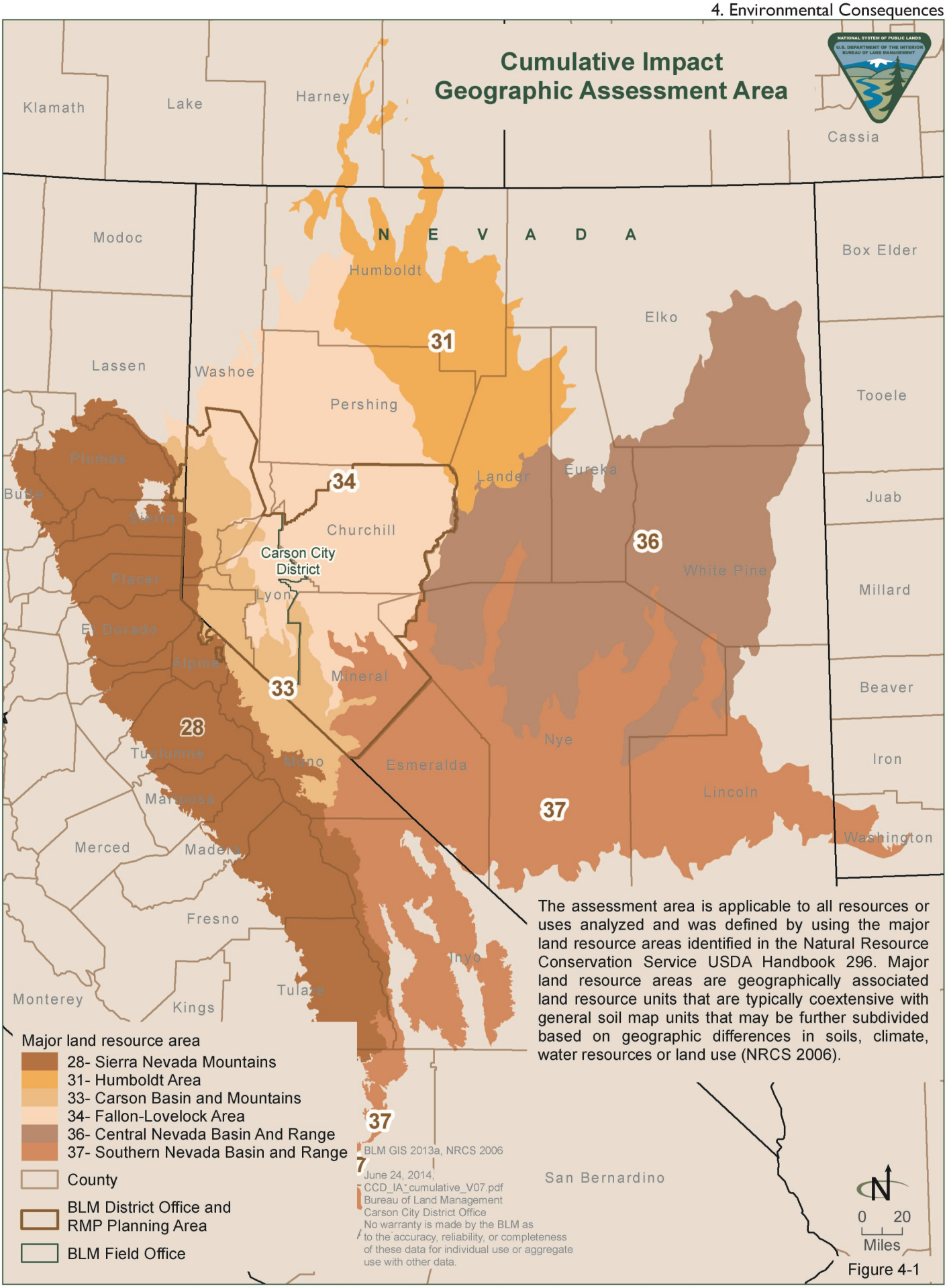
- Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial.
- The degree to which the proposed action affects public health or safety.
- Unique characteristics of the geographic area such as proximity to historic or cultural resources, prime farmlands, wetlands, wild and scenic rivers (WSRs), or ecologically critical areas.
- The degree to which the effects on the quality of the human environment are likely to be highly controversial.

- The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP (or National Register), or may cause loss or destruction of significant scientific, cultural, or historical resources.
- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA.
- Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

4.2.1 Cumulative Analysis Methodology

The cumulative impact geographic assessment area for the CCD RMP/EIS is shown in **Figure 4-1**, Cumulative Impacts Assessment Area, and is applicable to all resources or uses analyzed. The assessment area was defined by using the major land resource areas identified in the US Department of Agriculture, Natural Resource Conservation Service Handbook 296. Major land resource areas are geographically associated land resource units that are typically coextensive with general soil map units that may be further subdivided based on geographic differences in soils, climate, water resources or land use (NRCS 2006). For the purposes of this analysis, past and present actions span from 1983 to present and correspond to when management framework plans and RMPs incorporated into the Consolidated RMP were initially implemented. The timeframe for reasonably foreseeable future actions extends to 2035 based on the expected life of this plan. Management actions could be influenced by activities and conditions on adjacent public and non-public lands beyond the planning area boundary; therefore, assessment data and information could span multiple scales, land ownerships, and jurisdictions. These assessments involve determinations that often are complex and, to some degree, subjective.

The cumulative impacts discussion that follows considers the alternatives in the context of the broader human environment—specifically, actions that occur outside the scope and geographic area covered by the RMP. Cumulative impact analysis is limited to important issues of national, regional, or local significance;



The assessment area is applicable to all resources or uses analyzed and was defined by using the major land resource areas identified in the Natural Resource Conservation Service USDA Handbook 296. Major land resource areas are geographically associated land resource units that are typically coextensive with general soil map units that may be further subdivided based on geographic differences in soils, climate, water resources or land use (NRCS 2006).

Figure 4-1

therefore, not all resources identified for the direct and indirect impact analysis in this EIS are analyzed for cumulative impacts.

Because of the programmatic nature of an RMP and cumulative assessment, the analysis tends to be broad and generalized to address potential effects that could occur from a reasonably foreseeable management scenario combined with other reasonably foreseeable activities or projects. Consequently, this assessment is primarily qualitative for most resources because of lack of detailed information that would result from project-level decisions and other activities or projects. Quantitative information is used whenever available and as appropriate to portray the magnitude of an impact. The analysis assesses the magnitude of cumulative impacts by comparing the environment in its baseline condition with the expected impacts of the alternatives and other actions in the same geographic area. The magnitude of an impact is determined through a comparison of anticipated conditions against the naturally occurring baseline as depicted in the affected environment (see **Chapter 3**) or the long-term sustainability of a resource or social system.

The following factors were considered in this cumulative impact assessment:

- Federal, nonfederal, and private actions
- Potential for synergistic interaction among or between effects
- Potential for effects across political and administrative boundaries
- Other spatial and temporal characteristics of each affected resource
- Comparative scale of cumulative impacts across alternatives

Temporal and spatial boundaries used in the cumulative analysis are developed on the basis of resources of concern and actions that might contribute to an impact. The baseline date for the cumulative impacts analysis is 2010. The temporal scope of this analysis is the life of the RMP, which encompasses a 20-year planning period.

Spatial boundaries vary and are larger for resources that are mobile or migrate (e.g., antelope populations) compared with stationary resources. Occasionally, spatial boundaries could be contained within the planning area boundaries or an area within the planning area. Spatial boundaries were developed to facilitate the analysis and are included under the appropriate resource section heading.

4.2.2 Past, Present, and Reasonably Foreseeable Future Actions

The following past, present, and reasonably foreseeable future actions have been identified based on review of the planning issues; agency records, including existing decisions and formal proposals; actions highly probable based on known trends; and review of non-federal actions on lands not administered by the BLM, including private land actions and other federal, local, tribal and state land actions:

- Climate Change
- Invasive, non-native species and noxious weeds treatments
- Lands and realty (land tenure adjustments, ROWs) and communication site authorizations)
  - Industrial, agricultural, commercial, and residential development on private lands
  - Infrastructure developments including power lines, pipelines, communication sites, recreation facilities, and renewable energy on private lands
- Livestock grazing
- Military training operations
- Minerals (exploration and development)
- Renewable energy (exploration and development)
- Recreation (SRPs and OHV travel management)
- Vegetation management
- Wildlife and special status species management
- Wild horse and burros management
- Wildland fire management (suppression, fuels management, emergency stabilization and rehabilitation [ESR])

Past, present, and reasonably foreseeable future actions are considered in the analysis to identify whether and to what extent the environment has been degraded or enhanced, whether ongoing activities are causing impacts, and trends for activities in and impacts on the area. Projects and activities are evaluated on the basis of proximity, connection to the same environmental systems, potential for subsequent impacts or activity, similar impacts, the likelihood a project will occur, and whether the project is reasonably foreseeable.

Effects of past actions and activities are manifested in the current condition of the resources, as described in the affected environment (see **Chapter 3**). Reasonably foreseeable future actions are actions that have been committed to or known proposals that could take place within the 20-year planning period.

Reasonably foreseeable future action scenarios are projections made to predict future impacts; they are not actual planning decisions or resource commitments. Projections, which have been developed for analytical purposes only, are based on current conditions and trends and represent a best professional estimate. Unforeseen changes in factors such as economics, demand, and federal, state, and local laws and policies could result in different outcomes than those projected in this analysis.

Other potential future actions have been considered and eliminated from further analysis because it is unlikely that these actions would be pursued and implemented within the life of the plan or because so little is known about the potential action that formulating an analysis of impacts is premature. In addition, potential future actions protective of the environment (such as new potential threatened or endangered species listings or regulations related to fugitive dust emissions) have less likelihood of creating major environmental consequences alone, or in combination with this planning effort. Federal actions such as species listing would require the BLM to reconsider decisions created from this plan because the consultations and relative impacts might no longer be appropriate. These potential future actions may have greater capacity to affect resource uses within the planning area; however, until more information is developed, no reasonable estimation of impacts could be developed.

Data on the precise locations and overall extent of resources within the planning area are considerable, although the information varies according to resource type and locale. Furthermore, understanding of the impacts on and the interplay among these resources is evolving. As knowledge improves, management measures (adaptive or otherwise) would be considered to reduce potential cumulative impacts in accordance with law, regulations, and the final RMP.

Projects and activities identified as having the greatest likelihood to generate potential cumulative impacts when added to the RMP alternatives are displayed in **Table 4-1**, Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario. More detail on the cumulative impacts of implementing the RMP are described at the end of each analysis in **Sections 4.3** through **4.6**.

Table 4-1
Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario

	Human Actions
Energy and minerals development	There are currently 2 gold and silver operations, 1 copper operation, 1 magnesium compound operation, 1 salt mine, 4 diatomite operations, 1 gypsum operation, 2 perlite operations, 1 carbonate (limestone and lime) mineral operation, 1 pumice operation, and 1 pozzolan operation actively mining locatable minerals in the planning area. Approximately 23 plans of operation for exploration (greater than 5 acres) or mining of locatable minerals are currently administered by the BLM within the planning area. The minerals program administers 3 active competitive contracts for salable minerals operations removing more than 200,000 cubic yards annually, and more than 260 contracts or free-use permits for smaller volume salable minerals operations. There are 148 geothermal leases covering approximately 299,200 acres, with 5 associated power plants and an active geothermal power production of 183 megawatts (BLM 2013f).

Table 4-1
Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario

Energy and minerals development *(continued)*	As discussed in the Geothermal Reasonably Foreseeable Development Appendix of the Carson City 2013 Mineral Potential Report, exploration drilling would occur on all 148 geothermal leases, some of which would lead to more detailed exploration drilling, and a few of which would lead to the discovery of geothermal resources
	capable of developing as many as 5 15-megawatt geothermal power plants (BLM 2013f). Exploration disturbance for each lease would be 4.5 acres. The analysis assumes 2 leases per year, which would result in 9 acres disturbed per year. The 15-megawatt power plant is used as a typical size to estimate the amount of disturbance that could be involved for reasonably foreseeable development. The total disturbance for 5 15-megawatt power plants would be 605 acres.
	Limited drilling and exploration for oil and gas resources have taken place in the planning area since the early 1900s in Washoe, Lyon, Churchill, and Mineral Counties. The CCD currently manages less than 30 oil and gas leases in Churchill, Nye, and Mineral Counties (BLM 2011). There is a limited amount of exploration on these leases, and no production has occurred in association with any of these leases. Oil exploration in the planning area has generally been limited to the Carson Desert north and west of Salt Wells Lake and the area surrounding Fallon. Oil discoveries in western Nevada have been limited to a few reported shows identified during drilling, usually in dry holes. The Nevada Bureau of Mines and Geology identified this area as favorable for oil and gas (Garside et al. 1988). Most of the area identified as favorable, including most of the Carson Sink, is not within the decision area. Therefore, there is no reason to believe that oil and gas production would be foreseeable within the planning area during the 20-year planning period.
	Battle Mountain Oil and Gas Leasing Environmental Assessments. These documents provide for mineral development on the Battle Mountain District Office and are currently being revised in a new RMP planning effort.
	Winnemucca RMP (2013). This RMP provides for mineral development on the Winnemucca District Office.
	Southern Nevada RMP (in progress) and Oil and Gas amendment. This RMP will provide for mineral development on Southern Nevada District Office
	Winnemucca District Office Reasonably Foreseeable Development Scenario (BLM 2013e). This document summarizes existing fluid minerals development activities and gives a future development scenario based on unconstrained development.
	Battle Mountain District Office Reasonably Foreseeable Development Scenario (2012). This document summarizes existing fluid minerals development activities and gives a future development scenario based on unconstrained development.
	Winnemucca Mineral Potential Report (BLM 2006). Looks at all minerals (non-oil and gas) and gives a 20-year prediction of development potential.
	Battle Mountain Mineral Potential Report (2012). Looks at all minerals (non-oil and gas) and gives a 20-year prediction of development potential.

Table 4-1
Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario

Renewable Energy	The CCD Reasonably Foreseeable Development Scenario for Solar, Wind and Biomass estimates that as many as 2 utility-scale PV solar plants, 2 utility-scale wind developments, and 2 small mobile biomass facilities would be permitted in the planning area in the next 20 years. National Renewable Energy Laboratory data shows that portions of the planning area have high potential for solar energy, especially Lyon and Mineral Counties (NREL 2013).
	Luning Solar. Luning Solar was issued a ROW grant for a 575-acre project on July 15, 2010. A plan has been submitted for a 560-acre solar panel field.
	Salt Wells Geothermal Utilization Project by Gradient Resources for a 120-Megawatt Power Plant. Construction has not been initiated.
	Carson Lake Geothermal Utilization Project by Ormat for a 40-Megawatt Power Plant. Construction has not been initiated.
	New York Canyon Geothermal 62-Megawatt Power Plant. NEPA analysis has been finalized, but construction has not been initiated.
Vegetation Management	***Forestry***. Past, current, and foreseeable forestry uses in the project area include personal and commercial harvest of pinyon and juniper fuel wood, poles and posts for fence building, wildings (live trees), pinyon pine nuts, and Christmas trees. Christmas tree sales have been on the decline, whereas firewood permits were on the increase; however, both uses are expected to continue at current rates. Personal collection of pinyon pine nuts is also expected to continue. The Consolidated RMP limited non-commercial harvest to less than 25 pounds per individual
	Firewood, posts, poles, and biomass are all low-value products. The felling (cutting down individual trees), processing, and transportation costs associated with these products limit the feasibility of large-scale utilization. As stated under Renewable Energy, 2 small mobile biomass facilities would be permitted in the planning area in the next 20 years.
	In absence of active management of the forest and woodlands in the planning area, the aforementioned trends of higher tree densities, expansion/ reforestation of pinyon-juniper, contraction of aspen and riparian deciduous stands, and drought/insect/disease-related mortality are expected to continue.
	Northeast California Juniper Treatments. Multiple juniper removal treatments throughout the Alturas, Surprise and Eagle Lake Field Offices totaling 32,099 acres.
	Vegetation treatments. Mechanical, biological, and chemical treatments of undesirable vegetation were utilized in the past on public and private rangelands in the planning area. These treatments and maintenance of these vegetation treatments will likely continue on public and private lands. In addition, manual, biological, chemical and mechanical treatments of non-native and invasive species are likely to continue in the foreseeable future.
	There are large amounts of sagebrush habitat throughout the planning area that is experiencing active pinyon and juniper expansion. In addition, cheatgrass is present in sagebrush habitats district-wide, creating a potential for habitat conversion post-disturbance. Over 67,000 acres of the planning area is presently annual grassland, having already experienced type conversion from the previous native vegetative community. Pinyon and juniper are expected to continue expanding into sagebrush communities.

Table 4-1
Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario

Riparian Systems	Proper functioning condition assessments show that the majority of riparian areas are not in proper functioning condition. Many of the assessments indicate downward trends due to ongoing disturbances, mainly anthropogenic. Almost 70 percent of the land assessed was rated as not meeting Standard 2 (Riparian/Wetland systems are in proper functioning condition), and 25 percent of the land assessed did not meet Standard 3 (Water quality criteria in Nevada or California State Law shall be achieved or maintained).
	Riparian areas have and are expected to continue in a downward trend, with inadequate protection, and an increase in invasive species number, density and extent. In areas with headcuts, entrenchment and lowering of groundwater levels will continue unabated with xeric native species and nonnative species dominating the sites.
Livestock grazing	Within the planning area, there are 111 allotments and 52 permittees. Allotments include 77 available for livestock grazing and 34 unavailable for livestock grazing for a variety of reasons, including, but not limited to, grazing for wildlife, voluntary relinquishment, and issues with base property. The open allotments vary in size from 120 to 512,449 BLM-administered acres, with grazing allocations ranging from 29 to 11,410 AUMs in each allotment. In 2011, 82 percent of the permits were for cattle (55 permits), with sheep and horse grazing accounting for the remaining 18 percent (12 permits). Grazing on private lands within the cumulative impact analysis area is expected to remain stable or slightly decrease as residential development increases.
	Anticipated demand for livestock grazing on BLM-administered lands is expected to continue into the future. There is interest in acquiring grazing permits as they become available. In addition, due to the proximity to expanding urban areas, some grazing areas may lose available acreage. This loss ensures the demand for the areas that will remain available for livestock grazing.
Recreation and visitor use	Demands for undeveloped, dispersed recreation on BLM-administered lands have been increasing over the last decade, especially for motorized all-terrain vehicle (ATV) use. However, dispersed use of BLM-administered lands has also been affected by the economic downturn. As the economy recovers, disposable incomes go up and the demand for recreational opportunities is expected to rise.
	Population increases in urban interface areas will also increase the demand for access to BLM-administered lands from or near residential developments and the need to provide increased management and protection of resources.
Wildlife and Special Status Species Habitat Management	Habitat for wildlife and special status species continues to be affected by wildfire, land uses, and conversion of habitat to areas dominated by non-native, invasive plant species. Managing to protect and rehabilitate wildlife and sensitive species habitat will continue.

Table 4-1
Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario

Lands and Realty	The urban areas of Reno/Sparks, Carson City, and Gardnerville/Minden experienced annual growth rates as high as 8 percent between 2000 and 2007. The growth rates of these urban areas have plateaued since 2007, and in some cases, populations have declined. Despite recent trends, the demands on BLM-administered lands, particularly in the urban interface, remain high. Community-level demands on BLM-administered lands include locations for future commercial and residential development, flood protection, and parks and open space. Some of the demands have been met through the sale of BLM-administered land with identified commercial or residential development potential, acquisition of environmentally sensitive lands, and leasing or conveying of lands under the Recreation and Public Purposes Act of 1926 for schools, parks, and other public purposes.
	Military training operations (e.g., helicopter and other aviation training, land navigation, search and rescue, and driver training) have been and will continue to be conducted on the BLM-administered lands in the planning area. Ground mobility training has been on the increase with visiting military teams that desire a desert environment for training in addition to the local teams. This use is expected to continue and possibly occur more frequently with the use of BLM-administered lands expected to continue to increase.
	The CCD has disposed of approximately 4,954 acres since January 1, 2001. The disposals were made up of 10 Recreation and Public Purposes Act patents (623 acres); 2 Desert Land Entries (380 acres), 7 land exchanges (2,420 acres), special legislation (728 acres), and 6 sales (803 acres). During that same timeframe, the BLM acquired approximately 34,254 acres. The acquisitions were composed of 6 land exchanges (30,968 acres); 17 FLPMA (FLPMA; funded by Southern Nevada Public Land Management Act and Land and Water Conservation Fund) acquisitions (2,916 acres); 1 donation (30 acres); and 1 transfer from another agency (340 aces). The BLM has also acquired 1,873 acres of conservation easement.
	An increase in demand for land tenure adjustments is anticipated. In addition to continuing interest in availability of BLM-administered lands for public and private enterprises, a number of proposals for federal legislation to transfer BLM-administered lands to local governments, tribes, or other entities are currently under consideration.
	Areas with anticipated higher potential for land tenure adjustments include inholdings or lands next to specially designated areas such as ACECs, Special Management Areas, WSAs, and existing or potential recreation sites. In addition, BLM-administered lands interfacing with areas of increasing population growth, landlocked parcels, and parcels that are difficult or uneconomic to manage may be targeted for potential land tenure adjustments.
	Demand for land use authorizations in the planning area is anticipated to increase in correlation with future residential and commercial development on adjacent private lands and in response to increasing population and energy demands within and beyond the CCD. Over the past 10 years, the BLM has averaged issuance of approximately 28 ROW authorizations per year with an average of 35 applied for annually. Issuance of permits varies depending on demand, but typically average between 1 and 3 per year. Communication facility lease applications, on both existing and new sites, are expected to continue to increase on BLM-administered lands within the planning area.

Table 4-1
Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario

Lands and Realty *(continued)*	Designation of Energy Corridors on Federal Lands in the 11 Western States Programmatic EIS (2007). This multi-federal agency Programmatic EIS analyzes the environmental impacts of designating federal energy corridors on federal lands in 11 western states and incorporating those designations into relevant land use and resource management plans.
Wild Horse and Burro	Since the passage of the Wild Free-Roaming Horses and Burros Act, the BLM continues to manage wild horse and burro populations and habitat. Past and present actions to maintain appropriate management levels (AMLs) primarily through wild horse and burro gathers have occurred and are anticipated to continue in the future. However, due to various constraints, wild horse and burro gathers are not conducted as frequently as needed to maintain a thriving natural ecological balance among wild horse and burro populations, domestic livestock, wildlife, and vegetation. This trend is expected to continue and has become exacerbated by the current drought. As the wild horse and burro populations exceed the AMLs, a thriving natural ecological balance among wild horse and burro populations, domestic livestock, wildlife, and vegetation will not be maintained
Natural Processes	
Invasive/non-native species and noxious weeds	Noxious weeds and non-native species have invaded and will continue to invade many locations in the planning area. Noxious weeds are carried by wind, humans, machinery, and animals. The BLM currently manages weed infestations through integrated weed management, including biological, chemical, mechanical, and educational methods. The 1991 and 2007 Records of Decision for Vegetation Treatment on BLM Lands in Thirteen Western States, and the 2007 Programmatic Environmental Report guide the management of noxious weeds in western states.
	Noxious and invasive weeds are expected to continue to spread on all lands. Due to their ability to tolerate certain conditions, some species are expected to remain a serious long-term challenge in the planning area.
	Without an in plant management approach, damaged or degraded areas are not revegetated allowing noxious weeds to persist and increase on the landscape and overtime will allow the succession of other non-native invasive species to migrate to the area, establish and gain dominance.
Wildland Fire Management	Based on fire occurrence data collected from 1980 to 2013 on average less than one percent of the CCD is affected by wildfire each year.
	The wildland-urban interface (WUI) has been increasing dramatically throughout the planning area over the past two decades. Development slowed during the economic downturn beginning in 2008, but WUI expansion is expected to increase over the life of the RMP. In addition to residential, commercial, and industrial development next to BLM-administered lands, the WUI also includes power lines, pipelines, communication sites, recreation facilities, renewable energy, and military training areas. Many of the intensive and costly fire suppression actions occur within and next to the expanding WUI, and this trend is expected to continue.
	Trends indicate that the number of wildfires would continue to gradually increase based on climate, conversion of habitat to areas dominated by non-native, invasive species, and increased potential for human caused fires due to population growth and increases in recreation use.

Table 4-1
Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Comprise the Cumulative Impact Scenario

Wildland Fire Management *(continued)*	ESR of areas that have burned from wildfire would continue based on the number of acres burned by wildfires. ESR treatments would continue be prioritized to provide for human life and safety, soil/water stabilization, restoration of important habitat for special status species, and to deter establishment of invasive plants. Areas previously seeded post fire would re-establish vegetation and deter the establishment and spread of non-native, invasive species. Continued integrated weed management would also deter the establishment and spread of non-native, invasive species and noxious weeds.
Climate Change and Drought	Nevada's gross greenhouse gas emissions in 2010 were 45 million metric tons of carbon dioxide equivalents, or 0.7 percent of gross US greenhouse gas emissions (6,875 million metric tons) in that same year (NDEP 2012a). Nevada's gross greenhouse gas emissions rose faster than those of the nation as a whole, increasing 30 percent from 1990 to 2010 (NDEP 2012a), while national emissions rose by only 10 percent during this period (EPA 2014a). Rapid population growth has been the most important driver in emissions growth in Nevada. Much of this population growth has taken place near Las Vegas, which also adds to emissions in the state through air travel. The majority of the growth in greenhouse gas emissions came from transportation and electricity generation (EPA 2012a).
	According to the US Drought Monitor, as of May 28, 2013, approximately 64 percent of the State of Nevada is experiencing severe drought conditions (US Drought Monitor 2013). Field monitoring indicates that many areas within the Carson City District (CCD) are experiencing drought impacts including substantial reductions in forage production and reduced spring and stream flows. It is likely that a continuation of these conditions would impair forage and water resources on many more areas within the planning area.
	As of February 27, 2013, the US Department of Agriculture designated Douglas County and Carson City as well as other counties in Nevada, as primary natural disaster areas due to damages and losses caused by the recent drought. Douglas County and Carson City are located within the planning area. Additionally, farmers and ranchers in Lyon, Nye, and Washoe Counties qualified for natural disaster assistance.
	In June 2013, the CCD published the Finding of No Significant Impact and Final Carson City District Drought Management Environmental Assessment (US Drought Monitor 2013). The EA provides numerous drought response actions that allow for the BLM to provide a rapid response to drought situations on BLM-administered lands in order to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought conditions.

4.3 RESOURCES

4.3.1 Air

Summary

The primary sources of air pollutant emissions on BLM-administered lands in the planning area include exhaust emissions from vehicles, motorized recreational equipment, and maintenance equipment; wildland fires and

prescribed burns; vehicle and motorized recreational equipment travel on unpaved roads; wind erosion; mining and mineral developments; and energy resource developments. Wildland fires have the greatest and most widespread effects on air quality and can impact regional air quality conditions, including more urban areas depending on location and wind conditions. Other emission sources tend to have more localized effects on air quality.

Air quality management objectives for all of the RMP alternatives include maintaining compliance with federal and state air quality standards and air quality management programs and carrying out the FLPMA's instruction to protect air and atmospheric values while managing BLM-administered lands according to the principles of multiple use and sustained yield. Owners and operators of mineral and energy resource development projects would continue to be subject to state and federal air quality management programs, including air permit programs and fugitive dust control programs. Both existing and future gold and silver mining operations would be subject to Nevada and Environmental Protection Agency (EPA) mercury regulations.

Most of the CCD is in attainment of National Ambient Air Quality Standards (NAAQS) for all federally regulated pollutants, though a portion of Washoe County is a serious nonattainment area for particulate matter less than 10 micrometers in diameter (PM_{10}). The primary sources of PM_{10} emissions within the nonattainment area are fugitive dust from travel on paved and unpaved roads (68 percent of emissions in 2011), wildfires (22 percent of emissions), and residential wood combustion (6 percent of emissions; Washoe County AQMD 2012). The EPA exceptional events policy excludes air quality impacts associated with natural events from consideration when determining whether or not an area complies with federal ambient air quality standards. Wildfires may result in violations of ambient air quality standards at monitoring stations in the planning area, but Nevada may request that the EPA exclude these violations as exceptional events.

Future mining activities, geothermal developments, and renewable resource developments would be similar under all RMP alternatives; therefore, impacts on air quality would be similar under all alternatives. RMP alternatives would differ somewhat in the location and amount of recreational activity, especially OHV use. However, overall levels of recreational usage would be similar under most alternatives and may increase with increasing population. Only Alternative C places restrictions on this usage that may result in a decrease in the level of use and associated emissions.

Methods of Analysis

Methods and Assumptions

A qualitative approach was used for analyzing impacts on air quality based on an understanding of the current air quality conditions within the planning area.

Current air quality conditions are described in detail in **Section 3.2.1**, Air Quality. This approach involved identifying the pollutants associated with a proposed planning element, describing the relative magnitude of emissions changes, and indicating the extent of potential impacts. The primary air quality measures affected by activities on BLM-administered lands are PM_{10} and $PM_{2.5}$. While significant across the landscape, other criteria pollutants are unlikely to be substantially changed by actions on BLM-administered lands. Impacts on air quality are assessed for the different alternatives to analyze whether the overall air quality goal of maintaining existing air quality and air quality related values would be met under each alternative.

The analysis includes the following assumptions:

- Weather-related events and wildland fires may cause or contribute to local or regional air resource impacts.
- The area's population will continue to increase, as will demands on BLM-administered lands.

Indicators

Indicators used in the air quality analysis include the following:

- Changes in prescribed burns, wildland fire, and wildland fire management
- Acres of unpaved roads in the analysis area and use designations
- Level of mining
- Level of energy development
- Level of livestock grazing
- Amount of road construction and maintenance

Nature and Type of Effects

Air quality is affected by actions that introduce pollutants into the atmosphere. The degree of impact depends upon the amount of pollutants emitted, the existing air quality of a region, and localized conditions such as temperature, wind speed and direction, precipitation, and topography. The primary sources of emissions on BLM-administered lands are combustion sources such as vehicles (including OHVs), construction equipment, and maintenance equipment; fugitive dust from surface disturbance and wind erosion; and fire.

Actions that reduce emissions of air pollutants can improve air quality and air quality-related values. Actions that increase emissions of air pollutants can have negative effects on air quality and air quality-related values. An increase in sulfur dioxide, nitrogen oxide, PM_{10}, and $PM_{2.5}$ emissions can result in decreased visibility, increased atmospheric nitrogen and sulfur deposition on soils and vegetation, and acidification of sensitive water bodies. Fugitive dust could

potentially result in increases in ambient concentrations of PM_{10} and $PM_{2.5}$, resulting in localized impacts on vegetation and increases in atmospheric deposition. Particulate matter also contributes to haze and limits visibility. Ozone, which is formed by a chemical reaction between volatile organic compounds and nitrogen oxides, contributes to smog, which limits visibility.

Particulate matter emissions (fugitive dust) are primarily caused by ground-disturbing activities and vehicular traffic on unpaved roads and surfaces associated with development and operation and with recreation (primarily OHV use). Concentrated livestock grazing can also disturb soils and break apart biotic soil crusts making soils susceptible to windblown dust.

Fires, particularly uncontrolled fires, can emit large quantities of particulate matter into the atmosphere, affecting visibility as well as human health. The degree and extent of the impact depends upon the severity of the fire as well as the meteorological conditions at the time. Large fires can result in exceedances of NAAQS at nearby or downwind monitoring stations; however, the state can request that EPA exclude these violations as exceptional circumstances. Burned areas also are susceptible to wind erosion until the burned areas are revegetated and the exposed soils are stabilized.

Fires also emit large quantities of carbon monoxide, nitrogen oxides, sulfur oxides, and organic compounds. Prescribed fires and wildfires that occur on BLM-administered lands in the planning area could contribute to elevated levels of particulates in those areas and impact visibility. In the long term, controlling fuel load through prescribed burns and vegetation treatments can reduce the risk of uncontrolled wildfire and resultant effects on air resources (Wiedinmyer and Hurteau 2010).

Management for the following resources would not result in an effect on air quality: caves and cave resources, climate change, fish and wildlife, special status species, paleontological resources, visual resources, forestry and woodland products, lands and realty, ACECs, national trails, WSAs, WSRs, back country wildlife conservation areas, tribal interests, public health and safety, and interpretation and education.

Air Quality: Effects from Air Quality Management

Effects Common to All Alternatives

RMP air quality management objectives and actions under all alternatives include maintaining compliance with state and federal requirements and programs. This includes Nevada Bureau of Air Quality Planning rules, which prohibit the use, maintenance, or construction of roadways without taking appropriate dust abatement measures (Nevada Administrative Code 445B.22037); the Smoke Management Memorandum of Agreement, which requires reporting size, date of burn, fuel type, and estimated air emissions for each prescribed burn (USDA, US DOI, and State of Nevada 2010); and Nevada and California prescribed burn

permitting requirements. The programs noted here focus on the pollutants of greatest concern in the planning area, PM_{10} and $PM_{2.5}$, and their primary sources on BLM-administered lands within the planning area, prescribed fire, and fugitive dust. While carbon monoxide is also a pollutant of concern in a small portion of the planning area (the Reno and Sparks areas of Washoe County), there is very little BLM-administered land in this area. The primary sources of carbon monoxide in Washoe County are mobile and nonmobile source, residential wood burning, and wildfires and prescribed burning. The primary sources on BLM-administered land that could affect the carbon monoxide maintenance area are prescribed burns and on- and off-road vehicles.

State and federal regulatory programs related to these emission sources are designed to minimize the resulting air pollutant concentrations downwind of the emission sources. The BLM would continue to comply with Nevada permit program requirements for prescribed burns. Any prescribed burn expected to emit more than one ton of PM_{10} would require an open burn permit from the Nevada Bureau of Air Pollution Control. Prescribed burns expected to emit more than 10 tons of PM_{10} would require a more detailed permit application. In addition, a burn plan is required for prescribed burns expected to emit more than 10 tons of PM_{10}. There are no air permit requirements for wildland fire suppression activities. Programs allowing conditional fire suppression management for a benefit require an annual permit application that identifies areas being considered for prescribed fires or for allowing conditional fire suppression management for a benefit. The permit application must identify the conditions under which naturally ignited wildfires may be allowed to burn rather than being suppressed. BLM road construction and road maintenance activities that would disturb more than 20 acres would be subject to Nevada surface area disturbance permit requirements and would require preparation of a fugitive dust control plan.

Effects under Alternative A

Under Alternative A, the BLM would maintain air quality standards through case-by-case review of activities on BLM-administered lands and continuation of existing planning actions outlined in **Table 2-2**. These actions include applying stipulations or measures to reduce negative air quality impacts, limiting activities so as not to exceed a 50 percent reduction in ground cover in high erosion areas, and limiting OHV use to designated roads and trails in areas of severe erosion hazard. Implementing these actions would continue to minimize particulate emissions by limiting activities or authorized uses in areas most susceptible to erosion hazards.

Effects under Alternatives B, C, D, and E

Air quality management under Alternatives B through E would implement BMPs and mitigation measures on a case-by-case basis to minimize adverse impacts on air quality from BLM and BLM-authorized activities. No air quality management actions are proposed for areas with high erosion potential. However, new

management actions are proposed under soil and water resources for each alternative to reduce erosion potential. This would continue to protect areas most susceptible to erosion and reduce fugitive dust emissions from wind or physical disturbance.

Air Quality: Effects from Soil Resources

Effects Common to All Alternatives

Exposed and sparsely vegetated soils are susceptible to wind erosion and are thus a source of fugitive dust emissions. Soil disturbance may be caused by a number of activities on BLM-administered lands, including mineral and energy development, livestock grazing, wild horse and burro use, travel on unpaved roadways, and OHV use. Air quality impacts associated with specific resource uses are discussed under each specific resource use category within this section. All alternatives include management actions to minimize soil erosion and maintain soil stability in areas of sensitive soils. Effects from soil resources management actions for each alternative are discussed below.

Effects under Alternative A

Alternative A would reduce soil erosion by limiting reduction in ground cover from activities in high erosion areas to 50 percent and by limiting OHV use to designated roads and trails in areas of severe erosion hazard. Implementing these actions would continue to minimize particulate emissions by limiting activities or authorized uses in areas susceptible to erosion hazards.

Effects under Alternative B

In addition to applying BMPs and mitigation measures to minimize soil erosion and maintain soil stability in areas of sensitive soils, Alternative B would maintain and improve vegetation cover in areas of high erosion potential by applying soil amendments or requiring a growth medium. Alternative B would also require an erosion control plan for disturbance on slopes greater than 30 percent. Measures to reduce soil erosion would also reduce fugitive dust emissions; impacts would be similar to those from measures under Alternative A.

Effects under Alternatives C, D, and E

Vegetation management and avoidance of soil disturbance on steep slopes in Alternatives C through E would have the greatest potential to control soil-related fugitive dust emissions. In addition to applying BMPs and mitigation measures to minimize soil erosion and maintain soil stability in areas of sensitive soils, these alternatives would improve and increase litter, biotic soil crusts, and vegetation cover and would implement stricter reclamation requirements for surface-disturbing actions. These alternatives would require an erosion control plan for disturbance on slopes between 21 and 39 percent, and would prohibit surface disturbance on slopes greater than 40 percent. Soils management actions under these alternatives would result in less soil erosion and fewer fugitive dust emissions compared to current management.

Air Quality: Effects from Water Resources

Effects under Alternative A
No air quality impacts from water resource management were identified under Alternative A.

Effects under Alternatives B, C, D, and E
Water resources actions would result in short-term air quality impacts during construction of well importation or exportation projects, wells, or other water sources. Use of fuel burning equipment emits criteria air pollutants from equipment exhaust, while ground disturbance creates fugitive dust. No long-term air quality impact would result from water resources management.

Air Quality: Effects from Vegetation Resources

Effects under Alternative A
Vegetation management under Alternative A focuses on meeting rangeland health standards and enhancing rangeland health for all rangeland values, including livestock, wildlife, and wild horses. Alternative A includes fewer vegetation management actions and may be less effective at improving vegetation health and thus long-term reductions in wildland fire potential and associated fire-related air quality impacts.

Effects under Alternative B
Alternative B would allow for the greatest amount of fire treatments for managing forest and woodlands. Under Alternative B, as many as 20,000 acres of low-density pinyon-juniper woodland would be converted to sagebrush-dominated communities per year and as many as 6,500 acres of medium- and high-density pinyon-juniper woodlands would be thinned per year.

Vegetation treatments using mechanical means release criteria air pollutants from equipment usage. Prescribed fire treatments emit ozone precursor emissions (nitrogen oxides and volatile organic compounds) that can result in locally high ozone concentrations. Fire treatments also emit particulates, which could affect public health and reduce visibility. The BLM would comply with state permit requirements for prescribed burns to ensure that fire treatments avoid air quality impacts on downwind locations and do not result in violations of NAAQS. Over the long term, management actions that reduce fuel load and improve woodland health would reduce the potential for wildland fires and associated air quality impacts.

Restoration and rehabilitation actions that would stabilize soils and prevent cheatgrass and invasive species from dominating burned areas and altering the natural fire regime would decrease the potential for wind erosion of soils and reduce the potential for reoccurrence of severe wildland fire, resulting in a long-term benefit for air quality.

Alternative B would use mechanical, biological, and chemical means to eradicate or control invasive species. These methods would result in minor short-term air quality impacts through the release of criteria pollutants from equipment or potentially small amounts of volatile organic compounds from herbicide use. Controlling invasive species would result in a long-term benefit because the establishment of noninvasive plants would reduce the occurrence of wildland fire and associated air quality impacts.

Effects under Alternative C

Impacts from forest and woodlands treatments would be similar to those described under Alternative B but would occur on a reduced scale. Under Alternative C, as many as 3,500 acres of low-density pinyon-juniper woodland would be removed per year and as many as 1,500 acres of medium- and high-density pinyon-juniper woodlands would be thinned per year. The use of fire treatments would be much less under this alternative. Alternative C would also manage for fuel hazard reduction, which could reduce fuel load and the resultant air quality impacts that occur with wildland fire.

Rehabilitation of burned areas by re-establishing appropriate species, subspecies, and understory plants relative to site potential would reduce the potential for establishment and spread of invasive plants and would contribute towards altering the fire reoccurrence interval from higher fire regime condition classes to lower condition classes. Restoration actions that prioritize the use of native plants would reduce potential for wind erosion of soils, resulting in a long-term benefit for air quality.

Alternative C would use mechanical and biological chemical means to eradicate or control invasive species. Controlling invasive species would result in a long-term benefit because the establishment of noninvasive plants would reduce the occurrence of wildland fire and associated air quality impacts.

Effects under Alternative D

Alternative D would engage interested parties to develop a comprehensive restoration strategy prior to further treatment of pinyon-juniper woodlands; therefore, the types of treatments under this alternative are not known at this time. Future strategies would undergo environmental review at the time they are proposed. Alternative D would also manage for fuel hazard reduction with a focus on areas around communities. Reducing fuel loads and the chance of fire next to communities would reduce the chance of wildfire and its associated health impacts.

Restoration and rehabilitation under Alternative D would focus on reducing fire potential within the urban interface by using fire resistant species and prioritizing the use of native plants. Decreasing the potential for reoccurrence of severe wildland fire in the urban interface and near sensitive human receptors would result in a long-term benefit on air quality.

Alternative D would use mechanical, biological, and chemical means to eradicate or control invasive species. Impacts would be similar to those described for Alternative B.

Effects under Alternative E
Impacts from forest and woodlands treatments would be similar to those described under Alternative B but would occur on a reduced scale. Under Alternative E, as many as 8,500 acres of low-density pinyon-juniper woodland would be removed per year and as many as 6,500 acres of medium- and high-density pinyon-juniper woodlands would be thinned per year. Alternative E would also manage for fuel hazard reduction, which could reduce fuel load and the resultant air quality impacts that occur with wildland fire.

Impacts from habilitation and restoration would be similar to those described for Alternative D.

Alternative E would use mechanical, biological, and chemical means to eradicate or control invasive species. Impacts would be similar to those described for Alternative B.

Air Quality: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Management actions for wild horses and burros would result in negligible impacts on air quality under all alternatives. Gather and removal actions would be a temporary source of emissions from vehicle use, travel on unpaved roadways, and soil disturbance at gather sites and holding facilities. Wild horse and burro use of the land may result in minor levels of wind erosion and associated dust emissions through soil disturbance.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Air Quality: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Air quality impacts from wildland fire and fuels treatments, including prescribed burns, are discussed under *Nature and Types of Impacts*. It is difficult to accurately predict the number and extent of wildland fires that would occur over the life of this RMP. However, trends in wildland fires in the planning area over the last 30 years show that the acres burned in the planning area as a whole have decreased slightly in the decades between 1980 and 2013, while the percentage of those acres on BLM-administered lands has increased slightly in the same period. On average, less than 1 percent of the CCD is affected by wildland fire each year. While management actions under the different alternatives may affect the size, frequency, and location of future wildland fires, wildland fire trends of the last 30 years would likely continue over the life of this RMP. While past trends do not show an increase in acres burned over the long term, air quality has been and would continue to be affected in high-fire occurrence years as a result of conditions such as drought.

Effects under Alternative A

Alternative A includes fuels treatments to reduce fire hazard fuels as well as fire suppression in the event of a wildland fire. Air quality impacts from wildland fires and prescribed burns would be the same as described under *Nature and Types of Impacts*. In addition, vehicles and other equipment used in fuels treatment activities; vehicles, construction equipment (such as to create fire breaks), and aircraft used in fire suppression activities; and vehicles and construction equipment used in post-fire land stabilization activities would emit small amounts of criteria pollutant emissions during operation of this equipment.

Wildland fire would affect visibility during the time the fire burned, as described under *Nature and Types of Impacts*. Prescribed burns would also affect visibility but would be subject to the regulations and permit conditions described under *Effects from Air Quality Management*. To minimize the effect of controlled burns on air quality, these regulations and conditions limit the time of year and meteorological conditions under which prescribed burns can be conducted.

Effects under Alternative B

Impacts under Alternative B would be similar to Alternative A. The incidence of fire would be expected to follow existing trends.

Effects under Alternative C

Impacts under Alternative C would be similar to Alternative A. Chemical agents and dozers would not be used under this alternative in fire suppression actions, slightly reducing impacts on air quality compared to fire suppression options under Alternative A.

Alternative C would focus wildfire prevention efforts on areas of sensitive biological, cultural, and other natural resources. This focus could lead to fewer

wildfires in the less developed areas of the CCD but not on more urban areas. Overall, the incidence of fire would be expected to follow existing trends.

Effects under Alternative D

Impacts under Alternative D would be similar to Alternative A. Alternative D would focus on protecting the WUI from wildfire. The focus on these areas could reduce the incidence on fire in areas where air quality impacts on human health are the greatest. Overall, the incidence of fire would be expected to follow existing trends.

Effects under Alternative E

Impacts under Alternative E would be similar to Alternative A. Alternative E would utilize all fuels treatments methods to create fire safe communities and modify vegetation communities to achieve condition class, fuels, habitat, watershed, and riparian objectives. This focus on both urban and rural areas may lead to fewer wildfires over the long term, though the incidence of fire is expected to follow existing trends over the life of the RMP.

Air Quality: Effects from Cultural Resources Management

Effects Common to All Alternatives

Cultural resource management actions would result in negligible impacts on air quality. Excluding areas from surface-disturbing activities and reducing use on or decommissioning existing roads to protect sensitive cultural resources may reduce fugitive dust associated with surface disturbance. These exclusions are described under each alternative.

Effects under Alternative A

Management of cultural resources Alternative A would not impact air quality.

Effects under Alternative B

Under Alternative B, the BLM would manage a 0.25-mile ROW avoidance area on either side of the centerline of historic roads and trails eligible for the NRHP but are not congressionally designated.

Effects under Alternative C

Under Alternative C, the BLM would manage a 2.5-mile ROW avoidance area on either side of the centerline of historic roads and trails eligible for the NRHP but are not congressionally designated.

Effects under Alternative D

Impacts under Alternative D would be the same as for Alternative B.

Effects under Alternative E

Under Alternative E, the BLM would manage a 1-mile ROW avoidance area on either side of the centerline of historic roads and trails eligible for the NRHP but not congressionally designated.

Air Quality: Effects from Livestock Grazing Management

Effects Common to All Alternatives

Livestock grazing is a source of fugitive dust emissions from soil disturbance and reduced vegetation and biotic soil crust density that results in wind erosion. Livestock grazing operations, including the transport of livestock, would be a temporary source of fugitive dust and vehicle emissions.

Effects under Alternatives A, B, D, and E

Alternatives A, B, D, and E would manage a similar number of acres as available or not available to livestock grazing. Impacts would be as described under *Effects Common to All Alternatives*.

Effects under Alternative C

Alternative C would reduce the number of acres available to grazing by approximately 56 percent and would reduce AUMs to no more than 27 percent of existing levels, resulting in fewer emissions related to livestock grazing on BLM-administered lands within the planning area.

Air Quality: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Mining and mineral extraction activities in the planning area would impact air quality in the immediate vicinity of related surface-disturbing activities. Such impacts include particulates generated from blasting, excavation, loading, and hauling activities. Construction equipment operations also would be a source of engine exhaust emissions. For mining operations other than casual/recreational mining, plans of operation must be submitted by the claimant and reviewed by the BLM. Integral to these plans are requirements that all applicable federal, state, and local regulation for air pollution control are met, including obtaining air quality permits and implementing fugitive dust control plans. Most mining operations and energy developments would be subject to stationary source permit requirements. Nevada dust control program regulations would apply to mineral or energy developments that disturb more than 20 acres. In addition, Nevada regulations on mercury emissions (Regulation R189-05), which became effective in May 2006, apply to owners and operators of both existing and new gold or silver mining facilities, according to schedules established in the Nevada regulations, and the EPA's final rule on Mercury standards published on May 3, 2011 (40 CFR Part 63).

Oil and gas potential is low within the planning area; therefore, air quality impacts from development and operation of oil and gas wells and associated infrastructure would not be anticipated.

The planning area is an active geothermal resource area. Sources of air quality emissions associated with geothermal development include construction equipment and vehicle exhaust, fugitive dust during access road, well pad,

pipeline, and power plant construction, and emissions associated with well drilling, which include both criteria pollutant emissions as well as non-condensable gases such as carbon dioxide, hydrogen sulfide, methane, and ammonia, as well as trace amounts of mercury and arsenic when these compounds are contained in the geothermal resource. Depending upon the type of facility constructed, cooling towers, cooling ponds, and reinjection wells are also sources of emissions.

Emissions associated with operation of geothermal power plants depend on the type of plant constructed. Binary heat transfer systems are closed loop systems and have no significant air pollutant emissions. Flash steam systems are not closed systems and emit steam and minerals contained in geothermal fluids to the atmosphere. Hydrogen sulfide and particulate matter from minerals contained in geothermal fluids are the air pollutants emitted of most concern, though small quantities of other gases such as methane, benzene, sulfates, ammonia, boron, mercury, selenium, arsenic, and some metals may also be emitted depending on the characteristics of the geothermal resource. Emissions from geothermal facilities require air quality operating permits from the Nevada Bureau of Air Pollution Control.

Effects under Alternative A

Impacts under Alternative A would be the same as discussed under *Effects Common to All Alternatives*.

Effects under Alternative B

Impacts under Alternative B would be the same as discussed under *Effects Common to All Alternatives*. Alternative B would manage a similar number of acres as open to fluid mineral leasing but would manage more acres as subject to no surface occupancy (NSO) or controlled surface use (CSU) stipulations than Alternative A. Alternative B would also manage more acres as closed to nonenergy leasable mineral exploration or development, 439,600 acres as petitioned for withdrawal from locatable mineral entry, and 807,200 acres as closed to mineral material entry. Management actions that place restrictions on mineral extraction and exploration activities would reduce the negative impacts of mineral development on air quality. Closing additional areas to mineral development and limiting surface-disturbing actions in areas open to fluid mineral leasing could lower emissions associated with exploration and development of minerals.

Effects under Alternative C

Impacts under Alternative C would be the same as discussed under *Effects Common to All Alternatives*. Alternative C would manage fewer acres open to fluid mineral leasing and more acres as subject to NSO or CSU stipulations than Alternative A. Alternative C would also manage 2,960,800 acres as closed to nonenergy leasable mineral exploration or development, 117,500 acres acres as petitioned for withdrawal from locatable mineral entry, and 3,004,800 acres as

closed to mineral material entry. Alternative C would close the most acreage and place the highest level of restrictions on actions that would emit air pollutants resulting in the lowest emissions related to mineral development compared to the other alternatives.

Effects under Alternative D

Impacts under Alternative D would be the same as discussed under *Effects Common to All Alternatives*. The acreages managed as open or closed to mineral development would be similar to those described under Alternative B, except Alternative D would petition fewer acres for mineral withdrawal.

Effects under Alternative E

Impacts under Alternative E would be the same as discussed under *Effects Common to All Alternatives*. Alternative E would manage more acres as closed to fluid mineral leasing than Alternative A. Alternative E would also manage over twice as many acres as closed to nonenergy leasable mineral exploration or developmentand over three times as many acres closed to mineral material entry as Alternative A. In addition, Alternative E would manage 470,600 acres as petitioned from locatable mineral entry.

Alternative E closes the second most acres and places the highest level of restrictions on actions that would emit air pollutants, resulting in the lowest emissions related to mineral development compared to the other alternatives. Management actions under Alternative E would result in fewer emissions associated with exploration and development of minerals than under Alternative A.

Air Quality: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

On-road and off-road motorized vehicle use (e.g., OHVs, all-terrain vehicles [ATVs], and motorcycles) is the largest source of air pollutant emissions associated with visitor activities. These activities generate exhaust emissions and particulate emissions from travel on unpaved roads and trails. Based on annual visitor use days, OHV travel is the most popular recreational activity in the planning area. Motorboats, motocross, pleasure driving, campfires, and camp stoves are additional sources of criteria pollutants emissions associated with recreational visitor activities. Visitor use levels for recreation-related activities are expected to rise with increasing populations in the planning area. Air emissions related to these activities, primarily vehicle travel to recreation areas, would likely increase.

Effects under Alternative A

Under Alternative A, the BLM would manage 3,840,300 acres as open to motorized travel and 31,800 acres as closed to motorized travel. The BLM would manage motorized travel on an additional 924,300 acres as limited to existing routes. Alternative A would manage the most acres as open to OHV

use and would manage the fewest acres as limited to existing routes than the other alternatives; therefore, Alternative A would result in higher emissions than the other alternatives, particularly fugitive dust emissions from cross-country travel.

Effects under Alternative B

Under Alternative B, the BLM would manage 95,300 acres as open to motorized travel and 26,700 acres as closed to motorized travel. The BLM would manage an additional 4,677,000 acres as motorized travel limited to existing routes. Alternative B would maintain the Lemmon Valley Motocross Area and would manage the Dead Camel Mountains, Hungry Valley, and portions of the Sand Mountain, Walker Lake, and Wilson SRMAs as open to motorized travel. In addition, the BLM would designate the Middlegate, Mina, Pine Nut, and Salt Wells ERMAs for ATV, utility vehicle (UTV), and motorcycle long-distance trail riding and would provide OHV staging in the Reno Urban Interface ERMA. The overall level of recreation-related motorized travel would be similar to Alternative A, resulting in a similar level of criteria pollutant emissions from engine exhaust. However, limiting much of the travel to existing routes would prevent the creation of new trails and limit new sources of windblown dust.

Effects under Alternative C

Under Alternative C, the BLM would manage 1,300 acres as open to motorized travel and 1,190,500 acres as closed to motorized travel. The BLM would manage an additional 3,013,500 acres as motorized travel limited to existing routes. The BLM would eliminate the Lemmon Valley Motocross Area and would manage three SRMAs (Alpine, Sand Mountain, and Walker Lake) for recreation with an emphasis on protecting cultural, historical and natural resources. Nondesignated routes within the Dead Camel Mountains would be decommissioned. OHV use in Walker Lake SRMA would be limited to designated routes. Alternative C would likely result in a reduced level of recreation-related motorized use and a reduction in related criteria pollutant and fugitive dust emissions given the restrictions on use areas are current conditions.

Effects under Alternative D

Under Alternative D, the BLM would manage 22,700 acres as open to motorized travel and 30,600 acres as closed to motorized travel. The BLM would manage an additional 4,748,400 acres as motorized travel limited to existing routes. Similar to Alternative B, the overall level of recreation-related motorized travel would be similar to Alternative A, resulting in a similar level of criteria pollutant emissions from engine exhaust. However, limiting much of the travel to existing routes would prevent the creation of new trails and limit new sources of windblown dust.

Effects under Alternative E

Under Alternative D, the BLM would manage 55,700 acres as open to motorized travel and 24,100 acres as closed to motorized travel. The BLM would manage motorized travel on an additional 4,717,300 acres as limited to existing routes. Similar to Alternative B, the overall level of recreation-related motorized travel would likely be similar to Alternative A, resulting in a similar level of criteria pollutant emissions from engine exhaust. However, limiting much of the travel to existing routes would prevent the creation of new trails and limit new sources of windblown dust.

Air Quality: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Air quality impacts from the use of routes by motorized vehicles would be the same as described under *Effects from Recreation and Visitor Services*. Route maintenance activities, construction of new routes, or removal of existing routes would result in short-term fugitive dust and equipment engine emissions. Vehicle use levels in the planning area are expected to increase with the growing population in the planning area; therefore, exhaust-related emissions would continue to increase over the life of the RMP.

Effects under Alternative A

No travel management actions are proposed under Alternative A. Ongoing impacts would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternatives B, C, D, and E

Alternatives B through E would establish travel management areas, with subsequent travel management planning occurring over the subsequent five years. Road closures and route designations that limit use to existing or designated roads, primitive roads, and trails would limit user creation of new trails and subsequent new sources of windblown dust in the planning area.

Air Quality: Effects from Renewable Energy

Effects Common to All Alternatives

Solar and Wind Facilities. Impacts on air quality associated with solar and wind renewable energy development include construction-related emissions and, to a lesser extent, operational emissions. Individual renewable energy projects would result in short-term and long-term localized impacts at the project sites but would not contribute to regional degradation of air quality over the long term.

Construction of a solar facility includes a number of operations, with most air quality impacts occurring during site preparation (clearing, grading, and cut and fill if needed to produce acceptable slopes) and facility construction. The primary pollutants emitted during construction are fugitive dust from site

preparation, transmission line and road development, and vehicle and equipment use on unpaved surfaces, and exhaust emissions from construction equipment usage, construction worker commute traffic, and truck deliveries to the project site. Construction of a wind energy facility would result in similar emissions, though the primary source of fugitive dust emissions likely would occur during the construction of access roads, which sometimes must be developed through steeper terrain and may include blasting and cut and fill operations. Construction would be subject to Nevada surface area disturbance permit requirements and would require preparation of a fugitive dust control plan. Operation of photovoltaic solar facilities and wind facilities would result in negligible emissions, while operation of concentrated solar power facilities would result in emissions associated with small-scale boilers and cooling towers.

Biomass Facilities. Biomass can be used for direct heating, such as burning wood in a fireplace or wood stove, for generating electricity, or can be converted directly into liquid fuels. Within the planning area, there is potential for small-scale mobile biomass power production fueled by woody debris and plant matter from vegetation treatments. Within these systems, biomass materials would be converted into producer gas with a gasifier, filtered for tar and particulates, and directed to an engine to produce electricity. These systems would emit criteria pollutant emissions, including particulate matter, and would be subject to permitting conditions from the Nevada Bureau of Air Pollution Control.

Effects under Alternative A

Alternative A would manage the most acres as variance areas for utility-scale solar development (905,900 acres). Effects on air quality from utility-scale solar development would be the same as described under *Effects Common to All Alternatives*. Development in variance areas would be considered on a case-by-case basis based on environmental considerations and if approved for consideration would be required to undergo appropriate NEPA analysis (BLM and DOE 2012). There are no wind or biomass management actions under Alternative A.

Effects under Alternative B

Air quality impacts related to solar development would be similar to those described under Alternative A, though approximately 133,000 fewer acres would be managed as variance areas. Effects on air quality from utility-scale wind development would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternative C

Air quality impacts related to solar development would be similar to those described under Alternative A. However, the BLM would manage approximately 327,500 fewer acres as variance areas. Effects on air quality from utility-scale

wind development would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternative D
Air quality impacts related to solar development would be similar to those described under Alternative A. However, the BLM would manage approximately 234,000 fewer acres as variance areas. Effects on air quality from utility-scale wind development would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternative E
Air quality impacts related to solar development would be similar to those described under Alternative A. However, the BLM would manage approximately 276,000 fewer acres as variance areas. Effects on air quality from utility-scale wind development would be the same as described under *Effects Common to All Alternatives*.

Air Quality: Effects from Back Country Byways

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
No air quality impacts would occur under Alternative A.

Effects under Alternative B
Designation and promotion of the Fort Churchill, Marietta, and New Pass to Hawthorne Back Country Byways would increase vehicle traffic along these routes, resulting in an increase in vehicle exhaust emissions and fugitive dust from travel on roadways.

Effects under Alternative C
Designation and promotion of the Marietta and New Pass to Hawthorne Back Country Byways would increase vehicle traffic along these routes, resulting in an increase in vehicle exhaust emissions and fugitive dust from travel on these roadways. Rescinding the Fort Churchill Back Country Byway designation may result in a decrease in visitor usage along this route and a subsequent decrease in emissions.

Effects under Alternative D
No air quality impacts would occur under Alternative D.

Effects under Alternative E
Impacts under Alternative E would be the same as under Alternative B.

Air Quality: Cumulative Effects

Cumulative air quality impacts occur when multiple projects affect the same geographic areas at the same time or when sequential projects extend the duration of air quality impacts on a given area over a longer period of time. Air quality monitoring data trends can predict future air quality conditions within the cumulative effects area. Attainment status of NAAQS is evaluated over three-year periods; measured levels of pollutant levels that occur in three consecutive years can trigger a change in attainment status.

Past and Present Actions

Past and present actions that have affected air quality in the planning area include invasive species, lands and realty (e.g., ROW development), livestock grazing, minerals exploration and development, renewable energy development, recreation including travel management, vegetation management, wild horse and burro management, and wild fire and ecology management. Past and present management actions related to multiple uses of public lands, particularly travel management, minerals and energy development, and other development actions, have resulted in short-term and long-term direct impacts on air quality from the introduction of air pollutant emission sources.

While increases in development have resulted in more sources of air pollutant emissions in the planning area, emission control standards for mobile equipment, emissions control equipment on stationary sources, and requirements for cleaner-burning fuels have resulted in improvements in air quality for pollutants such as carbon monoxide and ozone in some portions of the planning area.

Monitoring data for areas other than Washoe County show that ambient concentrations of carbon monoxide have decreased and are well below NAAQS; ambient concentrations of ozone have remained steady and are below NAAQS; ambient concentrations of $PM_{2.5}$ have trended upward and are approaching NAAQS in some areas (Carson City and Gardnerville) but have decreased in other areas (Fernley); and ambient concentrations of PM_{10} have decreased and remain below NAAQS. Monitoring data for Washoe County show that ambient concentrations of $PM_{2.5}$ were at or above the NAAQS at monitored stations from 2003 to 2010 but below the NAAQS in 2011 and 2012. Ambient concentrations of ozone have remained steady at just below current NAAQS, though occasional exceedances of the 8-hour standard have occurred in the last 3 years. Ambient concentrations of carbon monoxide have decreased slightly and are well below NAAQS. The EPA sometimes revises the NAAQS based on new scientific information. The adoption of more stringent NAAQS by the EPA may affect the future attainment status of portions of the planning area.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions with the potential to affect air quality and air quality related values include new energy and mineral development, new geothermal development, new ROW development, increased recreation and visitor use and related travel on BLM-administered lands. In addition, climate change and wildland fire are processes or events that would result in indirect impacts on air quality and air quality related values similar to those described under *Nature and Types of Impacts*.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area that have contributed to air pollutants include urban development, mineral development, energy development, recreation, and wildfire. Mineral development has occurred, is occurring, and will continue to occur on both federal and nonfederal mineral estate lands within the planning area. These actions have generally resulted in only minor effects on local air quality due to the dispersed nature of activities. However, air pollutant-generating activities that occur near urban areas contribute incrementally to elevated levels of criteria pollutants, particularly ozone and particulate matter. Required open burn permits, surface area disturbance permits, and stationary source permits would continue to limit impacts on air quality from emissions associated with fire treatments, mining, renewable energy, and other development within the cumulative effects area. Direct and immediate impacts on air quality from future wildfires would be affected by implementation of fuel treatments that would limit fire size. Soil rehabilitation efforts would continue to reduce blowing dust.

The incremental effects of management actions under all alternatives would be similar. Actions under all alternatives would be required to comply with state and federal air quality standards and requirements. Wildfire management actions that reduce fire size, spread, and frequency of occurrence would help reduce or stabilize smoke emissions. The number and intensity of wildfire and the amount of smoke emissions generated would be dependent on climate, weather, and increased potential for human-caused fires. Based on current monitoring trends, it is anticipated that incremental impacts would remain low, with ambient pollutant levels remaining in compliance with federal and state air quality standards in most of the assessment area.

The effects of climate change would result in a cumulative impact on air quality and air quality related values to the extent that climate change resulted in a change in hydrologic and other ecological regimes that altered the landscape in a manner that increased the potential for wildland fire.

4.3.2 Climate

Climate represents the long-term statistical characterization of daily, seasonal, and annual weather conditions such as temperature, relative humidity, precipitation, cloud cover, solar radiation, and wind speed and direction. Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. A region's climate is affected by its latitude, terrain, and altitude, as well as nearby water bodies and their currents.

Historical data within the Great Basin show an increase in mean annual temperature, with most of the change resulting from higher minimum temperatures rather than higher maximum temperatures. Most portions of the Great Basin show a warming of 0.6 to 1.1 degrees Fahrenheit (°F) over the past century (Chambers et al. 2008). Regional climate models typically predict an additional warming over the next century. Historical data also indicate an increase in annual precipitation amounts in the Great Basin over the past century, together with increased year-to-year variability in precipitation amounts and a decrease in winter snow pack. These changes have resulted in earlier snowmelt, higher winter streamflow volumes, reduced spring peak volumes, and lower summer and fall streamflow volumes. Warmer and more arid conditions, coupled with a shorter snow season, have led to limited water supplies and severe drought in parts of the region (Chambers et al. 2008).

Climate change poses challenges for many resources and resource uses on BLM-administered land over the long term. For example, increased temperatures, drought, and evaporation could result in a shift in elevation and direction of wildlife and habitat populations. It may reduce seasonal water supplies and impact forage availability. Drought and resulting stress on vegetation may increase the frequency and intensity of insect infestations and increase the threat of wildland fire. These factors in turn may influence the availability of resources for livestock grazing, hunting, pine nut gathering, or performing other recreational uses on BLM-administered lands.

Climate is thus both a driving force and a limiting factor for biological, ecological, and hydrologic processes, as well as for resource management activities such as disturbed site reclamation, wildland fire management, drought management, rangeland and watershed management, and wildlife habitat administration. Climate also influences renewable and nonrenewable resource management, affecting the productivity and success of many management activities on BLM-administered lands. Incorporating effective application of climate information into public lands programs, projects, activities, and decisions authorizing use of the BLM-administered lands is critical for effective management.

In February 2010, DOI issued Amendment 1 to Secretarial Order 3289 directing the BLM to address the impacts of climate change on water, land, and other

resources. Management planning made in response to climate change impacts must be informed by science, and must require that scientists work with managers who are confronting this issue to evaluate impacts through the NEPA process. One of the tasks within the Order requires each bureau and office within the department to consider and analyze the potential climate change impacts in planning exercises and when making decisions affecting department resources.

Summary

A variety of actions within the planning area generate greenhouse gas emissions. The primary sources of greenhouse gas emissions on BLM-administered lands in the planning area under all alternatives would be combustion sources such as vehicles, construction equipment, and maintenance equipment; enteric fermentation from domestic livestock on grazing allotments and, to a lesser extent, from wild horses and burros; and fire.

Proposed vegetation treatments, wildland fire, livestock grazing, wild horse and burros, mineral resources, recreation, and travel management actions would emit greenhouse gases in the planning area, while proposed vegetation and wildland fire management actions that create healthy vegetation and soils would sequester greenhouse gases.

Each alternative evaluated in the RMP would contain actions that emit greenhouse gases and release carbon into the atmosphere as well as actions that improve soil and vegetation conditions and thus improve carbon sinks in the area. In general, alternatives that emphasize development would likely result in more greenhouse gas emissions over existing conditions, while alternatives that emphasize conservation would result in fewer emissions of greenhouse gas emissions and less disturbance of vegetation. Current scientific technology makes it difficult to link a specific BLM action to a specific climate change-related impact. Emissions of greenhouse gases from proposed BLM actions would be small in the context of broader spatial-scale emissions, and the duration of most BLM actions would be shorter than predicted changes in climatic conditions. Short-term direct and indirect impacts on climate from any of the alternatives would be negligible. However, over the long term, greenhouse gas emissions from actions on BLM-administered lands do contribute to total global emission levels. These, in turn, could contribute to future long-term, anticipated climate changes to a very minor degree. Overall, the contribution would be a very small portion of the total from other sources of a regional and global nature.

Potential effects of climate change on specific resources and resource uses in the planning area are discussed under their respective sections of this chapter.

Methods of Analysis

Methods and Assumptions

A qualitative approach was used for analyzing climate impacts. The potential effects of management actions were evaluated by assessing the impacts of anticipated future actions on the production of greenhouse gas emissions.

The analysis includes the following assumptions:

- There is a correlation between global concentrations of greenhouse gases and climate change.
- Future changes in precipitation and temperature regimes due to climate change will result in changes in vegetation, fire and fuels, and water availability.
- BMPs will be implemented for site-specific actions as applicable to the specific project and site location to minimize construction- and operation-related equipment emissions. This will also minimize combustion-related greenhouse gas emissions.

Indicators

The primary indicator of greenhouse gas-related impacts is the potential for the proposed action and alternatives to increase or decrease long-term levels of greenhouse gases.

Nature and Type of Effects

Greenhouse gases are gases that contribute to the natural greenhouse effect, including carbon dioxide, methane, nitrous oxide, and water vapor, as well as manufactured gases such as hydrofluorocarbons, chlorinated fluorocarbons, and sulfurhexafluoride.

Actions that increase greenhouse gas emissions, actions that reduce greenhouse gas emissions, actions that create carbon sinks, and actions that remove carbon sinks could affect climate change. The primary sources of greenhouse gas emissions on BLM-administered lands are combustion sources such as vehicles (including OHVs), construction equipment, and maintenance equipment; enteric fermentation from domestic livestock on grazing allotments and from wild horses and burros; and fire.

Fuel-burning equipment (e.g., personal vehicles, trucks, OHVs, ATVs, motorcycles, construction equipment, maintenance equipment, and mining equipment) releases primarily carbon dioxide as well as small amounts of methane. Ruminant livestock such as cattle and sheep are a primary source of methane emissions in the US; in 2010, enteric fermentation and manure management represented about 21 percent and 8 percent of total methane emissions from anthropogenic activities, respectively (EPA 2012). Nonruminant animals, such as wild horses and burros, also produce methane emissions but at

a much lower level (EPA 2012). Fires, particularly uncontrolled fires, can emit large quantities of greenhouse gases into the atmosphere, including carbon dioxide, methane, and nitrous oxide; fires also remove vegetation that acts as a carbon sink. In the long term, controlling fuel load through prescribed burns and vegetation treatments reduces the risk of uncontrolled wildfire and the resultant release of greenhouse gases into the atmosphere (Wiedinmyer and Hurteau 2010).

Proposed vegetation treatments, mineral resources development, recreation, and travel management actions would also emit greenhouse gases in the planning area, while proposed vegetation and wildland fire management actions that create healthy vegetation and soils would sequester greenhouse gases.

Vegetation management actions that involve reducing juniper woodland encroachment would also contribute to climate change. Woodlands tend to store more carbon due to greater aboveground biomass and greater total root biomass (Pinno and Wilson 2011). Because woodlands tend to store more carbon due to greater aboveground biomass and greater total root biomass, removal of the woodland and conversion to another plant community would reduce carbon storage potential. However, as described above, controlling fuel load through vegetation treatments also reduces the risk of uncontrolled wildfire and the resultant release of greenhouse gases into the atmosphere (Wiedinmyer and Hurteau 2010).

Construction of solar energy facilities emit greenhouse gas emissions from fuel combustion associated with heavy construction equipment and vehicle and truck use. Greenhouse gas emissions associated with operation of solar facilities would be much less than during construction. Because solar facilities operate for decades with minimal production of greenhouse gases, the potential greenhouse gas savings in the form of offsetting energy produced by coal or natural gas sources outweighs life-cycle emissions of greenhouse gases.

Construction of geothermal energy facilities would also be a source of greenhouse gas emissions resulting from fuel combustion associated with heavy construction equipment, drilling equipment, and vehicle and truck use, as well as from the release of carbon dioxide and lesser amounts of other greenhouse gases contained within the geothermal resources itself. Geothermal power plants utilizing binary technology do not release greenhouse gases from the geothermal production process itself, while plants utilizing flash steam or dry steam technologies release low levels of greenhouse gas emissions. Like solar power, energy from geothermal power sources releases far fewer greenhouse gas emissions than coal or natural gas-fired power plants.

Biomass facilities release greenhouse gases from the removal and combustion of vegetative materials.

Management for the following resources would not result in an effect on climate: air quality, climate change, fish and wildlife, caves and cave resources, paleontological resources, lands and realty, national trails, WSAs, WSRs, back country wildlife conservation areas, tribal interests, public health and safety, and interpretation and education.

Climate: Effects from Soil Resources

Effects Common to All Alternatives

Soil resources are carbon sinks, and removal of vegetation and biotic soil crusts releases the organic carbon within the soil. The greater the surface disturbance, the more carbon would be released.

Effects under Alternative A

Actions under Alternative A that limit new surface disturbance in areas particularly susceptible to erosion would reduce soil erosion and thus limit the release of carbon stored in the vegetation and soils.

Effects under Alternative B

Alternative B would maintain and improve vegetation cover in areas of high erosion potential. To the extent that Alternative B would result in increased vegetation, more vegetative matter would be available to sequester carbon.

Effects under Alternative C, D, and E

Vegetation management actions that improve and increase vegetation cover under Alternatives C through E would result in the greatest potential to control soil erosion. To the extent that Alternatives C through E would result in increased vegetation, more vegetative matter would be available to sequester carbon.

Climate: Effects from Water Resources

Effects under Alternative A

No climate change impacts from water resource management were identified under Alternative A.

Effects under Alternative B, C, D, and E

Water resources actions would be short-term sources of greenhouse gas emissions during construction of well importation or exportation projects, wells, or other water sources. Use of fuel burning equipment would emit greenhouse gas emissions from equipment exhaust. No long-term increase in greenhouse gas emissions would occur from water resources management under any of these alternatives.

Climate: Effects from Vegetation Resources

Effects Common to All Alternatives

Vegetation is the primary carbon sink within the planning area. Removal of vegetation releases the soil organic carbon and the carbon stored in the vegetation. The amount of carbon released depends on the type of soil and vegetation and the vegetation that replaces it. As described under *Nature and Type of Effects*, woody vegetation stores more carbon than grasses. Thus, pinyon-juniper would store more carbon than sagebrush, while sagebrush would store more carbon than cheatgrass.

Vegetation management would require the use of vehicles, chainsaws, and other equipment powered by nonrenewable fuels, which results in greenhouse gas emissions. Vegetation treatment using fire releases carbon from plants. At the same time, treatments that improve vegetative communities in the long term could increase rates of carbon sequestration, thus mitigating some of the negative climate change effects.

Effects under Alternative A

Vegetation management under Alternative A focuses on meeting rangeland health standards and enhancing rangeland health for all rangeland values, including livestock, wildlife, and wild horses. It includes fewer vegetation management actions and may be less effective at improving vegetation health and thus long-term reductions in wildland fire potential and associated climate change-related impacts discussed under *Nature and Type of Effects*.

Effects under Alternative B

Alternative B would emphasize resource use and development over other values. As such, management actions under this alternative have a higher potential for vegetation removal than under Alternative A. Under Alternative B, as many as 20,000 acres of low-density pinyon-juniper woodland would be converted to sagebrush-dominated communities per year and as many as 6,500 acres of medium- and high-density pinyon-juniper woodlands would be thinned per year. This alternative would convert the greatest amount of woodland to shrubland and would thus emit the most carbon from vegetative and soil sources. Alternative B would manage woodlands to maximize sustained yield of forest products and allow the most harvesting of economically valuable species. This would result in more release of carbon than Alternative A. In addition, Alternative B would prioritize mineral extraction, energy development, or forage production over maintaining sagebrush communities. Mineral and energy development would remove vegetation during development and would likely not replace it during operation, while forage production may convert sagebrush to species that store less carbon.

Vegetation treatments using mechanical means would release greenhouse gas emissions from equipment usage, and prescribed fire treatments would emit

carbon dioxide, methane, and nitrous oxide. Over the long term, management actions that reduce fuel load and improve woodland health would reduce the potential for wildland fires and associated impacts. In addition, restoration and rehabilitation actions that stabilize soils and prevent cheatgrass and invasive species from dominating burned areas and altering the natural fire regime would create more stable long-term carbon storage, resulting in a long-term benefit.

Effects under Alternative C

Alternative C would emphasize preservation over other values, lower the potential for vegetation removal, and focus on improving vegetative health compared to Alternative A. Under Alternative C, as many as 3,500 acres of low-density pinyon-juniper woodland would be removed per year and as many as 1,500 acres of medium- and high-density pinyon-juniper woodlands would be thinned per year. Extraction of wood products would be allowed, but only for personal use. Alternative C would avoid the disturbance, loss, or degradation of riparian, wetland, and associated floodplain and would close riparian areas to woodcutting or any other vegetative removal, except for beneficial uses. Riparian areas would also close riparian areas to mineral development and manage the area as ROW exclusion. These management actions would all preserve vegetation over other developed uses.

Alternative C would manage woodlands to emphasize forest health, which could reduce fuel load and the climate change-related impacts that occur with wildland fire (see *Nature and Type of Effects*).

Vegetation treatments using mechanical means would release greenhouse gas emissions from equipment usage, and prescribed fire treatments, if used, would emit carbon dioxide, methane, and nitrous oxide. Over the long term, management actions that reduce fuel load and improve woodland health would reduce the potential for wildland fires and associated impacts. In addition, restoration and rehabilitation actions that stabilize soils and prevent cheatgrass and invasive species from dominating burned areas and altering the natural fire regime would create more stable long-term carbon storage, a long-term benefit.

Effects under Alternative D

Alternative D would focus on reducing impacts in the urban interface. As such, many management actions would be designed to reduce the potential for wildland fire in this area through the reduction of fuel loads. Release of carbon when vegetation is removed greenhouse gas emissions from equipment used to perform the removal would result in short-term impacts. Reducing fuel loads and the chance of fire next to communities would reduce the chance of wildfire and its associated climate effects over the long term (see *Nature and Type of Effects*).

The BLM would engage interested parties to develop a comprehensive restoration strategy prior to further treatment of pinyon-juniper woodlands; therefore, the types of treatments under this alternative and their associated

effects are not known at this time. Outside of the urban interface, the BLM would manage woodlands with a focus on scenic values, recreation, wildlife habitat enhancement over economic development uses, with climate change benefits similar to those described under Alternative C.

Alternative D would use mechanical, biological, and chemical means to eradicate or control invasive species. Impacts would be similar to those described for Alternative B.

Effects under Alternative E

Alternative E strives to balance the focus of management actions without emphasizing one resource or resource use over another. Impacts from forest and woodlands treatments would be similar to those described under Alternative B but would occur on a reduced scale. Under Alternative E, as many as 8,500 acres of low-density pinyon-juniper woodland would be removed per year, and as many as 6,500 acres of medium and high-density pinyon-juniper woodlands would be thinned per year. This alternative would convert more woodland to shrubland than Alternative A and would thus emit more carbon from vegetative and soil sources. Alternative E would manage woodlands for forest health concerns, wildlife needs, recreation, and fuel hazard reduction. This would result in releases of carbon similar to those under Alternative A. Managing for fuel hazard reduction could reduce fuel load and the resultant climate change-related impacts that occur with wildland fire (see *Nature and Type of Effects*).

Vegetation treatments would use the full suite of mechanical, hand, and prescribed fire treatments. Treatments that use mechanical means would release greenhouse gas emissions from equipment usage, and prescribed fire treatments would emit carbon dioxide, methane, and nitrous oxide. Over the long term, management actions that reduce fuel load and improve woodland health would reduce the potential for wildland fires and associated impacts. In addition, restoration and rehabilitation actions that would stabilize soils and prevent cheatgrass and invasive species from dominating burned areas and altering the natural fire regime would create more stable long-term carbon storage, a long-term benefit.

Climate: Effects from Special Status Species Management

Effects under Alternative A

There are no management actions pertaining to special status species that would affect climate change under Alternative A.

Effects under Alternative B, C, D, and E

Implementing management to protect Greater Sage-Grouse generally involves reducing or otherwise restricting land uses and activities that generate greenhouse gases, resulting in beneficial climate change effects. Management actions under all alternatives would limit or prohibit the use of prescribed fire

with preliminary priority management areas (PPMAs) and preliminary general management areas (PGMAs), would apply stipulations and timing limitations for fluid mineral leasing, and would manage PPMAs and PGMAs as either ROW avoidance or ROW exclusion areas. Under all alternatives, management actions that involve reducing pinyon-juniper encroachment into Greater Sage-Grouse habitat could also affect climate change. Woodlands tend to store more carbon due to greater aboveground biomass and greater total root biomass (Pinno and Wilson 2011). Due to this, a conversion of habitat type from woodland to shrubland would release carbon during woodland removal and could result in a decrease in carbon storage capacity of these areas.

Climate: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

Management actions for wild horses and burros would result in few impacts on climate change under all alternatives. Gather and removal actions would be a temporary source of greenhouse gas emissions from vehicle and equipment use related to gathers. Wild horses and burros themselves are a minor source of methane emissions from digestion and manure decomposition (EPA 2012). The BLM would manage similar numbers of wild horses and burros under all alternatives.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Climate: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

The effects from wildland fire on climate change would be the same as described under *Nature and Type of Effects*. It is difficult to accurately predict the number and extent of wildland fires that would occur over the life of this RMP. However, trends in wildland fires in the planning area over the last 30 years show that the acres burned in the planning area have decreased slightly in the decades between 1980 and 2013, while the percentage of those acres on BLM-administered lands has increased slightly in the same period. On average, less

than 1 percent of the CCD is affected by wildland fire each year. While management actions under the different alternatives may affect the size, frequency, and location of future wildland fires, wildland fire trends of the last 30 years would likely continue over the life of this RMP.

Any use of prescribed fire to meet the goals and objectives of wildland fire management, such as to restore fire frequency and intensity regimes and to reduce hazardous fuel buildup, would emit greenhouse gases into the atmosphere. Conversely, wildland fire management that results in healthier vegetation communities could increase rates of greenhouse gas sequestration, thus mitigating climate change effects.

Impacts on climate change from wildland fire management will vary by alternative based on the extent to which prescribed fire is proposed to be used. Alternatives that increase frequency or duration of fire use could result in increased greenhouse gas emissions, at least in the short term.

Effects under Alternative A

Alternative A includes fuels treatments to reduce fire hazard fuels as well as fire suppression in the event of a wildland fire. Impacts from wildland fires and prescribed burns would be the same as described under *Nature and Type of Effects*. In addition, vehicles and other equipment used in fuels treatment activities; vehicles, construction equipment (such as to create fire breaks), and aircraft used in fire suppression activities; and vehicles and construction equipment used in post-fire land stabilization activities would emit small amounts of greenhouse gas emissions during operation of this equipment.

Effects under Alternative B

Impacts under Alternative B would be similar to Alternative A. The incidence of fire would be expected to follow existing trends.

Effects under Alternative C

Impacts under Alternative C would be similar to Alternative A. Prescribed burns would likely be used less in this alternative, and chemical agents and dozers generally would not be used in fire suppression actions; this slightly reduce greenhouse gas emissions compared to Alternative A. However, if these restrictions increased the duration of the fire or the acres burned, then more greenhouse gases would be emitted to the atmosphere. The incidence of fire would be expected to follow existing trends.

Effects under Alternative D

Impacts under Alternative D would be similar to Alternative A. Alternative D would focus on protecting the WUI from wildfire. The focus on these areas could reduce the incidence on human-caused fire. The incidence of fire would be expected to follow existing trends.

Effects under Alternative E
Impacts under Alternative E would be similar to Alternative A. Alternative E would utilize all fuels treatments methods to create fire safe communities and modify vegetation communities to achieve condition class, fuels, habitat, watershed, and riparian objectives. This focus on both urban and rural areas may lead to fewer wildfires over the long term, though the incidence of fire would be expected to follow existing trends over the life of the RMP.

Climate: Effects from Cultural Resources Management

Effects Common to All Alternatives
Cultural resource management actions would result in negligible impacts on climate. Excluding areas from surface-disturbing activities to protect sensitive cultural resources may reduce vegetation and soil loess and resultant carbon release that may be associated with surface disturbance. These exclusions are described in **Section 4.3.1**, Air Quality, *Resource: Effects from Cultural Resources Management*.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Climate: Effects from Visual Resources Management

Effects Common to All Alternatives
Management actions to improve and protect visual resources could reduce greenhouse gas emissions through limitations on surface disturbing activities. Such limitations would reduce greenhouse gas emissions from construction activities and would maintain existing vegetative communities that could act as greenhouse gas sinks. Impacts from visual resource management on climate change will vary by alternative based on the number of acres allocated to each VRM class. Alternatives that increase acreage allocated as VRM Class I or II could result in decreased greenhouse gas emissions.

Effects under Alternative A
VRM actions under Alternative A would not result in impacts on climate change.

Effects under Alternative B
Alternative B would manage the same acreage as Class I and nearly 20,000 more acres as Class II than Alternative A and would thus allow similar levels of use and associated greenhouse gas emissions.

Effects under Alternative C
Alternative C would manage slightly more acreage as Class I and almost 700,000 more acres as Class II than Alternative A. Limitations on development in Class II areas would likely allow fewer uses that would remove vegetation through surface disturbance or generate greenhouse gas emissions.

Effects under Alternative D
Impacts would be similar to those described under Alternative B.

Effects under Alternative E
Alternative E would manage the same acreage as Class I and approximately 475,000 more acres as Class II compared to Alternative A. Limitations on development in Class II areas would likely allow fewer uses that would remove vegetation through surface disturbance or generate greenhouse gas emissions.

Climate: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
The types of climate impacts from forestry and woodland product management would be the same as described under *Climate: Effects from Vegetation Resources Management* for removal of vegetation and resultant release of carbon into the atmosphere. The level of removal would be similar under all alternatives.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Climate: Effects from Livestock Grazing Management

Effects Common to All Alternatives

Livestock is a source of methane emissions from digestive fermentation and manure decomposition. Livestock grazing operations, including the transport of livestock, would be a temporary source of greenhouse gases from vehicle emissions.

Effects under Alternatives A, B, D, and E

Alternatives A, B, D, and E would manage a similar number of acres as available or not available for livestock grazing. Impacts would be as described under *Effects Common to All Alternatives*.

Effects under Alternative C

Alternative C would reduce the number of acres available for grazing by approximately 56 percent and would reduce AUMs to no more than 27 percent of existing levels, resulting in fewer methane emissions related to livestock grazing on BLM-administered lands within the planning area. However, decreases in AUMs on BLM-administered lands would not decrease overall greenhouse gas emissions if livestock were moved to other lands in the planning area.

Climate: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Mining and mineral extraction activities in the planning area would be sources of greenhouse gas emissions from equipment and vehicle exhaust emissions and from removal of vegetative greenhouse gas sinks by removing ground cover in portions of developed areas.

The CCD is an active geothermal resource area. Sources of greenhouse gas emissions associated with geothermal development include construction equipment and vehicle exhaust, well drilling, which includes greenhouse gas emissions from the drill rigs as well as noncondensable gases such as carbon dioxide and methane when these compounds are contained in the geothermal resource. Emissions associated with operation of geothermal power plants depend on the type of plant constructed. Binary heat transfer systems are closed loop systems and have few emissions. Flash steam systems are not closed systems and emit steam and minerals contained in geothermal fluids to the atmosphere. Small quantities of gases such as methane may be emitted, depending on the characteristics of the geothermal resource.

Impacts from mineral resource management on climate change would vary by alternative based on the acreage open or closed to mineral development and on surface disturbance limitations in areas open to mineral development. Alternatives proposing more acreage open to mineral development could result in increased greenhouse gas emissions. Best management practices, design

features, and standard operating procedures would be applied to specific mineral exploration and development proposals, and climate change impacts would be evaluated during implementation-level environmental analyses of these proposals.

Effects under Alternative A

Impacts under Alternative A would be the same as discussed under *Effects Common to All Alternatives*.

Effects under Alternative B

Impacts under Alternative B would be the same as discussed under *Effects Common to All Alternatives*. Alternative B manage a similar number of acres open to fluid mineral leasing but would manage more acres as subject to NSO or CSU stipulations than Alternative A. Alternative B would also manage more acres as closed to nonenergy leasable mineral exploration or development, 439,600 acres as petitioned for withdrawal from locatable mineral entry, and the same number of acres closed to mineral material entry. Management actions that place restrictions on mineral extraction and exploration activities would reduce the levels of greenhouse gases generated and carbon released to the atmosphere. Closing additional areas to mineral development and limiting surface-disturbing actions in areas open to fluid mineral leasing would result in fewer emissions associated with exploration and development of minerals.

Effects under Alternative C

Impacts under Alternative C would be the same as discussed under *Effects Common to All Alternatives*. Alternative C would manage fewer acres as open to fluid mineral leasing and would manage more acres as subject to NSO or CSU stipulations than Alternative A. Alternative C would also manage 2,960,800 acres as closed to nonenergy leasable mineral exploration or development, 117,500 acres petitioned for withdrawal from locatable mineral entry, and 3,004,800 acres closed to mineral material entry. Alternative C would close the most acreage and place the highest level of restrictions on actions that would emit air pollutants resulting in the lowest greenhouse gas emissions related to mineral development compared to the other alternatives.

Effects under Alternative D

Impacts under Alternative D would be the same as discussed under *Effects Common to All Alternatives*. The acreages open and closed to mineral development would be similar to those described under Alternative B, except Alternative D would petition fewer acres for mineral withdrawal.

Effects under Alternative E

Impacts under Alternative E would be the same as discussed under *Effects Common to All Alternatives*. Alternative E would manage more acres as closed to fluid mineral leasing than Alternative A. It also would manage over twice as many acres as closed to nonenergy leasable mineral exploration or development and mineral material entry as Alternative A. In addition, Alternative E would

manage 470,600 acres as petitioned for withdrawal from locatable mineral entry. Alternative E would close the second most acreage and would place the greatest level of restrictions on actions that would emit air pollutants compared to the other alternatives, resulting in the lowest emissions related to mineral development. Management actions under Alternative E would result in fewer greenhouse gas emissions associated with exploration and development of minerals than under Alternative A.

Climate: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Recreation results in greenhouse gas emissions from vehicles and wood-burning campfires. Recreation sites may also contribute to greenhouse gas emissions through removal of greenhouse gas sinks where vegetation is damaged or removed. Based on annual visitor use days, OHV travel is the most popular recreational activity in the planning area. Motorboats, motocross, pleasure driving, campfires, and camp stoves are additional sources of greenhouse gas emissions associated with recreational visitor activities. Impacts from recreation management on climate change would vary by alternative based on the acreage open or closed to recreation activities and on development of recreation facilities.

Increasing the acreage open to motorized vehicle use (e.g., OHVs, ATVs, and motorcycles) would result in increased greenhouse gas emissions. Further restricting vehicle use could result in decreased greenhouse gas emissions from motorized vehicles if such restrictions actually decrease motor vehicle use rather than just concentrating the use in a smaller area. Impacts on climate change would vary by alternative based on the miles of open or closed routes. Alternatives that decrease the acreage open to motorized travel could result in reduced greenhouse gas emissions, while alternatives that increase the acreage open to motorized travel could result in increased greenhouse gas emissions

Effects under Alternative A

Under Alternative A, the BLM would manage 3,840,300 acres as open to motorized travel and 31,800 acres as closed to motorized travel. Motorized travel would be managed as limited to existing routes on an additional 924,300 acres. Alternative A would manage the most acres as open to OHV use and the fewest acres as limited to existing routes than the other alternatives; therefore, Alternative A may result in higher greenhouse gas emissions than the other alternatives. Visitor use levels for other recreation-related activities are expected to rise with increasing populations in the planning area. Greenhouse gas emissions related to these activities, primarily vehicle travel to recreation areas, would likely increase.

Effects under Alternative B

Under Alternative B, the BLM would manage 95,300 acres as open to motorized travel and 26,700 acres as closed to motorized travel. Motorized travel would be managed as limited to existing routes on an additional 4,677,000 acres. The overall level of recreation-related motorized travel would likely be similar to Alternative A, resulting in a similar level of greenhouse gas emissions from engine exhaust. Visitor use levels for other recreation-related activities are expected to rise with increasing populations in the planning area. Greenhouse gas emissions related to these activities, primarily vehicle travel to recreation areas, would likely increase.

Effects under Alternative C

Under Alternative C, the BLM would manage 1,300 acres as open to motorized travel and 1,190,500 acres as closed to motorized travel. Motorized travel would be managed as limited to existing routes on an additional 3,013,500 acres. Alternative C would likely result in a reduced level of recreation-related motorized use and a reduction in related greenhouse gas emissions given the restrictions on use over current conditions. Visitor use levels for other recreation-related activities are expected to rise with increasing populations in the planning area. Greenhouse gas emissions related to these activities, primarily vehicle travel to recreation areas, would likely increase.

Effects under Alternative D

Under Alternative D, the BLM would manage 22,700 acres as open to motorized travel and 30,600 acres as closed to motorized travel. Motorized travel would be managed as limited to existing routes on an additional 4,748,400 acres. Similar to Alternative B, the overall level of recreation-related motorized travel would likely be similar to Alternative A, resulting in a similar level of emissions from engine exhaust. Visitor use levels for other recreation-related activities are expected to rise with increasing populations in the planning area. Greenhouse gas emissions related to these activities, primarily vehicle travel to recreation areas, would likely increase.

Effects under Alternative E

Under Alternative E, the BLM would manage 55,700 acres as open to motorized travel and 24,100 acres as closed to motorized travel. Motorized travel would be managed as limited to existing routes on an additional 4,717,300 acres. Similar to Alternative B, the overall level of recreation-related motorized travel would likely be similar to Alternative A, resulting in a similar level of criteria pollutant emissions from engine exhaust. Visitor use levels for other recreation-related activities are expected to rise with increasing populations in the planning area. Greenhouse gas emissions related to these activities, primarily vehicle travel to recreation areas, would likely increase.

Climate: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Air quality impacts from the use of routes by motorized vehicles would be the same as described under *Effects from Recreation and Visitor Services*. Route maintenance activities, construction of new routes, or removal of existing routes would result in short-term greenhouse gas emissions from equipment exhaust. Vehicle use levels in the planning area are expected to increase with the growing population in the planning area; therefore, exhaust-related greenhouse gas emissions would continue to increase over the life of the RMP.

Effects under Alternative A

No travel management actions are proposed under Alternative A. Ongoing impacts would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternatives B, C, D, and E

Alternatives B through E would establish travel management areas, with subsequent travel management planning occurring over the subsequent five years. Road closures and route designations that limit use to existing or designated roads, primitive roads, and trails would limit user creation of new trails and subsequent disturbance of vegetation and soils.

Climate: Effects from Renewable Energy

Effects Common to All Alternatives

Solar and Wind Facilities. Impacts on climate change associated with solar and wind renewable energy development include construction-related greenhouse gas emissions and, to a lesser extent, operational greenhouse gas emissions.

Construction of a solar facility includes a number of operations, with most climate impacts occurring from clearing of vegetation during site preparation, which releases sequestered carbon into the atmosphere. Facility construction is also a source of greenhouse gas emissions from equipment used for site preparation, transmission line and road development, and solar field development, as well as worker commute traffic and truck deliveries to the project site. Construction of a wind energy facility would result in similar impacts but would require less removal of vegetation, as wind facilities generally have smaller footprints. Operation of solar and wind facilities would result in negligible greenhouse gas emissions. As discussed under *Nature and Type of Effects*, the potential greenhouse gas savings in the form of offsetting energy produced by coal or natural gas sources outweighs life-cycle emissions of greenhouse gases because solar and wind facilities operate for decades with minimal production of greenhouse gases.

Biomass Facilities. Biomass can be used for direct heating, such as burning wood in a fireplace or wood stove, for generating electricity, or can be converted directly into liquid fuels. Within the planning area, there is potential for small-scale mobile biomass power production fueled by woody debris and plant matter from vegetation treatments. Within these systems, biomass materials would be converted into producer gas with a gasifier, filtered for tar and particulates, and directed to an engine to produce electricity. These systems would emit carbon from the harvesting of biomass and greenhouse gas emissions from the operation of the facility.

Effects under Alternative A

Alternative A would manage the most acres as variance areas for utility-scale solar development (905,900 acres). Effects would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternative B

Impacts related to solar development would be similar to those described under Alternative A. However, the BLM would manage approximately 133,000 fewer acres as solar variance areas. Effects on air quality from utility-scale wind development would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternative C

Impacts related to solar development would be similar to those described under Alternative A. However, the BLM would manage approximately 327,500 fewer acres as variance areas. Effects would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternative D

Impacts related to solar development would be similar to those described under Alternative A. However, the BLM would manage approximately 234,000 fewer acres as variance areas. Effects would be the same as described under *Effects Common to All Alternatives*.

Effects under Alternative E

Impacts related to solar development would be similar to those described under Alternative A. However, the BLM would manage approximately 276,000 fewer acres as variance areas. Effects would be the same as described under *Effects Common to All Alternatives*.

Climate: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Designating ACECs could reduce greenhouse gas emissions because the designated areas would be managed with increased use restrictions to protect the values for which they were designated. ACECs would be designated for biological, historic, cultural, paleontological, or scenic values; fish and wildlife

resources; other natural systems or processes; or to protect life and safety from natural hazards.

Restrictions could include ROW exclusion or avoidance, limits on motor vehicle use (including OHVs), limits on mining or other development, or adjustments to grazing, depending on the value to be protected. Such limits would reduce carbon release from vegetation removal and would decrease greenhouse gas emissions from fuel burning equipment to the extent the developed uses were not allowed. Such limitations could also increase greenhouse gas sequestration by leaving vegetative communities intact. Impacts from special designations on climate change would vary by alternative based on the acreage proposed for special designation. Alternatives with increased acreage as special designations could result in decreased greenhouse gas emissions.

Effects under Alternative A
Management actions under Alternative A would not result in impacts on climate change. Under Alternative A, 21,800 acres are currently designated in 6 ACECs.

Effects under Alternative B
Alternative B would designate 371,170 acres in 12 ACECs, nearly 350,000 more acres than Alternative A. Limitations on development or use in these areas would likely allow fewer uses that would remove vegetation through surface disturbance or generate greenhouse gas emissions.

Effects under Alternative C
Alternative C would designate 786,270 acres in 22 ACECs, nearly 760,000 more acres than Alternative A. Limitations on development or use in these areas would likely allow fewer uses that would remove vegetation through surface disturbance or generate greenhouse gas emissions.

Effects under Alternative D
Alternative D would designate 180,000 acres in 11 ACECs, nearly 160,000 more acres than Alternative A. Limitations on development or use in these areas would likely allow fewer uses that would remove vegetation through surface disturbance or generate greenhouse gas emissions.

Effects under Alternative E
Alternative E would designate 82,770 acres in 9 ACECs, over 60,000 more acres than Alternative A. Limitations on development or use in these areas would likely allow fewer uses that would remove vegetation through surface disturbance or generate greenhouse gas emissions.

Climate: Effects from Back Country Byways

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
No impacts would occur under Alternative A.

Effects under Alternative B
Designation and promotion of the Fort Churchill, Marietta, and New Pass to Hawthorne Back Country Byways would increase vehicle traffic along these routes, resulting in an increase in greenhouse gas emissions from vehicle use.

Effects under Alternative C
Designation and promotion of the Marietta and New Pass to Hawthorne Back Country Byways would increase vehicle traffic along these routes, resulting in an increase in greenhouse gas emissions from vehicle use. Rescinding the Fort Churchill Back Country Byway designation may result in a decrease in visitor usage along this route and a subsequent decrease in emissions.

Effects under Alternative D
No impacts would occur under Alternative D.

Effects under Alternative E
Impacts under Alternative E would be the same as under Alternative B.

Climate: Cumulative Effects
Primary climate change indicators that can be monitored include ambient air temperature, precipitation amounts and timing, annual snow pack levels, and stream flow volume and timing. The trends in climate change within the planning area discussed in **Section 3.2.2**, Climate, would continue under all alternatives. Current management policy and direction is to address climate change in long-range planning efforts. Cumulative effects on resources and resource uses resulting from climate change are discussed under those topic areas in the cumulative effects analysis, particularly for vegetation, fish and wildlife, including special status species, and water resources, for which climate change-related management actions have been proposed.

By its nature, climate change is a cumulative impacts issue. Individual local greenhouse gas emissions cannot be considered outside of the larger context of global cumulative emissions. As discussed at the beginning of this section, the precise link between potential emissions from BLM-proposed actions and specific impacts on or from global climate change is not known. However, it is known that some proposed actions would likely increase or decrease greenhouse gas levels in the atmosphere if implemented. Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area that have contributed greenhouse gases to the atmosphere include urban development (population increases spurring development), mineral development, energy development, fossil-fuel burning (primarily transportation-related use), livestock, and wildfire. These are discussed below.

Past and Present Actions

Mineral and energy development has occurred and is occurring on both federal and nonfederal lands within the planning area. Mineral and energy development result in short-term and long-term emissions of greenhouse gases during fuel combustion in vehicles, drill rigs, and construction equipment. These sources are expected to grow on both federal and nonfederal lands within the planning area. As described in **Section 3.2.2**, Climate, electrical power generation is the largest source of greenhouse gases in both the US and in Nevada (32 percent in the US [EPA 2014a] and 38 percent in Nevada [NDEP 2012a]).

Transportation is the second largest source of greenhouse gases in both the US and in Nevada (28 percent in the US [EPA 2014a] and 34 percent in Nevada [NDEP 2012a]). The small proportion of this fossil fuel-powered travel that would be impacted by BLM management actions under this RMP makes the contribution of such actions to state, national, and global greenhouse gas levels negligible.

Methane emissions from agricultural activities, including manure management, fertilizer use, and livestock, contribute 10 percent of US (EPA 2014a) and 3 percent of Nevada (NDEP 2012a) greenhouse gas emissions. Therefore, BLM management actions related to livestock grazing in the planning area would also have a negligible impact on state, national, and global greenhouse gas emission levels.

Reasonably Foreseeable Future Action

Mineral and energy development will continue to occur on both federal and nonfederal lands within the planning area. Mineral and energy development result in short-term and long-term emissions of greenhouse gases during fuel combustion in vehicles, drill rigs, and construction equipment. These sources are expected to grow on both federal and nonfederal lands within the planning area. As described in **Section 3.2.2**, Climate, electrical power generation is the largest source of greenhouse gases in both the US and in Nevada (EPA 2014a; NDEP 2012a).

Transportation and its contribution to climate change under any of the RMP alternative would be negligible compared to state, national, and global greenhouse gas levels. However, as the population increases within the planning area, overall vehicle use is expected to increase on both federal and nonfederal lands.

Agricultural use would likely remain stable or decline slightly over the life of the RMP. Because methane emissions from agricultural activities are such a small contribution to greenhouse gases in Nevada, BLM management actions related to livestock grazing in the planning area would result in negligible impacts on state, national, and global greenhouse gas emission levels.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Overall, the incremental effects of management actions on greenhouse gas emissions under all alternatives would be small in comparison to greenhouse gas emissions at the state, national, and global levels.

4.3.3 Soil and Water Resources

This section presents potential impacts of the alternatives on soil and water resources within the planning area. Existing conditions concerning soil and water resources are described in **Section 3.2.3**, Soil and Water Resources.

Summary

Proper soil health can affect the implementation of many resource uses, including mineral development, livestock grazing levels, wildlife habitat designations, and recreational uses. Soil resources, including biotic soil crusts, are susceptible to impacts from surface disturbing activities that may result in increased erosion or compaction, especially fragile soil areas.

The primary goals of soil management are to maintain inherent productivity of soil resources and promote sustained yields while keeping erosion at acceptable levels, thus preventing physical or chemical degradation. Proposed surface-disturbing projects will be analyzed to determine suitability of soils to support or sustain such projects and will be designed to minimize soil loss.

Overall, objectives and actions associated with other resources that result in closure of land to surface disturbance activities would benefit soil resources. Management for the following resources would not result in an effect on soil resources: air quality, climate, cultural resources, water resources, paleontological resources, visual resources, caves and cave resources, Back Country Byways, National Trails, WSRs, and Back Country Wildlife Conservation Areas (BCWCAs).

Some of the above resources, such as special designations, may aid in protecting soil resources by reducing the availability of surface disturbing activities.

Under all alternatives, water resources would receive certain levels of protection due to management in accordance with the Clean Water Act and other applicable state and federal water quality standards. Site-specific mitigation and BMPs for surface-disturbing activities would further reduce impacts on water resources. Adhering to these standards would reduce many of the impacts from future actions. In addition, existing and proposed stipulations designed to protect water resources would minimize sediment and contaminant delivery potential by preventing or limiting surface-disturbing activities near sensitive areas, such as hydrologic features, designated municipal watersheds and source water protection areas, and domestic wells. Stipulations and limitations for other resources (e.g., fisheries and riparian) that prevent or limit

surface-disturbing activities would provide additional protection for water resources.

Stipulations designed to protect water resources vary by alternative, as do stipulations for other resources that provide additional protection for water resources.

Alternative actions that allow the least amount of soil disturbance, loss of vegetation, energy and minerals development, recreational use, and roadway/transportation facilities development would be the least impactful on water resources. Also, alternative actions that most overlap management of protected areas (such as ACECs, WSRs eligibility, or suitability interim management) and restoration and revegetation projects would result in the most beneficial cumulative impacts on water resources.

Management for the following resources would not result in an effect on water resources: air quality, climate management, fish and wildlife, special status species, wild horse and burros, cultural resources, paleontological resources, visual resources, caves and cave resources, forestry and woodland products, Back Country Byways, national trails, back country wildlife conservation areas, WSAs, tribal interests, public health and safety, and interpretation and environmental education.

Methods of Analysis

Methods and Assumptions

Soil and water resources baseline information in **Section 3.2.3**, Soil and Water Resources, was reviewed for current understanding of known resources and to determine the condition of the resources. All laws and regulations pertinent to determining effects on soil and water resources (e.g., National Resources Conservation Service's Soil Survey Handbook) were considered and included in criteria for determining impacts. This known information was overlain with the actions found under each alternative in **Chapter 2**, and conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

The following assumptions were used to assess the impacts on soil and water resources:

- Soils on BLM-administered lands will be managed to maintain inherent productivity and promote sustained yields, while keeping erosional mechanism at minimal/acceptable levels thus preventing physical or chemical degradation. Proposed surface-disturbing projects will be analyzed to determine suitability of soils to support or sustain such projects and will be designed to minimize soil loss.

- Achieving or maintaining Standards for Rangeland Health and Guidelines for Livestock Grazing Management (described in **Section 3.7**, Livestock Grazing/Range Management) are generally effective in managing the effects on soils from livestock grazing. Grazing authorizations will be adjusted on a case-by-case basis when site-specific studies indicate changes in management are needed.
- BLM management actions and objectives will be consistent with soil resource capabilities.
- Fuels projects and planned or unplanned fires that contribute to establishing a more natural fire regime would result in long-term benefits to soil health.
- Roads and trails contribute to soil compaction and erosion. Higher road and trail densities will result in more adverse impacts on soil resources. Roads and trails that receive more traffic will be at greater risk for soil erosion unless they are improved.
- All surface-disturbing activities will include mitigation, standard operating procedures, and BMPs to reduce impacts on soil resources.
- The management actions for each resource were compared to identify differences, which, where they occur, are usually differences of degree.
- The BLM will follow BMPs outlined in **Appendix B**.
- Projects that help restore watersheds, desirable vegetation communities, or wildlife habitats (including surface disturbance associated with these efforts) will benefit soil and water resources over the long term.
- Impacts from surface disturbance activities on water resources will be influenced by several factors, including: location within the watershed, proximity to drainages or existing groundwater wells, time and degree of disturbance, reclamation potential of the affected area, existing vegetation, precipitation, functionality, and mitigating actions applied to the disturbance.
- Impacts on groundwater resources include water development projects such as wells, which could lower groundwater levels depending on groundwater pumping demand and water use priorities (e.g., multiple uses versus wildlife use).
- Transportation facilities will be designed to BLM minimum standards.
- An aquifer with a shallow water table is more susceptible to contamination. Mineral development is the primary activity that could impact shallow groundwater quality and quantity. Locations in

the planning area with depths to groundwater of less than 100 feet or unconfined aquifers are considered the most likely to be impacted by mineral development. Unconfined aquifers or those with water table elevations of 100 feet below ground surface are more vulnerable to leaks and spills of contaminants at the surface. However, groundwater at greater depths is vulnerable to mine dewatering and casing failure in wells.

Indicators

Indicators of impacts on soil and water resources are as follows:

- Declining soil surface health, as expressed through physical or chemical degradation, either with soils unable to support vegetation or soils that are not functioning at potential for a particular ecological site (e.g., vegetation type, diversity, density, and vigor)
- Acres of BLM-administered land protected from or open to surface-disturbing activities
- Acres of invasive plant species that intrude during ground disturbing activities or after instances of fire
- The ability to meet BLM Nevada Standards for Public Land Health
- Vegetation and infiltration
- The inability to meet state and federal water quality standards for surface and ground water
- Changes in water quality that have detrimental effects on downstream aquatic or riparian species
- Alteration of the physical characteristics of streams, springs/seeps/fens, wetlands, riparian areas, and groundwater aquifers that affect the and sustainability of these resources
- Depletion of water supplies

Nature and Type of Effects

Activities that displace or mix soil horizons, compact, or contaminate soils, or that remove vegetation from soils are generally considered to negatively affect soil health. Impacts on soil resources from surface disturbing activities can result from a number of causes, including improper livestock grazing, some allowed forms of recreation, mineral resource activities, and road improvement or construction. The intensity and extent of impacts on soil resources are determined in part by the type and location of the surface-disturbing activities and surface occupancy. The extent of impacts on soil resources can be affected by any applicable stipulations and plans of operation, such as plans and stipulations that address site-specific environmental concerns and require mitigation to stabilize soil, to prevent unnecessary erosion, and to revegetate disturbed surfaces. Land management actions that prohibit surfaces disturbance,

such as areas closed to mineral entry, are more protective of soil resources than land management that allows surface disturbing activities.

Surface-disturbing activities and surface occupancy can impact soil resources by compacting soil. In some cases, soil compaction aids in water retention and, thus, plant establishment and growth. However, too much compaction decreases water infiltration rates and gas exchange rates. Decreased gas exchange rates can cause aeration problems, induce nitrogen and potassium deficiency, and negatively impact root development, which is a key component of soil stabilization. As soil compaction increases, the soil's ability to support vegetation diminishes. This is because the resulting increase in soil strength and change in soil structure (loss of porosity) inhibit root system growth and reduce water infiltration. As vegetative cover, water infiltration, and soil stabilizing crusts are diminished or disrupted, the surface water runoff rates increase, further accelerating rates of soil erosion.

Travel across land by any means can result in vegetation loss, loss of biotic crusts, soil compaction, and soil erosion. Management approaches that designate travel to specified routes can result in more predictable, localized and manageable impacts. Selectively locating travel routes away from areas of sensitive soil conditions can minimize the extent of these effects, ideally limiting them to the footprint of the trail itself.

Recreation on BLM-administered lands may result in vegetation loss, soil compaction, and soil erosion. There are a number of activities that have minimal impacts. The effects of recreation on soil resources are determined by the severity and intensity of the recreation taking place. Areas with large number of visitors and/or mechanized recreation have a greater chance of resulting in some of the detrimental effects than lower impact, lower number recreation areas. Lands and realty management decisions affect where ground-disturbing activities can and cannot occur. Ground-disturbing activities could result in the compaction of soils, the erosion of soils, or vegetation loss, all of which reduce soil stability. In areas with NSO stipulations and managed as ROW exclusion, soil quality would be protected since ground disturbance would be prohibited and soil erosion would be limited to natural processes. In areas managed as ROW avoidance, soil quality would receive some protection since ground disturbance would often be limited. ROW avoidance areas would generally result in lower impacts on soil resources due to more restrictive conditions of use associated with ROW authorization compared to areas not managed as ROW avoidance.

Improper livestock and wild horse and burro management can affect soil resources, especially in wet areas, around springs, and near salt blocks. Wild horses and burros and domesticated livestock often use riparian and wetland areas for water and shade, and may congregate around water developments, which results in compacted soil and trampled nearby vegetation. At

unsustainable levels, grazing from livestock or wild horses can lead to loss of vegetative cover, reduced water infiltration rates and nutrient cycling, decreased plant litter and water quality, and increased bare ground and soil erosion (Manier et al. 2013). Land health evaluations, AMLs, rangeland monitoring studies, and rangeland health standards are used to assess rangeland condition and help to identify where a change in livestock grazing or wild horse and burro management would be beneficial.

Fluid mineral development generally requires both permanent and temporary roads, drilled wells, and associated well pads. In addition, fluid mineral development may require associated pipelines and transmission lines, along with the construction of necessary service roads for these facilities. Local soil health and characteristics within project footprints are typically impacted by compaction and vegetation clearing. Effects or impacts from mineral development is regulated and mitigated through federal and state laws, as well as handbooks, stipulations, and conditions of approval, which can reduce the amount of soil disturbance on a case-by-case basis.

Locatable minerals, mineral materials, and nonenergy leasable mineral activities require road construction and large areas of soil excavation. Local soil health and characteristics within project footprints are typically negatively impacted by excavation, compaction, erosion, and vegetation clearing. Once mineral extraction is complete, restoration and restoring vegetation may return a lower level of soil health over the long term; however, landscapes are often permanently changed as areas of prior soil cover are often permanently altered through such features as open pits.

The BLM would manage soil resources to maintain the natural habitat and to minimize the potential for accelerated wind and water erosion caused by surface disturbing activities. In order to maintain soil processes, a healthy, productive, and diverse plant community is necessary. Vegetation management to improve ecological condition would increase soil productivity, litter, biological soil crust, soil fertility, water infiltration, and nutrient cycling.

Direct and indirect impacts of land uses on soil resources are generally best mitigated by avoiding or minimizing the impacts to the degree practicable with stipulations, such as NSO and CSU. Management actions for the other resources would vary the amount of land available for surface-disturbing activities and those that could impact the soil resources. Activities that would increase erosion would be mitigated by implementing BMPs and standard operating procedures through reclamation or environmental enhancement activities to stabilize or maintain soil processes.

The mandate to manage the land for multiple uses requires the BLM to consider some uses that could degrade water quality, destabilize natural stream morphologic conditions, impair sustainability of water resources, alter

groundwater aquifer properties, and modify natural stream hydrographs. Minimizing such impacts is a common theme in all of the alternatives.

Activities that can potentially cause adverse effects on water resources include: recreation, mineral extraction, grazing, energy production, and other surface disturbing activities. Surface water quality impacts can result from both natural and human factors. Natural factors, such as evaporative concentration in desert environments and volcanic and geothermal sources, are difficult to control. Surface water quality impacts from humans can result from a number of causes, including transport of eroded soils into streams due to livestock grazing, runoff from historic mining sites, introduction of waste matter into streams from domestic livestock, and routes and ways used by motorized vehicles. If hydraulic fracturing resulted in additional oil and gas potential within the planning area water resources may be affected by additional water use and potential methane contamination.

Nonpoint sources can also impact surface water quality within the planning area. These impacts potentially result from transportation corridors (railways and roads), urban runoff and construction-related impacts from land development, recreation developments (official and unofficial), livestock grazing, herbicide use for weed control, and wildland fires.

Natural aquifer properties can be altered by subsurface disturbances such as well construction and water developments, which can increase potential for contamination of surface and groundwater resources along fractures or faults (DOI 2001). For alluvial aquifers located near streams groundwater contamination can be a major and potentially long-term contributor to contamination of surface water (USGS 2014). Surface water supply can be diminished when water that would have otherwise discharged as surface flow is withdrawn from shallow aquifers.

Air quality protections such as using the best air quality control technology, as per guidance from the Bureau of Air Quality Planning and complying with the Clean Air Act, would be applied as needed to meet air quality standards. These standards will help prevent excess particulates from accumulating in the atmosphere and ultimately being deposited into water bodies which will allow these water bodies to continue meeting state and federal standards and allow aquatic and riparian species to thrive.

Under all action alternatives, new water management imperatives associated with climate change may require restoration of natural systems and construction of new infrastructure to reduce flood risks or to capture early run-off. Although erosion could occur from the construction of this new infrastructure, the overall impacts would positively impact our ability to address climate change impacts on water resources, including: increased water temperature, the impact of drought on water resources, and an increased

frequency of severe precipitation events by identifying and filling priority freshwater needs.

The alternatives vary from no action to an emphasis on resource use, an emphasis on conservation, an emphasis on BLM-administered lands within the urban interface area, and an overall mix and variety of management actions. The different alternatives each result in different priorities for resource development. Some of these priorities on resource use would impact soil and water resources more than others. Below is a comparison of the effects from each resource on soil and water resources under Alternatives A, B, C, D, and E.

Soils: Effects from Soil Resources

Effects Common to All Alternatives

Under all alternatives, the BLM would manage soil resource areas with high erosion susceptibility to reduce soil loss from accelerated wind and water erosion by limiting BLM and BLM-authorized activities to no more than a 50 percent reduction in ground cover. Any proposed activities located on sensitive soils would incorporate BMPs and other mitigation measures to minimize soil erosion and maintain soil stability. In addition, areas with severe erosion hazards will be limited to designated roads for OHV use.

Effects under Alternative A

There are no additional management actions for soil resources under Alternative A other than those described under *Effects Common to All Alternatives*.

Effects under Alternative B

Alternative B would manage soil resources to reduce soil loss caused by accelerated erosion due to ground disturbing activities by maintaining and improving vegetation cover in areas of high erosion potential by applying soil amendments or requiring a growth medium. During surface disturbing activities, available topsoil would be stockpiled and reserved for post disturbance reclamation. Additionally, surface disturbing activities on slopes greater than 30 percent would require an erosion control plan that must be approved by the BLM prior to construction and maintenance.

Alternatives B through E would apply a CSU stipulation for fluid mineral leasing on lands with slopes greater than 15 percent and less than 50 percent or on lands with severe wind or water erosion hazard ratings, and an NSO stipulation on slopes greater than 50 percent. These alternatives would be more protective of soils on steep slopes or susceptible to wind or water erosion than Alternative A.

Effects under Alternative C

Alternative C would apply CSU and NSO stipulations for fluid mineral leasing, similar to Alternative B.

Alternative C would manage soil resources by improving vegetation cover by increasing litter, biological soil crusts, and vegetation type based on soil type. Alternative C would also minimize the break up or shearing of biological soil crusts during vegetation management.

Alternative C would manage soil resources during surface disturbing activities by stockpiling available topsoil or the best available material for growth medium for post-disturbance reclamation. Alternative C would further manage the stockpiled medium by requiring that mulch be applied to the medium if reclamation is not complete within 1 year, and must be seeded to prevent sediment loss if reclamation is not completed within 2 years. This would prevent erosion of the stockpiled topsoil or best growth medium during interim phases of development more than Alternative A.

Alternative C would require an erosion control plan for slopes between 21 percent and 39 percent, which must be approved by the BLM prior to construction and maintenance. Alternative C would prohibit surface disturbing activities on slopes greater than 40 percent, and may allow for placement alternatives if the action would not cause undue or unnecessary degradation on slopes lower than 40 percent, with an erosion control plan in place.

Effects under Alternative D

Alternative D would manage soil resources by utilizing deep-rooted stabilizing native and no-native vegetation to improve and stabilize the soil surface.

Alternative D would also manage soil resources during surface disturbing activities, require erosion control plans, and limit or prohibit surface disturbing activities.

Effects under Alternative E

Management actions for soil resources under Alternative E would be the same as those described under Alternative D.

Soils: Effects from Vegetation Resources

Effects Common to All Alternatives

Small-scale rangeland activities, including livestock impoundments, vegetation mowing, and seed collection, with less than one acre of surface disturbance, involve short-term increases in erosion and soil compaction. Due to the small size of the areas, these activities would result in negligible impacts on soil resources.

Vegetation management would initially disturb soils by removing undesirable vegetation through cutting or burning, planting native seed, and occasionally using heavy equipment. Success of vegetation management may not result in soil health improvements for years after initial disturbance. Soils that have a high restoration potential value would tend to support restorative vegetation

activities due to proper soil conditions, such as low salt content, adequate water retention, and available rooting depth. High potential restoration soil must combine with favorable environmental conditions such as precipitation and temperatures to be successful. If success is not obtained then reintroducing plantings or seeding must reoccur for success to occur.

Vegetation: Rangelands

Maintaining and restoring vegetation cover on rangelands would protect soils from erosion and increased wildland fire. Measures to rest land, restrict grazing, fence sensitive areas, and disperse impacts from riparian areas would also protect and restore soil resources. Rangeland vegetation management would be implemented under all alternatives with varying methods to achieve goals. Specifically, management actions vary in the type of vegetation (native, non-native, deep-rooting, those with high establishment rates) used in revegetation efforts, the priority of vegetative treatment sites, methods used to improve the health and diversity of vegetation on the range, and implementation of vegetation treatment objectives. All of these management actions would ultimately improve vegetation resources, which in turn would benefit soil resources through stabilization, reduction in potential for erosion by wind, and slowing runoff during heavy or flash rain events. This would reduce erosion by water. The rate of restoration under each alternative is not quantifiable, nor is the resulting vigor or health of the range as a result of the varying management actions. The effect of rangeland management on soil resources is essentially common to all alternatives.

Vegetation: Riparian Areas

Appropriate management of riparian areas would help reduce accelerated erosion and deposition of sediments directly related to the health and function of wetland soils. Restrictive buffers around streams and water bodies and closures to prevent actions that would degrade riparian conditions would indirectly protect soil resources within these areas. This effect would be localized and similar under all alternatives, except that its degree would depend on the degree of functionality reached within riparian areas.

Vegetation: Invasive, Nonnative Species, and Noxious Weeds

All of the alternatives provide for some sort of weed management. This would improve vegetation diversity and cover, reducing erosion potential and improving soil stability.

Effects under Alternative A

Alternative A would not provide additional management actions for vegetation restoration and rehabilitation or invasive, nonnative species or noxious weed reduction. Outdated or insufficient management actions may not result in the desired effects of reduction in invasive weeds and would make more areas vulnerable to invasive species establishment and spread.

Effects under Alternative B

Vegetation: Restoration and Rehabilitation

Under Alternatives B through E, rehabilitation projects would be conducted to stabilize soils, promote plant resiliency, limit expansion or dominance of invasive species, and reestablish native species. Implementing post-fire ESR treatments would differ by alternative in the number and location of acres treated. Projects aimed at rehabilitating the landscape after a fire event will have a beneficial effect on soil resources by stabilizing soils, reducing runoff, and preventing wind erosion until vegetation composition can be restored.

Vegetation: Invasive, Nonnative Species, and Noxious Weeds

Alternative B would utilize appropriate mechanical, biological, and chemical control methods to eradicate or control invasive, nonnative species, and noxious weeds. These control methods could be used alone or in combination, and may require multiple applications to achieve goals. Control methods for the reduction of weeds would result in short-term impacts on soil resources from compaction or ripping by heavy machinery, introduction of herbicides, or heavy grazing methods to remove unwanted vegetation within treatment areas. These areas would eventually benefit from such vegetation treatments to restore native species.

Alternative B would also minimize the spread of noxious weeds through the control of materials contaminated with noxious plant seeds or parts by requiring salable mineral materials obtained from BLM-administered land to have a Weed Free certification from the Nevada Department of Agriculture, and that construction on BLM-administered land utilize earth materials certified as Weed Free by State of Nevada and State of California. Also, renewal and amendment request for land use authorizations would require a stipulation in the authorization addressing noxious weed management. These additional management actions would inadvertently protect soil resources from the spread of noxious weeds.

Effects under Alternative C

Vegetation: Restoration and Rehabilitation

Effects on soil resources from Vegetation: Restoration and Rehabilitation under Alternative C would be the same as those described under Alternative B.

Vegetation: Invasive, Nonnative Species, and Noxious Weeds

Alternative C would eliminate the use chemical controls to treat invasive plants. Fewer acres would be treated, leaving soils in areas subject to increased erosion potential and subject to higher fire return cycles as invasive plants would likely prevail in untreated areas. Alternative C would utilize appropriate mechanical and biological control methods to eradicate or control invasive, nonnative species and noxious weeds. These control methods could be used alone or in combination and may require multiple applications to achieve goals. Chemical

control methods would not be used. This would eliminate the introduction of herbicides to soil resources.

Alternative C would also minimize the spread of noxious weeds through the same control of materials methods discussed under Alternative B.

Effects under Alternative D

Vegetation: Restoration and Rehabilitation
Effects on soil resources from Vegetation: Restoration and Rehabilitation under Alternative D would be the same as those described under Alternative B.

Vegetation: Invasive, Nonnative Species, and Noxious Weeds
Management of noxious weeds under Alternative D would be the same as those described under Alternative B.

Effects under Alternative E

Vegetation: Restoration and Rehabilitation
Effects on soil resources from Vegetation: Restoration and Rehabilitation under Alternative E would be the same as those described under Alternative B.

Vegetation: Invasive, Nonnative Species, and Noxious Weeds
Management of noxious weeds under Alternative E would be the same as those described under Alternative B.

Soils: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
Small-scale activities, including wildlife water development with less than 1 acre of surface disturbance, involve short-term increases in erosion and soil compaction. Due to the small size of the areas, these activities would result in negligible impacts on soil resources.

Improvements to land health and aquatic habitat, restrictions on access, and stream bank alterations could increase soil stability, provide vegetative cover, and reduce ground disturbance, thereby improving the health of soil resources. Implementation of mitigation measures and applying Land Health Standards, BMPs and standard operating procedures to maintain or improve wildlife habitat would also maintain or improve soils. Restriction of land use as a result of wildlife management would reduce the potential for impacts on soil resources in those areas.

Effects under Alternative A
Management of fish and wildlife under Alternative A would not provide for any additional land use restrictions that would reduce the possibility of impacts on soil resources. Current restrictions and protections for habitat and species that

indirectly protect soil resources would continue, but there would be fewer specific measures and objectives than the other alternatives. This would result in less protection of soil resources under Alternative A than the other alternatives.

Effects under Alternative B

Surface use restrictions under Alternative B as a result of fish and wildlife management would be greater than Alternative A.

Wildlife Habitat

Alternative B would restrict surface use by implementing CSU stipulations for fluid mineral leasing within 500 feet of lentic and lotic habitats and managing a 100-foot ROW avoidance buffer for fish and wildlife priority habitat.

Migratory Birds

Important Bird Area and migratory pathway management would apply CSU stipulations for fluid mineral leasing in these areas and manage these sites as ROW avoidance areas.

Raptors

Raptor habitat management would apply CSU stipulations within 0.25 miles of active nest sites, and would manage these sites as ROW avoidance areas.

Bat Habitat

Alternative B would not implement surface restriction as a result of bat habitat management.

Greater Sage-Grouse

Greater Sage-Grouse habitat management would manage PPMA (275,600 acres) with CSU stipulations for fluid mineral leasing, and as ROW avoidance areas.

Effects under Alternative C

Restriction of surface use under Alternative C would be the greatest of all the alternatives.

Wildlife Habitat

Under Alternative C, wildlife habitat management would apply NSO stipulations for fluid mineral leasing within 500 feet of lentic and lotic habitats, would manage fish and wildlife habitat as ROW exclusion areas with a 500-foot buffer, and would close these areas to mineral material disposal and nonenergy mineral leasing. Surface use restrictions as a result of wildlife habitat management would be greater under Alternative C than Alternative A, and would therefore result in greater protections of wildlife habitat.

Migratory Birds

Alternative C would manage Important Bird Areas and migratory pathways as ROW exclusion areas. The BLM would also apply NSO stipulations for fluid

mineral leasing and close these areas to mineral material disposal. This would be more restrictive of surface disturbing activities than Alternative A.

Bat Habitat

Alternative C would prohibit large-scale surface-disturbing discretionary actions within 500 feet of bat occupied caves. This would reduce the possibility of impacts on soil resources around these caves.

Raptors

Raptor management would include applying NSO stipulations to fluid mineral leasing within 0.5 mile of active nest sites, managing raptor nest sites as ROW exclusion areas, and closing these sites to mineral material disposal and nonenergy mineral leasing.

Effects under Alternative D

Surface use restriction under Alternative D would be similar to surface use restriction described under Alternative B. However, Alternative D would provide surface use restriction under bat habitat management, whereas Alternative B would not.

Wildlife Habitat

Under Alternative D, wildlife habitat management would be the same as described under Alternative B.

Migratory Birds

Under Alternative D, Important Bird Area management would be the same as described under Alternative B.

Bat Habitat

Alternative D would prohibit large-scale surface-disturbing discretionary actions within 200 feet of bat occupied caves. This would reduce the possibility of impacts soil resources around the caves.

Raptors

Under Alternative D, raptor habitat management would be the same as described under Alternative B.

Effects under Alternative E

Surface restrictions as a result of fish and wildlife management under Alternative E would be greater than under Alternative A.

Wildlife Habitat

Wildlife habitat management under Alternative E would apply NSO stipulations within 500 feet of lentic and lotic habitat with some exceptions, modifications, and waivers, and would manage fish and wildlife priority habitat is ROW avoidance areas with a 100-foot buffer.

Migratory Birds
Under Alternative E, Important Bird Area management would be the same as described under Alternative B.

Bat Habitat
Alternative E would prohibit large-scale surface-disturbing discretionary actions within 0.5 mile of bat occupied caves and within 0.25 mile of caves not known to be occupied by bats.

Raptors
Under Alternative E, raptor habitat management would be the same as described under Alternative C.

Soils: Effects from Special Status Species Management

Effects Common to All Alternatives
Measures to protect special status fish, wildlife, and wildlife habitat include a variety of restrictions, buffers, closures, height limits, and bat gates that would limit activities incompatible with maintaining special status species. These actions could indirectly reduce the potential for disturbance of soil resources, or improve soil resources through habitat management or improvement.

Effects under Alternative A
Management of special status species under Alternative A would not provide for any additional land use restrictions that would reduce the possibility of impacts on soil resources.

Effects under Alternative B

Greater Sage-Grouse
Greater Sage-Grouse habitat management would manage PPMA (275,600 acres) with CSU stipulations for fluid mineral leasing and as ROW avoidance areas.

Effects under Alternative C

Greater Sage-Grouse
Alternative C would close PPMA and PGMA (414,200 acres) to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. In addition, the BLM would manage these areas as ROW exclusion areas. Alternative C would implement the most restrictions on Greater Sage-Grouse habitat, and would, therefore, be the most protective of soil resources within these areas.

Effects under Alternative D

Greater Sage-Grouse
Under Alternative D, Greater Sage-Grouse habitat management would apply NSO stipulations for fluid mineral leasing within PPMA (275,600 acres) with no

exceptions, modifications, or waivers. Alternative D would apply NSO stipulations for fluid mineral leasing within PGMA (138,600 acres) with exceptions, modifications, and waivers as outlined in **Appendix C**, and would manage PPMA and PGMA as ROW avoidance areas (414,200 acres). These restrictions are greater than Alternative A.

Effects under Alternative E

Greater Sage-Grouse

Alternative E would manage PPMA and PGMA as closed to nonenergy mineral leasing and mineral material disposal. Alternative E would be more protective of soil resources than Alternative A.

Soils: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

Direct impacts associated with wild horse and burro gathers would consist of disturbance to soil surfaces immediately in and around the temporary gather sites and holding facilities. Impacts would be created by vehicle traffic and hoof action as a result of concentrating horses and burros, and could be locally high in the immediate vicinity of the gather sites and holding facilities. Generally, these sites would be small (less than 0.5 acre) in size. Any impacts would remain site-specific and isolated in nature. Impacts would be considered minimal as gathering and herding would be of short duration.

Normally, these gather sites are located near or on roads, pullouts, water haul sites or other flat areas, which have been previously disturbed, to enable easy access by transportation vehicles and logistical support equipment. These common practices would minimize the potential impacts on soils.

Indirect impacts from reduced concentrations of wild horses and burros would be reduced soil erosion and compaction. This reduction in soil erosion and compaction would be most notable and important in the vicinity of small springs and meadows currently experiencing high levels of disturbance and bare ground from the excess wild horses and burros.

As wild horse and burro populations increase over time, and if they exceed upper AML level, soil loss from wind and water erosion, and invasion of undesired plant species would continue or expand as a result of over-utilization of vegetation, loss of perennial native grasses and heavy trailing due to an over-population of wild horses within the HMA. This loss would be most notable in the vicinity of small springs and meadows and other water sources with high levels of wild horse and burro use.

Under all alternatives, the BLM would manage wild horses and burros within HMAs with goals to maintain adequate habitat, forage, and water to support healthy populations at identified AMLs. When wild horse and burro populations

exceed the upper AML level, gathers would be conducted to remove the excess animals and reduce the population to the lower AML level. Impacts under each alternative with respect to soil resources would be the same.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Soils: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Wildland fire reduces plant cover, litter, and biological soil crust. This results in soil resources that are highly susceptible to erosion. ESR and burned area rehabilitation treatments may be implemented to reduce these impacts. Wildland fire increases wind erosion, which may be a minor to a substantial impact on public health depending on fire location, especially among sensitive groups, such as children, the elderly, or those individuals with asthma or emphysema. Wildland fire also increases water erosion, which may be either a minor or greater impact depending on slope stability and risk of landslide within recently burned areas.

Impacts from erosion are greatest during the first year after the fire, and diminish over time as vegetation is reestablished. Water erosion can be substantial within limited areas, especially if the sediment impacts residential or industrial areas and transportation systems. These impacts would occur until vegetation becomes fully established.

Fire impacts would also include the reduction of soil nutrients from wind and water erosion, loss of shrubs or deep-rooted plants, reduced nutrient cycling and organic matter, loss of biological crusts, reduced vegetation productivity, and increased compaction from loss of surface litter.

Initiation of ESR actions would ensure timely stabilization of watersheds, reduction of flood hazards, and replacement or reestablishment of vegetation through seeding and recovery of perennial plants. The reestablishment of vegetation cover, litter, and viable root mass would reduce the impacts of wind

and water erosion on soil resources. Stabilization of watersheds would prevent undue loss of topsoil, reducing loss of site potential. Short-term increases in water and wind erosion are unavoidable in the first year following a wildfire.

Effects under Alternative A

Under Alternative A, the CCD is divided into 4 fire management categories. Category A would manage 21,000 acres with aggressive and full fire suppression, and would aim to keep fires to less than 10 acres. Category B would manage 467,000 acres to suppress and control fires to less than 10 acres in forested areas, and less than 25 acres in brush or grass areas. Category C would manage 1,119,100 acres to contain unplanned ignitions to less than 2,000 acres in all vegetation types, and fire suppression tactics would be constrained to protect scenic, natural resources, and wilderness values. Category D would manage 3,104,900 acres to contain fires by appropriate means when conditions will result in significant damage to natural resources or threaten private developments.

Efforts to suppress fires to certain acreage may increase impacts on soils from fire suppression activities but would result in fewer impacts on soil resources from wildland fire, as described under *Effects Common to All Alternatives.*

Effects under Alternative B

Under Alternative B, a full range of fire management activities and options would be utilized to protect all identified values at risk, as identified in the regularly updated fire management plan for the district. Fire suppression activities would reduce the potential impacts on soil resources from wildland fires, but may increase their risk of impact from fire suppression tools and equipment.

After a fire has occurred, Alternatives B through E would implement ESR to stabilize soils, re-establish hydrologic function, maintain and enhance biological integrity, promote plant resiliency, limit expansion or dominance of invasive species, and reestablish native species. This would reduce the overall impacts on soil resources from wind and water erosion after a fire event.

Effects under Alternative C

Under Alternative C, minimum impact suppression would be applied so that emergency fire management methods would be no greater than necessary to meet fire management objectives. Alternative C would allow the use of dozers for fire management only when there is a threat to public safety or property damage, and chemical agents would not be allowed for suppression activities. These limits to suppression activities could put soil resources at greater risk of impact from wildland fire, but at less of a risk for impact from fire suppression activities.

Under Alternative C, hazardous fuels reduction projects would be implemented where negative impacts of wildland fire are greatest on sensitive cultural

resources, and sensitive biological and other natural resources. This would reduce the overall possibility of impacts on soil resources from wildland fire in these areas.

Alternative C would implement ESR as described under Alternative B.

Effects under Alternative D

Like Alternative B, Alternative D would implement a full range of fire management activities and options would be utilized to protect all identified values at risk, as identified in the regularly updated fire management plan for the district.

Alternative D would implement ESR as described under Alternative B.

Effects under Alternative E

Under Alternative E, the BLM would implement a full range of fire management activities and options to protect all values at risk and to sustain healthy ecosystems within acceptable risk levels. This would include protecting WUI, cultural, paleontological, and biological and other natural resources from catastrophic impacts of wildfire and wildfire suppression activities.

Under Alternative E, hazardous fuels reduction projects would be implemented where impacts from wildland fire are greatest on public health and safety and sensitive biological, cultural, and other natural resources are greatest.

Alternative E would implement ESR as described under Alternative B.

Soils: Effects from Livestock Grazing Management

Effects Common to All Alternatives

All alternatives would comply with the Approved Standards and Guidelines for livestock grazing, would manage all allotments with the goal of meeting rangeland health, and would rest areas burned by prescribed or wildland fire for a minimum of two growing seasons before resuming livestock grazing actions. This would reduce the potential for soil resources to become trampled and compacted or susceptible to wind or water erosion due to loss of vegetation cover from overgrazing.

Small-scale activities, including livestock impoundments, vegetation mowing, and seed collection, with less than one acre of surface disturbance, involve short-term increases in erosion and soil compaction. Due to the small size of the areas, these activities would result in negligible impacts on soil resources.

Effects under Alternative A

Alternative A would manage livestock grazing without the option to make unavailable allotments where ecological function continues to decline due to grazing after management changes have been implemented.

Under Alternative A, 6,700 acres would continue to be managed as unavailable for livestock grazing. This would continue to protect these areas from impacts on soil from livestock grazing, such as soil compaction.

Effects under Alternative B

Alternative B would make unavailable allotments where management changes have been implemented but ecological function is still decreasing due to grazing. The resultant vacant allotments could be offered for application to a new permittee.

Under Alternative B, the BLM would manage 6,100 acres as unavailable to livestock grazing. This would provide slightly more acres available for livestock grazing than Alternative A.

Effects under Alternative C

Alternative C would make allotments unavailable as they become vacant. This would result in an overall decrease in livestock grazing on the landscape through the life of the RMP. This would reduce effects from livestock grazing on soil resources but would also remove any range management and improvement features which may be improving soil stability and health.

Under Alternative C, 2,702,000 acres would be managed as unavailable to livestock grazing, which is more than the other alternatives.

Alternative C would provide for an emergency shutdown option to make all allotments unavailable to livestock grazing during emergency situations such as drought, fire, or a plague of insects. This would reduce the overall effect of these emergency situations on vegetation and soil resources.

Effects under Alternative D

Alternative D would make unavailable allotments where management changes have been implemented but ecological function is still decreasing due to grazing, or if livestock grazing is incompatible with urban uses.

Alternative D would manage 10,700 acres as unavailable to livestock grazing, which is greater than under Alternative A.

Alternative D would provide for an emergency shutdown option to make all allotments unavailable for livestock grazing during emergency situations such as drought, fire, or a plague of insects. This would reduce the overall effect of these emergency situations on vegetation and soil resources.

Effects under Alternative E

Alternative E would make unavailable allotments where management changes have been implemented but ecological function is still decreasing or failing to reach other defied objectives due to livestock. Allotment boundaries would be modified to address incompatible urban uses. This would reduce the

compounding impacts from urban and grazing use on soil resources in these areas.

Under Alternative E, the BLM would manage the same number of acres as unavailable to livestock grazing as Alternative B.

Alternative E would provide for an emergency shutdown option to make all allotments unavailable to livestock grazing during emergency situations such as drought, fire, or a plague of insects. This would reduce the overall effect of these emergency situations on vegetation and soil resources.

Soils: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Construction activities that involve geothermal, oil and gas, and mine development, mineral material pits and power plants would remove vegetation, thereby increasing erosion and soil compaction in the short term. Erosion would involve impacts from negligible to greater, depending on the level of disturbance and the soil type. Long-term mitigations and reclamation are common to all alternatives. With reclamation and mitigation, impacts would be minor. Differences among types and degree of reclamation and mitigations are discussed below.

Under all alternatives, 194,900 acres would be managed as closed to locatable mineral entry.

Effects under Alternative A

Locatable Minerals

Alternative A would maintain withdrawal of 194,900 acres of federal mineral estate from locatable mineral entry. Alternative A would also replace pre-FLPMA Classification and Multiple Use Act segregations with FLPMA withdrawals. This would result in withdrawing 5,500 acres of currently segregated lands from locatable mineral entry. This would indirectly protect soil resources from impacts of locatable mineral exploration and development in these areas.

Fluid Minerals

Alternative A would continue to manage 839,100 acres as closed to oil and gas and geothermal leasing. The BLM would manage an additional 700 acres with NSO stipulations for oil and gas leasing, including areas within 300 to 500 feet of water resources, and around important archaeological sites.

Mineral Materials (Salable)

Alternative A would manage 564,200 acres as closed to mineral material disposal.

Nonenergy Leasable Minerals
Alternative A would close 738,800 acres to nonenergy leasable minerals.

Effects under Alternative B

Locatable Minerals
Alternative B would recommend 439,600 acres for withdrawal from locatable mineral entry. This would be more than Alternatives A.

Fluid Minerals
Alternative B would manage 768,500 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations on fluid mineral leasing on an additional 404,600 acres within ACECs and areas with slopes greater than 50 percent. The BLM would apply CSU stipulations on fluid mineral leasing on 2,120,200 acres, including PPMA, some ACECs, NRHP-listed properties, within 500 feet of Dynamite and Hidden Caves or lentic and lotic habitats, additional lands with slopes greater than 50 percent, lands with severe soil, wind, or water erosion, within Important Bird Areas, and within 0.25 mile of raptor nests.

Mineral Materials (Salable)
Alternative B would manage 807,200 acres as closed to mineral material disposal, including Hidden and Dynamite Caves, WSAs, and within 300 feet of known human burials. Alternative B would restrict mineral material disposal within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat. This could result in restrictions for mineral material development on 414,200 acres.

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative B would manage the fewest acres with restrictions on mineral materials of the alternatives.

Nonenergy Leasable Minerals:
Alternative B would manage 981,900 acres as closed to nonenergy leasable minerals, including WSAs, areas within 300 feet of known human burials, and Washoe County. Alternative B would restrict nonenergy leasable mineral development within Greater Sage-Grouse PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat.

Assuming that PPMA and PGMA remain open or that nonenergy leasable mineral development could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative B provides for the same amount of acres of closure to nonenergy leasable minerals than under Alternative A, but less than under Alternatives C, D, and E.

Effects under Alternative C

Locatable Minerals

Under Alternative C, 117,500 acres would be recommended for withdrawal from locatable mineral entry, which is greater than Alternative A.

Fluid Minerals

Alternative C would manage 2,081,700 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations for fluid mineral leasing on an additional 1,039,200 acres. These areas include lands with slopes greater than 50 percent, priority watersheds containing municipal water supplies, areas within 500 feet of riparian and wetland areas, lentic and lotic habitats, Important Bird Areas, within 0.5 mile of active raptor nests, NRHP-listed properties, ACECs, the East Fork Carson River Segment 1, and BCWCAs. The BLM would manage 1,242,800 acres with CSU stipulations including lands with slopes greater than 15 percent and less than 50 percent, and lands with severe soil, wind, or water erosion hazard ratings.

Mineral Materials (Salable)

The BLM would manage 3,004,800 acres as closed to mineral material disposal. This includes caves and cave resources, priority watersheds containing municipal water supplies, within 200 feet of riparian and wetland areas, fish and wildlife priority habitats, within 0.5 mile of active raptor nests, PPMA and PGMA, some ACECs, within 2.5 miles of National Historic Trail (NHT) corridors, the East Fork Carson River Segment, within 1 mile of known human burials, the Virginia Range ERMA and BCWCAs.

Alternative C would close substantially more acres to mineral materials than Alternative A (564,200 acres closed).

Nonenergy Leasable Minerals:

Alternative C would close 2,960,800 acres to nonenergy mineral leasing, including priority watersheds containing municipal water supplies, fish and wildlife priority habitats, areas within 0.5 mile of active raptor nests, PPMA and PGMA, some ACECs, within 2.5 miles of NHT corridors, WSAs, within 0.25 mile of the East Fork Carson River Segment 1 (0.25 mile), within 1 mile of known human burials, Washoe County, and BCWCAs.

Effects under Alternative D

Locatable Minerals

Under Alternative D, 440,800 acres would be recommended for withdrawal from locatable mineral entry, which is greater than Alternative A.

Fluid Minerals

Alternative D would manage 737,000 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations on fluid mineral

leasing additional 864,800 acres. This includes the Pah Rah ACEC, lands with slopes greater than 50 percent, within 1,000 feet of municipal well heads in priority watersheds, PPMA and PGMA, the WSR East Fork Carson River Segment 1. Also, CSU stipulations would be applied to 2,071,400 acres including areas within 200 feet of riparian and wetland areas, within 500 feet of lentic and lotic habitat, lands with slopes greater than 15 percent and less than 50 percent, lands with severe soil, wind or water erosion hazard ratings, Important Bird Areas, NRHP-listed properties, and some ACECs.

Mineral Materials (Salable)

Alternative D would manage 807,700 acres as closed to mineral material sales, including caves and cave resources, within 1,000 feet of municipal well heads in priority watersheds, some ACECs, WSAs, the East Fork Carson River Segment 1, and within 0.25 mile of known human burials. Alternative D would restrict nonenergy mineral material disposal within Greater Sage-Grouse PPMA and PGMA if it is determined that there would be adverse impacts on Greater-Sage Grouse or their habitat. This could result in restrictions for mineral material development on 414,200 acres (PPMA and PGMA).

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative D would manage more acres as closed to mineral material sales than under Alternative A.

Nonenergy Leasable Minerals

Alternative D would close 981,900 acres to nonenergy leasable minerals, including areas within 1,000 feet of municipal wellheads, the Virginia Range Combleaf Botanical ACEC, WSAs, within 0.25 mile of the East Fork Carson River Segment, within 300 feet of known human burial, and Washoe County.

Alternative D would restrict nonenergy leasable mineral development within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat.

Assuming that PPMA and PGMA remain open or that nonenergy leasable minerals could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative D would manage more acres as closed to nonenergy leasable minerals than under Alternative A.

Effects under Alternative E

Locatable Minerals

Under Alternative E, 470,600 acres would be recommended for withdrawal from locatable mineral entry.

Fluid Minerals

Alternative E would manage 1,007,200 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations on additional 1,151,600 acres, including lands with slopes greater than 50 percent, within 1,000 feet of municipal well heads in priority watersheds, areas within 500 feet of riparian/wetland areas and lentic and lotic habitats, within 0.5 mile of raptor nests, within Greater-Sage Grouse PPMA and PGMA, NRHP-listed properties, and the WSR East Fork Carson River Segment 1. Alternative E would also manage an additional 1,844,900 acres with CSU stipulations, including lands with slopes greater than 15 percent and less than 50 percent, lands with severe soil, wind or water erosion hazard ratings, and Important Bird Areas.

Mineral Materials (Salable)

Alternative E would manage 1,778,700 acres as closed to mineral material disposal, including caves and cave resources, within 1,000 feet of municipal wellheads in priority watersheds, fish and wildlife priority habitat areas, within 0.5 mile of active raptor nests, within Greater Sage-Grouse PPMA and PGMA, the Ruhenstroth Paleontological ACEC, within 1 mile of high potential historic sites and high potential route segments along NHT corridors, WSAs, the East Fork Carson River Segment 1, within 300 feet of known human burials, and the Virginia Range ERMA. Alternative E would close more acreage to mineral materials than under Alternative A.

Nonenergy Leasable Minerals:

Alternative E would manage 1,785,900 acres as closed to nonenergy leasable minerals, including areas within 1,000 feet of municipal wellheads, within 0.5 mile of active raptor nests, the Sand Mountain SRMA, the Ruhenstroth Paleontological ACEC, within 1 mile of high potential historic sites and high potential route segments along NHT corridors, WSAs, within 0.25 mile of the East Fork Carson River Segment, and within 300 feet of known human burial, and Washoe County.

Alternative E would close more acres to nonenergy leasable minerals than under Alternatives A, B, and D, but less than under Alternative C.

Soils: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

SRMAs and ERMAs are BLM-administered land units that provide specific structured recreational activities, experience, and benefit opportunities. Increased use in SRMAs or ERMAs could affect soils by associated increases in vehicle and pedestrian traffic and the resulting compaction and erosion. However, impacts would be reduced through specific management actions outlined for these areas. Mitigations, including limits to new roads, vehicle access, trails, and activities, would be considered to limit impacts on resources. There would be impacts on soil from recreation under all of the alternatives.

Effects under Alternative A

SRMAs

Alternative A would continue to manage two SRMAs. These are the Alpine Indian Creek/East Fork Carson River SRMA (7,600 acres), and the Walker Lake SRMA (60,100 acres). In total, Alternative A would manage 67,700 acres as SRMAs. Alternative A would manage the fewest SRMAs.

ERMAs

Alternative A would not designate any ERMAs.

Effects under Alternative B

SRMAs

Alternative B would designate 6 areas as SRMAs, totaling 76,100 acres: Alpine (5,800 acres), Dead Camel Mountain (16,800 acres), Hungry Valley (21,600 acres), Sand Mountain (7,400 acres), Walker Lake (24,000 acres), and Wilson Canyon (500 acres). Alternative B would designate more SRMAs than Alternative A.

ERMAs

Alternative B would designate 8 ERMAs, totaling 1,678,300 acres: Middlegate (268,700 acres), Mina (824,700 acres), Mustang (400 acres), Pah Rah (20,000 acres), Pine Nut (201,100 acres), Reno Urban Interface (70,600 acres), Salt Wells (292,700 acres), and 102 Ranch (120 acres). Alternative B would designate more ERMAs than Alternative A.

Effects under Alternative C

SRMAs

Alternative C would designate 3 SRMAs, totaling 74,700 acres: Alpine (10,700 acres), Sand Mountain (3,900 acres), and Walker Lake (60,100 acres). Alternative C would designate the same number of SRMAs as Alternative A.

ERMAs

Alternative C would designate 15 ERMAs, totaling 1,528,800: Bagley Valley (2,600 acres), Dry Valley (84,100 Acres), Faye-Luther (40 acres), Middlegate (195,300 acres), Mina (486,400 acres), Mustang (400 acres), Pah Rah (20,000 acres), Peterson (42,200 acres) Pine Nut (201,100 acres), Reno Urban Interface (91,000 acres), Salt Wells (113,700 acres), Singatse (174,900 acres), Virginia Mountains (68,100 acres), Virginia Range (48,800 acres), and 102 Ranch (120 acres). Alternative C would designate more ERMAs than Alternatives A.

Effects under Alternative D

SRMAs

Alternative D would designate 4 SRMAs, totaling 67,100 acres: Alpine (7,400 acres), Dead Camel Mountain (37,400 acres), Hungry Valley (21,800 acres), and Wilson Canyon (500 acres). Alternative D would designate more SRMAs than Alternative A.

ERMAs

Alternative D would designate 6 ERMAs, totaling 292,600 acres: Faye-Luther (600 acres), Mustang (400 acres), Pah Rah (20,000 acres), Pine Nut (201,100 acres), Reno Urban Interface (70,400 acres), and 102 Ranch (120 acres). Alternative D would designate more ERMAs than Alternative A.

Effects under Alternative E

SRMAs

Alternative E would designate 6 SRMAs, totaling 106,100 acres: Alpine (7,700 acres), Dead Camel Mountain (37,400 acres), Hungry Valley (16,200 acres), Sand Mountain (19,700 acres), Walker Lake (24,600 acres), and Wilson Canyon (500 acres). Alternative E would designate the same number of SRMAs as Alternative B and more than Alternatives A.

ERMAs

Alternative E would designate 15 ERMAs, totaling 2,085,800 acres: Bagley Valley (2,600 acres), Dry Valley (83,000 acres), Faye-Luther (110 acres), Middlegate (268,700 acres), Mina (824,700 acres), Mustang (400 acres), Pah Rah (20,000 acres), Petersen (42,000 acres), Pine Nut (201,000 acres), Reno Urban Interface (70,600 acres), Salt Wells (280,400 acres), Singatse (174,900 acres), Virginia Mountains (68,100 acres), Virginia Range (48,800 acres), and 102 Ranch (120 acres). Alternative E would designate the same number of ERMAs as Alternative C, and more than Alternatives A.

Soils: Effects from Comprehensive Travel and Transportation Management

Travel across land by any means can result in vegetation loss, loss of biotic crusts, soil compaction, and soil erosion. Management approaches that designate travel to specified routes can result in more predictable, localized, and manageable impacts. Selectively locating travel routes away from areas of sensitive soil conditions can minimize the extent of these effects, ideally limiting them to the footprint of the trail itself.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A would manage 3,840,300 acres as open to cross-country travel, 31,800 acres as closed to motorized and mechanized travel, 6,900 acres as closed to motorized travel with mechanized travel limited to existing routes, and 924,300 acres as limited to existing roads for motorized travel for a total of 963,000 acres of restrictions.

Alternative A would manage the fewest acres with restrictions for travel management of all the alternatives.

Effects under Alternative B

Alternative B would manage 95,300 acres as open to cross-country travel, 26,700 acres as closed to motorized and mechanized travel, and 4,300 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,677,000 acres as limited to existing roads for motorized travel, for a total of 4,708,000 acres of restriction.

Alternative B would manage more acres with restrictions than Alternative A.

Effects under Alternative C

Alternative C would manage 1,300 acres as open to cross-country travel, 1,190,500 acres as closed to motorized and mechanized travel, 598,000 acres as closed to motorized travel with mechanized travel limited to existing routes, and 3,013,500 acres as limited to existing roads for motorized travel, for a total of 4,802,000 acres of restriction.

Alternative C would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A.

Effects under Alternative D

Alternative D would manage 22,700 acres as open to cross-country travel, 30,600 acres as closed to motorized and mechanized travel, 1,600 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,748,400 acres as limited to existing roads for motorized travel, for a total of 4,780,600acres of restriction.

Alternative D would manage fewer acres as closed to motorized and mechanized travel than under Alternative A, but overall, Alternative D would manage more acres with restrictions than under Alternative A.

Effects under Alternative E

Alternative E would manage 55,700 acres as open to cross-country travel, 24,100 acres as closed to motorized and mechanized travel, 6,200 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,717,300 acres as limited to existing roads for motorized travel, for a total of 4,747,600 acres of restriction.

Alternative E would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A and, overall, would manage more acres with restrictions than Alternative A.

Soils: Effects from Lands and Realty

Effects Common to All Alternatives

Various construction activities and ROW authorized under lands and realty management (such as wind power, solar power, communication sites, transmission lines, roads, and pipeline projects) would impact soil resources as a result of surface disturbing activities. Erosion would vary, depending on the level of disturbance, the soil type, and BMPs implemented.

Effects under Alternative A

Alternative A would manage 564,100 acres as ROW exclusion, and would not manage any acres as ROW avoidance. Land Use Authorizations and management under Alternative A would provide the least protection for soil resources.

Effects under Alternative B

Alternative B would manage 580,000 acres as ROW exclusion and 1,195,800 acres as ROW avoidance, totaling 1,775,800 acres of land restriction that would provide protection of soil resources (more than Alternative A).

Effects under Alternative C

Alternative C would manage 2,675,800 acres as ROW exclusion and 369,300 acres as ROW avoidance, totaling 3,045,100 acres of land restriction. This would protect the most soil resources from potential impacts of lands and realty development.

Effects under Alternative D

Alternative D would manage 564,100 acres as ROW exclusion and 1,226,100 acres as ROW avoidance, totaling 1,790,200 acres of land use restriction that would protect soil resources. This is more than Alternative A.

Effects under Alternative E

Alternative E would manage 605,900 acres as ROW exclusion and 1,448,200 acres as ROW avoidance, totaling 2,054,100acres of land restrictions that would prevent impacts on soil resources. This is more than under Alternative A.

Soils: Effects from Renewable Energy

Effects Common to All Alternatives

Potential impacts from renewable energy projects (solar, wind, and biomass) include direct impacts from ground-disturbing activities and erosion. All permits and ROWs would be subject to stipulations, restrictions, and mitigation measures, reducing the potential for impacts on soil resources. Under all

alternatives, the development of renewable energy in a timely manner to meet national, regional, and local needs would be encouraged.

Effects under Alternative A

Alternative A would manage 905,900 acres as variance areas for utility-scale solar development and would not manage any acres as ROW avoidance or exclusion areas for wind energy projects.

Effects under Alternative B

Alternative B would manage 773,400 acres as variance areas for utility-scale solar development and would manage 1,220,200 acres as ROW avoidance for wind energy projects. Alternative B would manage more acres with restrictions on renewable energy development than Alternative A, thus reducing the potential for impacts on soil resources.

Effects under Alternative C

Alternative C would manage 578,400 acres as variance areas for utility-scale solar development and no acres as ROW avoidance areas for wind energy projects. Alternative C would also manage 2,073,200 acres as ROW exclusion for wind energy projects. Alternative C would manage more acres with restrictions on renewable energy development than Alternative A, thus reducing the potential for impacts on soil resources.

Effects under Alternative D

Alternative D would manage 672,100 acres as variance areas for utility-scale solar energy and 1,228,100 acres as ROW avoidance areas for wind energy projects. Alternative D would manage more acres with restrictions on renewable energy development than Alternative A, thus reducing the potential for impacts on soil resources.

Effects under Alternative E

Alternative E would manage 629,900 acres as variance areas for utility-scale solar energy, and 956,900 acres as ROW avoidance areas for wind energy projects. Alternative E would also manage 629,900 acres as ROW exclusion for wind energy projects. Alternative E would manage more acres with restrictions on renewable energy development than Alternative A, thus reducing the potential for impacts on soil resources.

Soils: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Under all alternatives, mitigation measures would be developed to reduce impacts to important resource values within ACECs which would also serve to reduce impacts on soils. All new and proposed ACECs (Alternatives B, C, D, and E) include use restrictions for salable, solid minerals, and fluid minerals. This would also protect soils.

Effects under Alternative A
Under Alternative A, 6 ACECs would continue to be managed, totaling 21,800 acres.

Effects under Alternative B
Alternative B would continue to manage 4 ACECs and would propose the designation of an additional 9 ACECs, totaling 371,170 acres. Alternative B would designate more acres as ACECs than Alternative A and would, therefore, be more protective of soil resources than Alternative A.

Effects under Alternative C
Alternative C would continue to manage 5 ACECs and would propose the designation of an additional 18 ACECs, totaling 786,270 acres. Alternative C proposes 17 more ACECs that Alternative A and would increase the acres managed as ACECs by more than 670,000 acres.

Effects under Alternative D
Alternative D would continue to manage 3 ACECs and would propose the designation of an additional 8 ACECs, totaling 180,000 acres. Alternative D would designate more acres as ACECs than Alternative A and would, therefore, be more protective of soil resources than Alternative A.

Effects under Alternative E
Alternative E would continue to manage 4 ACECs and would propose the designation of an additional 4 ACECs, totaling 82,770 acres. Alternative E would manage more acres as ACECs than Alternative A and would, therefore, be more protective of soil resources than Alternative A.

Soils: Effects from Wilderness Study Areas

Effects Common to All Alternatives
Managing acres as WSAs to maintain wilderness characteristics would restrict surface-disturbing activities and would indirectly reduce the potential for direct disturbance of soil resources. If Congress releases the WSAs and there are no management actions that restrict surface disturbance, the risk of impacts on soil resources from future surface-disturbing activities would increase.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Soils: Cumulative Impacts
Table 4-1 lists the reasonably foreseeable cumulative actions for the CCD.

Past and Present Actions
The BLM currently manages weed infestations through integrated weed management, including biological, chemical, mechanical, and educational methods. Due to the ability of noxious weeds to tolerate certain landscape conditions, some species are expected to remain a serious long-term threat. Vegetation treatments involving the use of mechanical, biological, and chemical treatments have been used in the past on both private and public rangelands, and would likely continue in the future. These treatments can impact soils through compaction and ripping of soils by heavy machinery during treatment.

Few impacts on soils from wildlife and special status species management have occurred and have been dependent on the timing, extent and type of habitat improvement projects. Generally, habitat improvement projects improve or protect soils. Managing to protect and rehabilitate wildlife and sensitive species habitat will continue.

Wildfires have exposed large areas where vegetation has been consumed increasing the likelihood or probability of soils to erode following wildfire. The implementation of ESR on areas burned by wildfire may continue based on the number of acres burned. ESR treatments would continue to be prioritized to provide for human life and safety, soil/water stabilization, restoration of important habitat for special status species, and to deter establishment of invasive plants.

Limited impacts on soils have occurred from wild horse and burro management. Areas experiencing concentrated wild horse and burro grazing have been prioritized for gathering of wild horses and burros, if above the upper AML, in order to maintain a thriving natural ecological balance. However, due to various constraints, gathers are not conducted as frequently as needed to continue to maintain a thriving ecological balance. This trend is expected to continue, and be exacerbated by the current drought conditions.

Minerals, renewable energy and lands and realty activities have also impacted soils in order to construct roads, drill pads, power lines and facilities. Mineral exploration and development is expected to continue to occur for locatable minerals, fluid mineral leasing, nonenergy mineral leasing, and mineral material disposables.

In response to demands for land use authorizations, the Designation of Energy Corridors on Federal Lands in the 11 Western States Programmatic EIS was published in 2007. Over the past 10 years the CCD has average issuance of approximately 28 ROW authorizations per year, with an average of 35 applied for annually.

Recreation activities have impacted soils where concentrated recreational use has occurred or in areas popular for OHV uses. These areas of higher OHV use experience increased vegetation community impacts, increasing potential for accelerated erosion of soils.

Reasonably Foreseeable Future Actions

Invasive weeds are expected to continue to spread across the landscape, carried by wind, humans, machinery, and animals, and alter current vegetation communities which may reduce soil stability and increase wildfire return cycles as areas containing invasive plants such as cheatgrass are more prone to reburn. Vegetation treatments involving the use of mechanical, biological, and chemical treatments will likely continue in the future. These treatments can impact soils through compaction and ripping of soils by heavy machinery during treatment.

Managing to protect and rehabilitate wildlife and sensitive species habitat will continue, and habitat improvement projects improve or protect soils.

Trends indicate that the number of wildfires will continue to gradually increase based on climate, conversion of habitat to areas dominated by nonnative, invasive species, and increased potential for human-caused fires due to population growth and increases in recreation uses.

Grazing pressure on rangelands from livestock and wild horses and burros is anticipated to continue. There is interest in acquiring grazing permits as they become available. In addition, due to proximity to expanding urban areas, some allotments may lose grazing acreage. This would ensure demand for areas that remain available for grazing.

Energy development is expected to continue. There are approximately 23 plans of operations for explorations (greater than 5 acres) or mining currently administered, 260 contracts for free-use permits for salable mineral operations, and 148 geothermal leases currently leased (BLM 2013f). The National Renewable Energy Laboratory data shows that portions of the planning area have high potential for solar energy, and Luning Solar was issued a ROW grant for a 575-acre project in July, 2010 but construction has not started.

Demands for land use authorizations in the planning area are anticipated to increase in correlation with future residential and commercial development in response to increasing population and energy demands. Population increases within the WUI will escalate demands for access to BLM-administered lands

near residential developments, which will require increased management and protection of resources.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area that have impacts to soil resources include land use authorizations and energy development, mineral development, recreation, livestock grazing, wild horse and burro use, weeds and weed treatments, wildfire and climate change. Mineral and energy developments and ROWs have occurred, are occurring, and will continue to occur on both federal and nonfederal lands within the planning area. These actions have generally resulted in only minor effects on soils due to the implementation of BMPs and compliance with air quality standards. However, the number of soils disturbing activities could incrementally impact soil resources. Livestock grazing and wild horse and burro use would continue to impacts soils resources but would be reduced through implementation of monitoring and mitigation/ Impacts on soil resources from future wildfires would be affected by implementation of fuel treatments that would reduce fire size and soil rehabilitation efforts that would continue to reduce erosion and soil loss.

The incremental effects of management actions under all alternatives would be similar. Actions under all alternatives would be required to implement standard operating procedures, BMPs and mitigation as necessary and would be required to comply with state and federal air quality standards and requirements. Wildfire management actions that reduce fire size, spread, and frequency of occurrence would help reduce or stabilize loss of soils. The number and intensity of wildfire would be dependent on climate, weather, and increased potential for human-caused fires. Based on current monitoring trends, it is anticipated that incremental impacts would remain low. The effects of climate change would result in a cumulative impact on soil resources to the extent that climate change resulted in a change in hydrologic and other ecological regimes that altered the landscape in a manner that increased the potential for wildland fire and soil erosion.

Water Resources: Effects from Water Resources

Effects Common to All Alternatives

Under all alternatives, a common goal is to define watershed functions so cumulative effects within watersheds can be properly managed by the BLM. The BLM will collaborate with other federal agencies, tribal governments, the States of Nevada and California, counties, and local municipalities on management of municipal watersheds to meet local needs. Any proposed activities on sensitive soil types such as biological crusts, hydric or highly erodible soils would incorporate BMPs and other mitigation measures to minimize soil erosion and

maintain soil stability. Stabilizing soil erosion would reduce the potential transport of sediment into streams impacting surface water quality.

Effects under Alternative A

Under Alternative A, critical or at-risk watersheds will continue to be delineated as necessary in order to give these areas special consideration in activity plan development, with the goal of preventing accelerated soil loss and watershed degradation, associated flood and sediment damage to private property or adjacent lands, or to prevent destruction of important wildlife habitat. High erosion hazard and/or flood-prone areas will be delineated within the urban interface areas. These actions would protect water ecosystems and water quality by minimizing erosion which will reduce stream sedimentation and turbidity.

Effects under Alternative B

Under Alternative B, a listing of priority watersheds and priority water supply areas would be identified and maintained based on the following criteria:

- Watersheds with threatened and endangered species habitat (occupied and recovery streams)
- Presence of well head protection zones as defined in community well head protection plans, in accordance to the State of Nevada's well head protection program
- Watersheds that serve as important source areas for municipal and agricultural water supplies

These management actions would protect water availability in priority watersheds for people and threatened and endangered species within the planning area.

Effects under Alternative C

Under Alternative C, a listing of priority watersheds and priority water supply areas would be identified and maintained based on the same criteria described under Alternative B. However, Alternative C would also protect habitat containing threatened and endangered species habitat. These protections include surface disturbance reducing activities such as:

- Closing lands to mineral material disposals (except for government use at the Authorized Officer's discretion)
- Closing lands to nonenergy solid mineral leasing
- Applying NSO stipulations for fluid mineral leasing
- Managing priority watersheds as ROW exclusion areas

The actions under Alternative C would offer the most protections to water resources of all the alternatives due to the focus on the water quantity included

in Alternative B. Alternative C would increase water quality by reducing surface disturbance activities. These actions would reduce erosion and sedimentation into waterways.

Effects under Alternative D

Alternative D would protect priority watersheds similar to Alternative C by containing municipal water supply within 1,000 feet radius of municipal well heads as by applying the following management actions:

- Closing lands to mineral material disposals (except for government use at the Authorized Officer's discretion)
- Closing lands to nonenergy solid mineral leasing
- Applying NSO stipulations for fluid mineral leasing
- Managing priority watersheds as ROW exclusion areas

However, the Authorized Officer may consider allowing surface disturbance or surface occupancy in priority watersheds on a case-by-case basis based on the project meeting certain criteria such as recognition of valid existing rights or a proposed ROW with associated surface disturbance located within a designated ROW corridor. Impacts from these management actions would be similar to Alternative C due to the closures of surface disturbing activities, but to a lesser degree due to the lack of emphasis on focusing on threatened and endangered species.

Effects under Alternative E

Under Alternative E, impacts would be the same as under Alternative D.

Water Resources: Effects from Vegetation Resources

Effects Common to All Alternatives

<u>Vegetation: Invasive, Nonnative Species, and Noxious Weeds</u>

Under all alternatives, control of invasive, nonnative, and noxious weeds would improve water quality and quantity in areas where impacts have occurred. In disturbed areas, noxious weeds tend to out-compete native species creating monocultures which are typically poorly suited to protect soils from erosional forces and can alter water movement in the soil. Increased erosion and sedimentation to water bodies can result in changes to water chemistry and alter stream channel morphology.

Effects under Alternative A

<u>Vegetation: Invasive, Nonnative Species, and Noxious Weeds</u>

Alternative A would continue to coordinate with the Navy and other appropriate agencies to implement approved integrated pest management plans to control and remove undesirable vegetation. Although short-term surface

disturbances can occur from the eradication of noxious weeds, long-term benefits to soils and water resources include surface stabilization with desirable species and reduced erosion potential.

Effects under Alternative B

Vegetation: Invasive, Nonnative Species, and Noxious Weeds
Alternative B would implement weed management stipulations and public education to reduce the spread of invasive, nonnative species, and noxious weeds along perennial stream corridors. Control methods include mechanical, biological, and chemical treatments that may be used alone or in combination. The management actions under this alternative offer the least protection to water resources by using chemicals that could enter water ways through runoff.

Effects under Alternative C

Vegetation: Invasive, Nonnative Species, and Noxious Weeds
Alternative C would implement control methods such as mechanical and biological treatments that may be used alone or in combination. The BLM would only utilize mechanical weed treatments riparian areas. This method does not apply chemicals that can kill the soil food web where being applied, but it can be more time consuming and require multiple treatments. The management actions under this alternative offer water quality the most protection by not using chemicals that can enter water ways through runoff.

Effects under Alternative D

Vegetation: Invasive, Nonnative Species, and Noxious Weeds
Alternative D impacts would be the same as those in Alternative B.

Effects under Alternative E

Vegetation: Invasive, Nonnative Species, and Noxious Weeds
Alternative E impacts would be the same as those in Alternative B.

Water Resources: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
Under all alternatives, a common goal is to manage vegetation communities that provide the food, cover, and breeding requisites for existing and potential native or otherwise desirable species of fish and wildlife in order to sustain and optimize their distribution and abundance consistent with habitat capability. These goals would allow for opportunities to maintain overall ecosystem health and to preserve water quality and sustainability of stream flow. This would include, for example, implementing timing restrictions and distance buffers, as appropriate, to minimize impacts on wildlife from activities during important life cycle periods. These actions would temporarily limit disturbances to soil and

vegetation. As a result, it would be less likely for erosion to occur that could degrade water quality in the areas with timing restrictions and distance buffers. Overall, management actions for fish and wildlife management would help protect water resources.

Effects under Alternative A

Impacts would be the same as those under *Effects Common to All Alternatives*. This makes Alternative A the least protective of water resources.

Effects under Alternative B

Alternative B would apply CSU stipulations to fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed aquatic and semi-aquatic species. The BLM would manage areas with priority habitat for fish and wildlife as ROW avoidance areas with a 100-foot buffer for aquatic habitats. These actions would limit disturbances to soil and vegetation near aquatic areas. As a result, it would be less likely for erosion to occur that could degrade water quality in these areas.

Effects under Alternative C

Alternative C would apply NSO stipulations with no exceptions, modifications or waivers to fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed and BLM sensitive aquatic and semi-aquatic species. This would generally provide the same level of protection as closing the entire area to leasing. This is because, while the mineral would still be available for extraction beneath the surface, facilities would be located outside of any lentic and lotic habitats. Also, areas with priority habitat for fish and wildlife would be managed as a ROW avoidance area with a 500-foot buffer for aquatic habitats. Protection of water resources would be similar to Alternative B, but with greater intensity due to the larger buffer. These actions make Alternative C the most protective of water resources.

Effects under Alternative D

Under Alternative D, impacts on water resources from fish and wildlife management actions would be the same as Alternative B.

Effects under Alternative E

Alternative E would apply NSO stipulations with exceptions, modifications or waivers to fluid mineral leasing within 500 feet of lentic and lotic habitats occupied by federally listed and BLM sensitive aquatic and semi-aquatic species. Also, areas with priority habitat for fish and wildlife would be managed as a ROW avoidance area with a 100-foot buffer for aquatic habitats. These actions would limit disturbances to soil and vegetation near aquatic areas. As a result, it would be less likely for erosion to occur that could degrade water quality in these areas, except in areas where exceptions, modifications, or waivers occurred.

Water Resources: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Fire removes vegetation cover and exposes soils to erosion, increasing the potential for sediments to be transported into water resources. Combustion can create a variety of toxic chemicals that may eventually be transported to water bodies in runoff or because of atmospheric deposition. Fire suppression can result in soil disturbance from vehicles and equipment such as fire engines and dozers. Impacts include removal of vegetation and disturbance to soils increasing erosion potential and impacts on water. Use of retardant may impact water directly. These impacts are greater to lentic resources verses perennial streams because lentic areas are less dynamic and slower to recover. Impacts include reduced water quality and possible oxygen depletion.

Effects under Alternative A

Alternative A would continue to implement ESR on areas burned by wildfire based on the number of acres burned by wildfires. ESR treatments would continue be prioritized to provide for human life and safety, soil/water stabilization, restoration of important habitat for special status species, and to deter establishment of invasive plants. The reduction of invasive plants establishing will protect water resources by reducing erosion and sedimentation to water bodies which can result in changes to water chemistry and alter stream channel morphology.

Effects under Alternative B

Alternative B would conduct rehabilitation projects to stabilize soils; reestablish hydrologic function; maintain and enhance biological integrity; promote plant resiliency; limit expansion or dominance of invasive species; and reestablish native species. These actions would help maintain water qualities that benefit aquatic species by reducing the potential for erosion.

Effects under Alternative C

Alternative C would conduct more suppression, which, because it implies maintenance of conditions that may be out of equilibrium with the natural threat of fire, could be unsustainable in the long-term and result in greater loss of vegetation cover in individual fires. Loss of vegetation cover can lead to soil erosion, and larger fires at less frequent intervals might also lead to more soil erosion over a longer period of time, with greater effects on water quality than if the fires are smaller and more frequent.

Effects under Alternative D

Alternative D would implement hazardous fuels reduction projects where the negative impacts of wildland fire are greatest to health and safety within the urban interface. Fuels treatments would be designed and implemented to create fire safe communities resistant to catastrophic wildfire events. Also, rehabilitation projects after fire would be similar to those described in

Alternative B. These actions would protect water quality by reducing the potential for erosion.

Effects under Alternative E

Alternative E would implement hazardous fuels reduction projects where the negative impacts of wildland fire are greatest to health and safety, sensitive biological, cultural, and other natural resources. These actions would preserve water quality by focusing hazardous fuels reduction activities on sensitive biological and natural resources.

Water Resources: Effects from Livestock Grazing Management

Effects Common to All Alternatives

Livestock grazing can impact water resources by changing stream channel morphology, destroying riparian vegetation, altering watershed hydrology, and impairing water quality (Agouridis et al. 2005). These impacts are due to the presence of livestock increasing soil erosion and water pollution from runoff. Water quality can be impaired by grazing animals directly by depositing urine and manure into surface water or indirectly by depositing manure and urine near surface water where runoff and leaching can transport these materials into the water.

The BLM can manage the effects of livestock grazing on water quality by controlling the timing, intensity, duration, and spatial distribution of grazing (Agricultural Research Service 2013). These impacts vary between alternatives due to the different acres available or unavailable and the number of AUMs available for livestock grazing.

Effects under Alternative A

Alternative A would manage livestock grazing without the option to make unavailable allotments where ecological function continues to decline due to grazing after management changes have been implemented.

Under Alternative A, the BLM would continue to manage livestock use at 151,200 total AUMs. The BLM would manage 4,796,600 acres as available for all classes of livestock grazing, and 6,700 acres would not be available.

Effects under Alternative B

Alternative B would make unavailable allotments where management changes have been implemented but ecological function is still decreasing due to grazing. The resultant vacant allotments could be offered for application to a new permittee.

Under Alternative B, the BLM would continue to manage livestock use at 151,200 AUM. The BLM would manage 4,797,200 acres as available for all classes of livestock, and 6,100 acres would not be available. This alternative would offer fewer impacts on water resources due to more acres being

unavailable to livestock grazing than Alternative A and continuous year-long grazing would not be allowed in any pasture of an allotment.

Effects under Alternative C

Alternative C would make unavailable allotments as they become vacant. This would result in an overall decrease in livestock grazing on the landscape through the life of the RMP. This would reduce effects from livestock grazing on water resources but would also remove any range management and improvement features that may be improving soil stability and health, which would affect water resources.

Under Alternative C, the BLM would reduce AUMs at a periodic review for allotments not meeting Rangeland Health Standards due to current livestock grazing. The BLM would manage 2,101,300 acres as available for all classes of livestock grazing, and 2,702,000 acres would be unavailable for all classes of livestock grazing. This alternative would make the most acres unavailable to livestock grazing compared to the other alternatives, resulting in the fewest impacts on water quality.

Effects under Alternative D

Alternative D would make unavailable allotments where management changes have been implemented but ecological function is still decreasing due to grazing, or if livestock grazing is incompatible with urban uses.

Under Alternative D, the BLM would manage grazing at existing levels, and re-examine and adjust use levels to appropriate AUM amounts every 10 years or on a case-by-case basis (whichever is less) during the periodic review of the permitted use in a grazing permit. The BLM would manage 4,792,600 acres as available for all classes of livestock grazing, and 10,700 acres as unavailable for all classes of livestock grazing. This alternative would offer fewer impacts on water resources due to more acres being unavailable to livestock grazing than Alternative A.

Effects under Alternative E

Alternative E would make unavailable allotments where management changes have been implemented but ecological function is still decreasing or failing to reach other defied objectives due to livestock. Allotment boundaries would be modified to address incompatible urban uses. This would reduce the compounding impacts from urban and grazing use on water resources in these areas.

Management at existing levels, and re-examine and adjust use levels to appropriate AUM amount every 10 years or on a case-by-case basis (whichever is less) would occur during the periodic review of the permitted use in a grazing permit. The BLM would manage 4,797,200 acres as available for all classes of livestock grazing. 6,100 acres would be unavailable to all classes of livestock

grazing. This alternative would offer fewer impacts on water resources due to more acres being unavailable for livestock grazing than Alternative A.

Water Resources: Effects from Geology and Mineral Management

Effects Common to All Alternatives

In areas with NSO stipulations, both surface and ground water quality would be protected. Since ground disturbance would be prohibited and soil erosion limited to natural processes accelerated soil erosion would be limited, decreasing the potential for sedimentation of surface streams. Groundwater would be protected because geothermal wells would not affect groundwater levels. However, indirect well drilling under a parcel with an NSO stipulation may affect groundwater. In areas with CSU stipulations, water quality would receive some protection since ground disturbance would often be limited.

Closing lands to fluid minerals leasing would reduce the release of pollutants capable of contaminating surface water during runoff or contaminating aquifers during groundwater recharge. By managing lands as open to fluid mineral leasing, there is the potential for actions to occur in fluid minerals development areas that could alter drainage patterns, stream hydrographs, and water supplies. These impacts would be avoided in areas closed to fluid mineral leasing.

The severity of these direct and indirect impacts would vary, depending on the different types of minerals leasing activities and the intensity of development, as well as the type, volume, and management of contaminants at mineral development sites. Under Alternatives C, D, and E, priority watersheds and habitat containing threatened and endangered species habitat would be managed as closed to nonenergy solid mineral leasing and to mineral material disposals (except for government use at the Authorized Officer's discretion). The Authorized Officer may consider allowing surface disturbance and/or surface occupancy in priority watersheds on a case-by-case basis based on the project meeting one of the following management criteria:

- Recognition of valid existing rights
- A determination made through consultation with United States Fish and Wildlife Service (USFWS)
- Determination that the proposed actions and associated surface disturbance would:
    a. Protect, mitigate, or improve wildlife/fish habitat
    b. Provide for public safety or local water supply
- A proposed ROW and associated surface disturbance is located within a designated ROW corridor
- Surface disturbance defined as casual use

Impacts on water resources from a project meeting one of these criteria and occurring in a priority watershed include: sedimentation, contamination, and alteration of surface and subsurface water bodies. The severity of these indirect impacts would vary, depending on the different types of locatable, mineral materials, and leasable activities and intensity of development.

Effects under Alternative A

Alternative A would continue to close 839,100 acres of BLM-administered surface/federal minerals to fluid minerals leasing, and 3,964,200 acres of BLM-administered surface/federal minerals would be managed as open to fluid minerals leasing. Impacts from these open and closed areas are described under effects common to all. Per the Lahontan RMP Management Decisions Summary, activities within 500 feet of water would be open with NSO stipulations. Per the Walker RMP Management Decisions Summary, activities within 300 feet of any water would be open with NSO stipulations. Together these NSO stipulations would be applied to 700 acres.

Effects under Alternative B

Alternative B would close 768,500 acres of BLM surface/federal minerals to fluid minerals leasing, and 4,034,700 acres of BLM surface/federal minerals would be managed as open to fluid minerals leasing. The BLM would apply NSO stipulations to 404,600 acres and CSU stipulations to 2,120,200 acres. Water resources in these areas would be positively impacted in this alternative more than Alternative A, because more acres would be protected by constraining or restricting use or occupancy of the land surface with CSU and NSO stipulations.

Effects under Alternative C

Alternative C would close 2,081,700 acres of BLM surface/federal minerals to fluid minerals leasing, and 2,721,500 acres of BLM surface/federal minerals would be managed as open to fluid minerals leasing. The BLM would apply NSO stipulations to 1,039,200 acres and CSU stipulations to 1,242,800. This alternative restricts surface use and disturbance more than any other alternative and would provide the most protection to water resources.

Effects under Alternative D

Alternative D would close 737,000 acres of BLM surface/federal minerals to fluid minerals leasing, and 4,066,200 acres of BLM surface/federal minerals would be managed as open to fluid minerals leasing. The BLM would apply NSO stipulations to 864,800 acres and CSU stipulations to 2,071,400 acres. Water resources in these areas would be positively impacted in this alternative more than Alternative A, because more acres would be protected by constraining or restricting use or occupancy of the land surface with CSU and NSO stipulations.

Effects under Alternative E

Alternative E would close 1,007,200 acres of BLM surface/federal minerals as closed to fluid minerals leasing, and 3,796,000 acres of BLM surface/federal minerals would be managed as open to fluid minerals leasing. The BLM would

apply NSO stipulations to 1,151,600 acres and CSU stipulations to 1,844,900 acres. Water resources in these areas would be positively impacted in this alternative more than Alternative A, because more acres would be protected by constraining or restricting use or occupancy of the land surface with CSU and NSO stipulations.

Water Resources: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Since recreation is the management focus in SRMAs, management of SRMAs could result in more impacts on water resources; however, recreation impacts in these areas are largely dependent on the type of recreation that is the subject of the SRMA. Recreational activities such as motorized vehicle use can cause soil erosion and degrade water quality by runoff of fuels into surrounding surface water. These activities, however, would likely be monitored more than areas lacking the recreation designation and therefore, impacts could be minimized through monitoring.

Many recreation destinations center on areas where perennial surface water is present, such as streams or lakes in upper watersheds. These are often sensitive areas, where increased visitor use might lead to soil compaction (as at campsites or on trails), increased use of OHVs, and generation of water pollutants (e.g., sanitary waste, pathogens). Increased visitor use might require additional support facilities and infrastructure, such as improved access roads, potable water, sanitary facilities, waste disposal, and other facilities. Each of these can have adverse impacts on water resources. Improved access may lead to more visitor use and demand for more support facilities. Some areas in the planning area are remote, but there is increased demand for recreation opportunities from urban expansion in the Reno area. Therefore, increased concentration of visitor use on the few areas with desirable riparian settings is likely to result in increased impacts on the water resources.

Demand for OHV use areas is increasing. OHV use can disturb soils and increase erosion. OHV destinations would typically include riparian areas, which are particularly vulnerable to OHV use. All of the alternatives include measures to monitor and control visitor use and associated impacts on other resources, but the alternatives differ in the degree and type of recreational development they would promote.

Effects under Alternative A

Alternative A would continue management of existing SRMAs, while the other alternatives would designate new ones. Designation of new SRMAs is a response to known and perceived public demand for recreational opportunities. SRMAs provide a means of formally planning and managing recreational uses within a defined geographic area. Designation of SRMAs would not impact water

resources; however, the management actions applied to SRMAs may result in effects on water resources.

Effects under Alternative B

Alternatives B, C, and D each include similar adaptive management measures recognizing the need to protect other resource values as recreational use expands. This may help to adjust visitor use to prevent adverse effects on water resources. Under Alternative B, the BLM would manage 95,300 acres as open to OHV use, 26,700 acres would be closed to OHV use, and 4,677,000 acres of OHV use would be limited to existing trails. Although fewer closures would occur under this alternative than Alternative A, more than 4.6 million acres would be managed as limited to existing routes, resulting in fewer impacts on water resources than under Alternative A.

Effects under Alternative C

Under Alternative C, the BLM would manage 1,300 acres as open to OHV use, 1,190,500 acres as closed to OHV use, and 3,013,500 acres of OHV use would be limited to existing trails. This alternative would close the most acres to OHV use, resulting in the greatest protection of water resources.

Effects under Alternative D

Under Alternative D, the BLM would manage 22,700 acres as open to OHV use, 30,600 acres as closed to OHV use, and 4,748,400 acres of OHV use would be limited to existing trails. Impacts would be similar to those under Alternative B.

Effects under Alternative E

Under Alternative E, the BLM would manage 55,700 acres as open to OHV use, 24,100 acres as closed to OHV use, and 4,717,300 acres of OHV use would be limited to existing trails. Impacts would be similar to those under Alternative B.

Water Resources: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Impacts from motorized recreation include: disrupted soil crusts, reduced vegetation, sedimentation in surface water, and turbidity in surface water. When soil is disturbed and vegetation is removed from the surface of a landscape, the amounts and velocities of runoff can increase, which accelerate the rates at which sediments and other debris are eroded from the land and washed to downslope aquatic systems. It can also alter groundwater recharge rates.

Water quality can be impacted when pollutants from motorized vehicle emissions and spills of petroleum products are absorbed by sediments and plant material or dissolved in runoff. Once mobilized, these contaminants may enter aquatic systems (Ouren et al. 2007). Each alternative varies in the amount of acres managed as open, limited, or closed to motorized and mechanized travel in priority watersheds. Closing areas and limiting the miles of routes in priority

watershed would protect these areas from disturbance such as compaction, erosion, and runoff. As a result, alternatives that close more acres or miles of routes to travel would best protect water resources (See **Table 4-2**, Acres of Routes Overlapping Priority Watersheds by Alternative).

Table 4-2
Acres of CTTM Designations Overlapping Priority Watersheds by Alternative

Roads and Trails with motorized Use	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Open to Unrestricted vehicle use	366,400	54,500	0	5,800	16,600
Limited to Existing Routes	156,600	469,500	291,000	518,300	508,200
Closed to Motorized and Mechanized Travel	1,600	0	80,400	0	1,100
Closed to motorized Travel and Limited to Existing Routes for Mechanized Travel	2,100	2,600	155,300	2,600	700

Source: BLM GIS 2014a, BLM GIS 2014b, GBGS GIS 2013

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Water Resources: Effects from Lands and Realty

Effects Common to All Alternatives
ROW actions that could release pollutants capable of contaminating surface water during runoff or contaminating aquifers during groundwater recharge could occur in ROW avoidance areas. Also, ROW actions that could alter drainage patterns and recharge rates for groundwater, which affect stream hydrographs and water supplies, could occur in ROW avoidance areas; however, ROW avoidance areas would generally result in lower impacts on water quality, compared with areas not managed as ROW avoidance. These impacts would not occur in ROW exclusion areas because ground disturbance

would be prohibited and soil erosion would be limited to natural processes. The severity of impacts would vary, depending on the type of ROW, intensity of development, and site-specific geomorphic conditions.

Effects under Alternative A

Alternative A would manage 77,500 acres as ROW exclusion areas and no acres as ROW avoidance in priority watersheds. These management actions would provide the fewest protections to water resources compared to the other alternatives.

Effects under Alternative B

Impacts under Alternative B would be fewer than Alternative A because the BLM would manage 77,500 acres as ROW exclusion areas and 103,700 acres as ROW avoidance areas in priority watersheds. These ROW avoidance areas would provide some protection to water resources but still allow for some ground disturbance.

Effects under Alternative C

Alternative C would manage 526,700 acres in priority watersheds and habitats containing threatened and endangered species as ROW exclusion areas. Water quality in these areas would be protected the most out of all the alternatives since ground disturbance would be prohibited and soil erosion would be limited to natural processes. The BLM would manage no acres as ROW avoidance areas in priority watersheds since all priority watersheds are already managed as ROW exclusion areas.

Effects under Alternative D

Alternative D would protect priority watersheds containing municipal water supply within 1,000 feet radius of municipal well heads. The BLM would manage these areas as ROW exclusion. Additionally, the BLM would manage 77,500 acres as ROW exclusion areas. This would result in protections similar to Alternative B but over a larger area due to the 115,900 acres managed as ROW avoidance.

Effects under Alternative E

Alternative E effects would be similar to Alternative D, but more protective due to the additional acres being managed as ROW exclusion and avoidance. This alternative would allow for management of 81,100 acres as ROW exclusion and 138,200 acres being managed as ROW avoidance in priority watersheds.

Water Resources: Effects from Renewable Energy

Effects Common to All Alternatives

Development of renewable energy would require road access to the sites. All projects would involve construction, soil disturbance, and the potential for enhanced erosion to impact surface water quality. Solar projects tend to be located on level terrain, such as on valley floors, where there are few sensitive

surface water resources, and soil erosion by water would tend to not be significant.

Wind farms typically consist of a series of turbines located along ridges, at the highest points in a watershed. Typically, soils are thin and the terrain is rocky in these areas. There may be few existing roads and these may be unsuitable for transporting the components and equipment to the site. Constructing new roads or improving existing roads is likely to result in enhanced erosion and a potential threat to surface water quality. Roads would need to be maintained to allow continued access for turbine maintenance.

Impacts on water resources from renewable energy development would vary based on resource-specific and project-specific conditions. Generally, concentrating solar projects would require the greatest amount of water during operation, while wind energy and photovoltaic projects would require only moderate amounts of water resources. In all cases, some supply of water is usually needed to meet the demand to operate these projects for example solar projects often require a water source for cleaning solar panels. These impacts will vary under each alternative due to the acres of land open for solar development and acres of land being managed as ROW avoidance areas.

Effects under Alternative A

Alternative A would manage the most acres of land (80,600) for solar energy development within priority watersheds and would manage no acres as ROW avoidance in wind energy projects. These management actions would result in the greatest impact of all the alternatives on water resources.

Effects under Alternative B

Alternative B would open fewer acres for solar energy development (71,600) in priority watersheds than Alternative A. Alternative B would manage the fewest acres as ROW avoidance (145,400 acres) for wind energy projects other than Alternative A. These factors result in moderate to high impacts compared to Alternative A.

Effects under Alternative C

Alternative C would manage priority watersheds as closed to solar energy development and the most acres as ROW exclusion (268,100 acres) for wind energy projects; this alternative would have the fewest impacts on water resources.

Effects under Alternative D

Alternative D would close acres in priority watersheds to solar energy development and would manage more acres as ROW avoidance (145,500 acres) for wind energy projects than Alternative A, resulting in moderate impacts on water resources.

Effects under Alternative E

Alternative E would close acres in priority watersheds to solar energy development and would manage more acres as ROW avoidance (112,800 acres) for wind energy projects than Alternative A, resulting in moderate to low impacts on water resources.

Water Resource: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

ACECs protect the integrity of sensitive and unique areas within the planning area through restrictions or prohibition of surface-disturbing activities. Where there are restrictions on surface-disturbing activities to protect ACECs, water resources would benefit through the management for other special resource values, such as soils and vegetation. Management of highly erodible soils can prevent increased turbidity in downstream waters and vegetation can help filter contaminants from runoff and contributes to soil stabilization.

Effects under Alternative A

Alternative A would continue managing current ACECs (21,800 acres total) using current land use plan decisions, policy, and regulations. This alternative would provide no new indirect protection to soils and water.

Effects under Alternative B

Alternative B would manage 371,170 acres as current and proposed ACECs. This would provide more indirect protection from surface disturbances to soils and water than Alternative A.

Effects under Alternative C

Alternative C would manage 786,270 acres as current and proposed ACECs. This would provide the most indirect protection from surface disturbances to soils and water of all the alternatives.

Effects under Alternative D

Alternative D would manage 180,000 acres as current and proposed ACECs. This would provide more indirect protection from surface disturbances to soils and water than Alternative A.

Effects under Alternative E

Alternative E would manage 82,770 acres as current and proposed ACECs. This would provide more indirect protection from surface disturbances to soils and water than Alternative A, since more acres would be designated as ACECs.

Water Resources: Cumulative Impacts

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Future Actions – All Alternatives

The management actions proposed in the RMP in conjunction with the past and present activities as well as reasonably foreseeable future actions would have varying impacts on water resources and are summarized by action/reasonably foreseeable future action group below:

- Livestock grazing and wild horse and burro management would result in changes to the current state of water resources unless AUMs and AMLs are adjusted as necessary to protect water resources.
- Mineral resource management would not likely cause any change to the current state of water quality due to NSO and CSU stipulations in priority watersheds.
- Lands and realty actions would continue to add to impacts on water resources as more rights of way which cross water resources are granted. Mitigation would, in general, reduce or negate these impacts on a case-by-case basis.
- Renewable energy exploration and development would not likely impact the current state of ground water resources or surface water quantity assuming a disconnection between the geothermal resource and other aquifers is maintained. The addition of geothermal plants in the planning area would have an additive effect on the potential to decrease surface water quality either during construction or through disruption of surface flow patterns. Project design requirements and mitigation would, in general, reduce or eliminate these impacts.
- Recreational use is expected to increase as population of the planning area increases, which would have an additive effect on reducing surface water quality.
- Priority wildlife habitat areas and special status species management would have a compounding effect on surface water resource by providing for greater protection or preservation of streams as well as the surrounding landscapes.
- Wildland fire management would not likely lead to a measurable change in the current state of water resources.

Incremental impacts on water quality would range from low to moderate and would depend on uses being in compliance with State of Nevada water law, quality standards and permit requirements. Other factors include continued grazing management to meet land health standards, the size and degree of use

restrictions and mitigation measures, the location and number of project developments, and OHV travel management designations.

4.3.4 Vegetation

Summary

The greatest impacts on vegetation, including rangelands, riparian and wetland areas, and invasive weeds, would be from livestock grazing, wild horse and burro activity, water resources management, and wildland fire actions. Special status species and soils management actions would benefit rangelands and riparian and wetland areas by promoting restoration. Surface-disturbing activities on BLM-administered land, including construction, implementation, and maintenance activities; fence building; road maintenance; wild horse and burro gathers; livestock herding; recreational activities such as camping, hiking, and backpacking; vegetation treatments; and site excavations for data recovery would cause short-term disturbance of vegetation by removal or trampling, which may allow weeds to become established.

The effects of each action on vegetation resources are quantified when possible; however, many impacts must be qualitatively assessed when suitable data are not available. A more detailed analysis would follow at the implementation stage, such as an allotment evaluation or a periodic review.

Alternative C would provide the most protection to vegetation, including riparian and wetland vegetation, by restricting development activities and OHV use in these areas. Alternative E would provide a more flexible approach by protecting these areas while allowing for multiple uses. Alternatives A, B and D would provide less protection for riparian and wetland areas. Management actions in the areas of socioeconomic effects and environmental justice would not impact vegetation resources.

Methods of Analysis

Methods and Assumptions

Impacts are determined by assessing which actions, if any, would change vegetation structure or composition, decrease the extent of rangeland or riparian vegetation, allow for increased dominance of invasive weeds, affect habitat value for wildlife species, or decrease grazing potential. Impacts were assessed according to the following methods and assumptions:

- Activities generally affect vegetation by changing plant composition, seral condition, structure, production, and ground or canopy cover.
- Some impacts will be direct, while others will be indirect and affect vegetation through a change in another resource. Direct impacts on vegetation are damage, trampling, or removal of vegetation, resulting in a reduction in areas of native vegetation; mortality

resulting from application of herbicides; and actions that unequivocally reduce total numbers of plant species or reduce or cause the loss of total area, diversity, vigor, structure, or function of wildlife habitat.

- Indirect impacts include those that cannot be absolutely linked to one action, such as decreased plant vigor or health from reduced water quality or quantity. Potential indirect impacts include loss of habitat due to surface disturbance, compaction or occupancy; introduction of noxious and invasive weeds or conditions that enhance the spread of weeds; loss of or reduced size of riparian areas or reduced plant vigor due to reduction of surface water flows as a result of groundwater pumping.
- Many actions will be subject to BMPs. Although BMPs are designed to minimize the effects of projects, they generally cannot eliminate all impacts. This impact analysis assumes that BMPs will minimize but not eliminate possible effects.
- Acres impacted by wildland fire are expected to increase over the life of the plan.
- Appropriate vegetative management will maintain or improve native plant communities to protect soil and water resources while providing habitat, and limit grazing to a level that will not impair plant health.
- Weeds often exploit disturbed areas and are adept at outcompeting many native species; most actions that disturb soils or vegetation will increase the potential for weed infestation.
- Weed infestation will often follow transportation routes, making transmission corridors, roadsides, and trails prime habitat for weeds and making vehicles prime mechanisms for the spread of weeds
- Noxious and invasive weeds will continue to be introduced and spread as a result of ongoing vehicle traffic, recreational activities, wildlife and livestock grazing, and surface-disturbing activities.
- Noxious and invasive weeds will further expand into native plant communities, and disturbances to these communities would expand opportunities for the spread of non-native invasive plant species; and the BLM would continue to treat noxious and invasive weeds and pests.
- Weeds are most likely to thrive in disturbed areas, including burned areas, along road cuts or in staging areas, degraded or unhealthy rangelands, and where soils have been disturbed.
- Weed and pest control will be carried out in coordination with the appropriate county, weed and pest control district, and owners of

adjacent property, but total control of the spread of noxious weeds is unlikely under any alternative.

The following indicators were used to assess the degree of impacts on vegetation:

- Vegetation types impacted
- Acres of vegetation lost or restored

Nature and Type of Effects

The nature and type of effects vary by resource and alternative as described in the following sections.

Vegetation: Effects from Air Quality Management

Effects Common to All Alternatives

Restrictions on prescribed fire use to protect air quality may reduce opportunities to burn in any given year. This may indirectly hinder the achievement of vegetation management goals by preventing certain treatments from being implemented. However, these restrictions would be unlikely to completely prevent implementation over the long term, so impacts are likely to be minor.

Vegetation: Effects from Climate Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, there is no consideration of climate change impacts in project design and operations. Climate change would continue without a planned BLM response, which could result in fragmentation of vegetation communities, a decrease in suitable habitat for some plant species, and an increase for others.

Effects under Alternative B

Under Alternative B, climate change impacts would be considered in project approval and funding, and specialists would use adaptive management in considering climate change in project design and operation. Rapid Ecological Assessment would be employed to assess impacts of climate change on vegetation and maintain connectivity of habitat areas. These approaches would increase the ability of BLM management to respond to climate change. Adaptive management for climate change would improve management of vegetation resources.

Effects under Alternative C

Effects under Alternative C would be the same as under Alternative B.

Effects under Alternative D
Effects under Alternative D would be the same as under Alternative B.

Effects under Alternative E
Effects under Alternative E would be the same as under Alternative B.

Vegetation: Effects from Soil Resources

Effects Common to All Alternatives
Measures to reduce soil erosion, such as seeding and improving vegetative cover, would reduce compaction and increase infiltration. This would indirectly improve vegetation health over the short term. As a result, vegetative productivity and diversity would be increased. This would increase litter, soil fertility, infiltration, and nutrient cycling in the long term.

Effects under Alternative A
Alternative A limits OHV use to designated roads and trails in highly erosive soil areas. This approach would protect vegetated areas not currently used as roads or trails.

Effects under Alternative B
Alternative B would apply an erosion control plan to projects on slopes, would apply soil amendments to minimize soil disturbance, and apply a CSU stipulation on highly erosive soils. These management approaches would diminish erosion and soil damage and protect vegetation more than Alternative A,

Effects under Alternative C
In addition to the approaches under Alternative B, Alternative C would minimize soil crust breakage by applying mulch or lop and scatter techniques when thinning pinyon-juniper. These management approaches would diminish erosion and soil damage compared to Alternative A and would better protect vegetation.

Effects under Alternative D
In addition to the approaches under Alternatives B and C, Alternative D would also mandate re-seeding of disturbed soils to minimize erosion. Along with Alternative E, Alternative D includes the most specific actions to reduce soil damage.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative D.

Vegetation: Effects from Water Resources

Effects Common to All Alternatives

Many water sources (excluding underground) in the planning area are associated with riparian and wetland areas, the protection of which would be assessed when obtaining, using, or developing these water sources.

Effects under Alternative A

Alternative A limits BLM-authorized activities in degrading watersheds and specific portions of urban watersheds at immediate risk of degradation, and limits OHV use in riparian areas. These approaches protect water supply in specific localized areas, but provide limited oversight of watershed health and water quality on a regional scale. Impacts on water resources would be reduced by complying with water quality regulations and implementing BMPs and land health standards. This would indirectly protect vegetation. However, Alternative A would provide the fewest action- and location-specific protections of all alternatives.

Effects under Alternative B

In addition to the efforts under current management, Alternative B and the other action alternatives would establish a listing of priority watersheds and priority water supply areas based on presence of wildlife habitat, among other factors. These policies may improve vegetation management in riparian areas by more effective management of water supply.

Effects under Alternative C

In addition to the approach under Alternative B, Alternative C would also use permitting, land acquisitions, and other realty actions to acquire minimum pool and in-stream flows or to gain access to water sources or developments. The actions would improve hydrologic function in riparian areas.

Effects under Alternative D

Effects under Alternative D would be similar to those described for Alternative C.

Effects under Alternative E

Effects under Alternative E would be similar to those described for Alternative C.

Vegetation: Effects from Vegetation Management

Effects Common to All Alternatives

Vegetation treatments would continue to occur on rangelands to meet land health standards. Range improvements would result in direct, minor, and short-term disturbances to vegetation, including loss of vegetation cover and changes in plant composition near each project. Indirect effects include increased susceptibility to noxious and invasive weeds transported by livestock, wild

horses and burros, wildlife, recreational activities, and other disturbances. Actions to decrease weeds on BLM-administered lands would indirectly improve rangeland health and community composition by increasing native species, restoring a more natural fire regime, and decreasing the risk of catastrophic wildfire in both the short and long term. Post-fire rehabilitation efforts, including temporary grazing closures, would reduce the ability for weeds to invade and would support native species growth. This would indirectly help to achieve healthy rangeland conditions in the long term.

Riparian and wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows. Specific objectives for meadows and riparian areas would prioritize restoration of these communities, making restoration efforts more effective and efficient. Restoration efforts are designed to achieve reduced erosion and improved water quality; sediment filtration; floodplain development; floodwater retention; groundwater recharge; stabilized stream banks; and/or habitat and water depth, duration, and temperature necessary for fish and waterfowl habitat, and biodiversity.

Vegetation restoration projects would reestablish an understory of forbs and perennial bunchgrasses that are less susceptible to fire than invasive annuals, such as cheatgrass. This would reduce the risk of catastrophic wildfire on rangelands, which might otherwise spread into riparian and wetland areas.

Restoring appropriate levels of forage production in uplands would disperse livestock and reduce the need for cattle to concentrate in the more productive riparian and wetland areas for sustenance. The promotion of upland plant community health can help promote the distribution of livestock which can decrease pressure and use of riparian areas. Additionally, upland plant community health can help reduce erosion, leading to decreased sediment loading in riparian areas.

Effects under Alternative A

Under Alternative A, riparian management actions would continue to reduce the potential for degradation of riparian wildlife habitat. The implementation of BMPs that address non-grazing impacts, such as water diversions, roads, and recreation, would avoid and mitigate many surface disturbances and erosion. Maintenance of healthy forests through pinyon-juniper removal or thinning would occur on a case-by-case basis. The BLM would continue to work towards meeting Rangeland Health Standards throughout the CCD.

Effects under Alternative B

Under Alternative B, a pinyon-juniper removal and thinning program would be initiated to aid in sagebrush restoration and improving woodland health. As many as 20,000 acres of pinyon-juniper woodlands would be converted to sagebrush habitats each year for the first decade, which will, reduce the overall coverage of pinyon-juniper woodlands. An additional 6,500 acres would be

thinned each year resulting in a less dense woodland stand, improved tree health, increased sunlight/water/available nutrients, and regrowth of understory grasses, forbs, and shrubs. Alternative B would maximize sustained yield of forest products and economic development, and would also allow salvage logging of burned stands. Alternative B would also limit stream crossings to minimize sedimentation.

Alternative B includes vegetation treatments for rangeland restoration, and aim to improve ecological site conditions, to benefit land health. Revegetation efforts would use plant species that have high success rates, not necessarily native species, promote maintenance of ecological integrity, and aim to restore depleted understory vegetation. All these approaches would benefit vegetation by maintaining and restoring its condition, more than current management. Alternative B would allow sagebrush removal when needed for mineral extraction or other purposes, which is less protective than approaches under the other action alternatives. This alternative lacks provisions to promote native plant use in rehabilitation and stabilization projects and to restrict grazing in riparian areas.

Alternative B and the other action alternatives would use appropriate control methods, including mechanical, biological and chemical to eradicate or control invasive, nonnative species and noxious weeds, and implement other policies to reduce the spread of noxious weeds.

Effects under Alternative C

Under Alternative C, a limited pinyon-juniper removal (as many as 3,500 acres per year) and thinning project (up to another 1,500 acres per year) would be initiated, to restore sagebrush ecosystems and woodland health (**Table 2-1**). Alternative C would manage vegetation with a focus on wildlife habitat, forest health and fuels reduction, would allow salvage logging only to protect public safety, and includes mitigation measures for conducting vegetation treatments. For rehabilitation projects, Alternative C promotes use of native plant material and restoration techniques to establish desired plant communities. Alternative C would limit woodcutting or vegetative removal in riparian areas. Conservation of vegetation resources would be greatest under this alternative.

Wildlife, livestock, or recreation implementation plans would consider impacts on riparian areas and meadows, and consider limits to livestock grazing in sensitive riparian areas. In attaining Proper Functioning Condition (PFC) the interim goal would be 85 percent (functioning at risk with an upward trend), progressing towards or attaining PFC, compared to 75 percent under Alternative B. Rangeland treatments are similar to Alternative B, but Alternative C does the most to promote revegetation with native species and to limit sagebrush removal.

Effects under Alternative D

Alternative D would require a comprehensive restoration strategy and a utilization plan for by products of pinyon-juniper treatments before any removal of this vegetation type. Alternative D would also manage for healthy and diverse forestlands, and consider impacts on riparian areas, as under Alternative C. PFC goals would be the same as Alternative C. This would protect against sagebrush removal in urban interface areas only. Alternative D would allow salvage logging for public safety and to meet demand for wood, and includes mitigation measures as under Alternative C.

Effects under Alternative E

Alternative E has a pinyon-juniper removal and thinning program to aid in sagebrush restoration. As many as 8,500 acres would be converted to sagebrush habitats each year and an additional 6,500 acres thinned each year, fewer than anticipated under Alternative B, but more than the other alternatives. Alternative E would also manage for healthy and diverse forestlands, consider impacts on riparian areas, and protect sagebrush from removal, as under Alternative C. PFC goals would be the same as Alternative C. Alternative E would allow salvage logging for public safety, forest health, and to meet demand for wood and includes mitigation measures as under Alternative C.

Vegetation: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Habitat restoration actions would benefit upland and riparian vegetation that provides wildlife habitat. Improving aquatic habitats involves rehabilitating wetland and riparian vegetation to foster healthy aquatic communities by decreasing sedimentation, providing structural complexity, and restoring suitable water temperatures, canopy cover, and bank stabilization. Actions to minimize erosion and sedimentation would indirectly benefit riparian and wetland vegetation by reducing soil disturbance and increasing infiltration, leading to improved plant vigor and productivity.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Vegetation: Effects from Special Status Species Management

Effects Common to All Alternatives
Special status species management across all alternatives would restrict or prevent certain activities within special status species habitat. Additional permitting requirements such as plant, Greater Sage-Grouse, bat, and raptor inventories would be required. Such actions to avoid impacts on listed or sensitive species or their habitat could directly affect implementation, effective placement, or timing of vegetation management treatments. As a result, certain management goals may be precluded, but wildlife habitat would be protected. Maintaining and improving special status species habitat would improve riparian and wetland areas that provide important resources for these species. Management aimed at maintaining and improving special status species habitat would directly impact vegetation by helping to achieve rangeland and forest health and wildlife habitat goals in these areas. Management of Lahontan cutthroat trout habitat could directly restrict certain vegetation treatments that would occur in adjacent riparian woodlands, such as soil disturbance or use of chemicals.

Impacts from special status species plant management would increase the need to monitor areas containing sensitive plant to determine health, disease, unauthorized harvesting, invasive plants, recreational impacts, and impacts associated with livestock grazing and climate change.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Direct impacts on vegetation resulting from wild horse and burro management actions include browsing and trampling of vegetation, and compacting soil, which alter the amount, condition, production, and vigor of vegetation in grazed areas. Wild horses and burros directly impact riparian vegetation around watering locations by trampling and grazing plants, which reduces riparian species cover

and diversity, and may result in localized area of invasive plant dominance. Protection and development of seeps and development of alternative water sources mitigate impacts of wild horses on riparian and wetland habitat. Vegetation recovery on a burned area could be slowed or reduced by wild horses and burros.

Under all alternatives, the BLM would manage wild horses and burros in HMAs CCD with rangeland health evaluations to monitor vegetation health and density.

Effects under Alternative A
The BLM would manage wild horses and burros in HMAs as shown in **Table 2-1**. AMLs would be maintained at levels in keeping with the productivity of the habitat area. Periodic reductions in wild horse levels may be required. Lack of flexibility in current management may result in over-grazing by wild horses and burros.

Effects under Alternative B
Under Alternative B, through the rangeland health evaluation process, the adequacy of habitat components would be assessed to determine levels that could support healthy rangeland and healthy herds over the long term. Suitable, acceptable, marginal, and unsuitable habitat would be identified through a modified habitat evaluation process, and may lead to adjustments in AML or exclusions from AML due to water availability, sparse vegetation, or other factors. This alternative has an increased component of adaptive management relative to Alternative A. This would better protect rangeland vegetation.

Effects under Alternative C
Effects would be similar to those discussed under Alternative B.

Effects under Alternative D
Effects would be similar to those discussed under Alternative B.

Effects under Alternative E
Effects would be similar to those discussed under Alternative B.

Vegetation: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Vegetation response to fire depends on the size, location, intensity, season, timing, and amount of precipitation, preexisting plant community condition, and the abundance of noxious and invasive weeds in the area. Fires have direct effects by changing the composition of the plant community, delaying plant succession, and removing woody vegetation and plant litter. Wildland fires may burn hot enough to kill soil organisms and root systems, resulting in diminished plant recruitment and growth rates. ESR treatments, such as seeding with native perennial species, would be implemented to restore degraded vegetation and

directly improve vegetation health in the long term. These treatments indirectly deter the spread of weeds and invasive species.

Wildland fires create an opportunity for noxious and invasive weeds to become established or spread by removing aboveground vegetation, leaving burned areas more susceptible to noxious and invasive weeds. Some species of noxious and invasive weeds respond well to post-fire conditions and out-compete native species. Firefighting equipment might also introduce or spread noxious and invasive weeds, disturb the soil surface and remove vegetation, creating an opportunity for noxious and invasive weeds to become established.

Fuels management actions would result in short-term direct loss of vegetation on a small scale. Projects would reestablish desirable vegetation communities, providing for healthy, diverse rangelands, riparian and wetland areas over the long term. These actions would allow fire to play its natural role more frequently and would reduce the likelihood of catastrophic wildfire. This would protect native vegetation in the long term.

Suppressing wildfire and creating fuel breaks would prevent catastrophic destruction of native vegetation and would preserve native vegetation and diversity and prevent noxious weed invasion in these areas over the long term. Surface disturbance resulting from fire line construction, use of heavy equipment, and other fire suppression activities would damage vegetation and accelerate soil erosion in localized areas. However, these areas would be rehabilitated to minimize long-term impacts.

Effects under Alternative A

Alternative A manages wildfires in Category A, B C, and D, each with target fire suppression goals to protect property and resources. Fire suppression would protect vegetation in areas threatened by fire, but can contribute to more damaging fires if dense understory vegetation builds up.

Effects under Alternative B

Alternative B would develop fire management plans to guide response to wildfire and prioritize suppression activities, and improve ESR. Alternative B would include provisions to prevent cheatgrass and other invasive species from dominating burned areas and altering the natural fire regime by re-establishing appropriate species/subspecies. This approach would benefit vegetation more than current management.

Effects under Alternative C

Management under Alternative C would be similar to Alternative B, with more focus on protecting sensitive biological, cultural, and other natural resources, and use of native species in revegetation. This alternative would do the most to protect vegetation from fire damage.

Effects under Alternative D
Management actions under Alternative D would be similar to those described under Alternative B, but would focus resources on the urban interface zone.

Effects under Alternative E
Effects would be similar to those discussed under Alternative B.

Vegetation: Effects from Cultural Resources Management

Effects Common to All Alternatives
In general, cultural resource management may place use restrictions or specific protection measures on areas containing upland, riparian and wetland vegetation. Protections to cultural resources would prevent direct disturbance and fragmentation of vegetated areas. These areas are small relative to the amount of vegetation in the planning area; therefore, impacts would be localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Conservation measures and law enforcement actions to protect paleontological resources would prevent direct disturbance to and degradation of vegetated habitat, while potentially impacting the ability to implement vegetation treatments in certain areas. These areas are small relative to the acres of vegetation; therefore, impacts would be localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Visual Resources Management

Effects Common to All Alternatives
Implementing VRM guidelines, particularly managing WSAs as Class I, would increase the difficulty of accomplishing vegetation management actions and may affect the dimensions and locations of vegetation treatments, because such vegetation treatments could change the visual character of vegetated areas. Class I and II guidelines would limit the scope of stand treatments or prescribed burning and would restrict the number, size, and location of treatments and prescriptions.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
The proposed vegetation management actions allow the utilization of vegetative products under all the alternatives for both personal use and resale (commercial). Products available for harvest include but are not limited to firewood, Christmas trees, posts, poles, lumber, wildings, cuttings, native seed, and pine nuts. Harvest would only be allowed on the maximum treatment acres proposed under each alternative with the exception of native seed. Native seed collections typically occur on rangeland sites and include harvest seed from grasses, forbs, and shrubs for subsequent seeding of fires or restoration sites. The issuance of these permits is dependent upon seed availability/viability and

site health, which varies significantly from year to year. Since the collection of native seed typically involves low-impact hand harvest, impacts on vegetation are very minimal.

The collection and removal of vegetative products may result in the introduction of nonnative species, damage to vegetation from vehicles and equipment, increased activity fuels (slash), creation of access roads if permittees drive off existing roads to collect products. These impacts are mostly associated with personal use activities that are not regularly monitored. All alternatives allow for the personal and commercial use of vegetative products, with the exception of commercial use of pine nuts.

Effects under Alternative A

Current management would continue under Alternative A, Wood product sales would be restricted within identified high erosion areas should ground cover be reduced more than 50 percent. Pinyon pine nut harvests for personal use would be allowed as many as 25 pounds without a permit. Commercial collection of pine nuts may be allowed with Field Manager approval and the issuance of a commercial permit for fair market value.

Effects under Alternative B

Alternative B and the other action alternatives would prohibit the harvest of live or dead/down cottonwood or aspen trees on personal-use firewood permits. This approach would benefit vegetation resources. Alternative B would also allow extraction of vegetative material for biomass facilities. Pinyon pine nut limits for personal use would be the same as Alternative A and commercial permits may be issued. The focus of Alternative B is opening forest products to development and utilization.

This alternative has the highest amount of vegetative product removal. The actual impacts of this removal will depend upon current and future markets. Vegetative product removal would be limited to the acres of treatment proposed under this alternative and these acres are based on sustained yield calculations of available woodland. Commercial permits would contain stipulations to protect the soil, water, and vegetation. With proper monitoring the effects of these activities are likely to be less than the effects described for dispersed personal use activities.

Effects under Alternative C

Alternative C management would be similar to Alternative B with a 10 lb. limit on pinyon nut harvests for personal use and no commercial permits would be issued. The focus of Alternative C is resource conservation. This would benefit vegetation resources more than current management or Alternative B.

Effects under Alternative D

Effects would be similar to those discussed under Alternative B with fewer acres available for product harvest.

Effects under Alternative E
Effects would be similar to those discussed under Alternative B with fewer acres available for product harvest.

Vegetation: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Ineffective livestock grazing management may harm vegetation by reducing its amount, condition, production, and vigor. Impacts from grazing are usually related to a long duration of use during the growing season, resulting in lower vigor of grazed species and a change in species composition. Overuse of riparian and wetland vegetation next to water sources, troughs, and stock reservoirs often cause soil disturbance and a loss of plant cover. Livestock directly impact riparian vegetation around watering locations by trampling and grazing plants, which reduces riparian species cover and diversity. Livestock may also contribute to the spread of weeds. Livestock grazing management can be used to provide positive impacts on rangeland, such as reducing fuel buildup.

Actions to improve rangeland health are designed to improve the health and diversity of native vegetation communities and to rehabilitate disturbed areas. Range improvement actions would directly help to increase native vegetation and subsequently decrease the number and extent of weed populations in the long term.

Collecting monitoring data would allow problems to be detected so that corrective action could be taken to improve rangelands and lower weed spread. Unhealthy rangelands have a higher abundance of cheatgrass and noxious weeds. Fire spread increases with the amount of cheatgrass and noxious weeds. Therefore, unhealthy rangelands increase the likelihood of large catastrophic fires that damage and remove species of native vegetation. Following catastrophic fire, burn areas are more susceptible to noxious weed invasion. As such, native vegetation and wildlife habitat would be protected by maintaining healthy rangelands. This would indirectly prevent noxious weed invasion.

All alternatives would comply with standards and guidelines for livestock grazing, and manage allotments toward meeting Rangeland Health Standards. All alternatives would rest burned areas from livestock grazing for a minimum of two growing seasons.

Effects under Alternative A
Under current management, existing range management programs and closures would continue (see **Table 2-1**), These programs promote rangeland health and make provisions to improve habitat for wildlife, but some lands do not meet rangeland health standards and also likely provide poor wildlife habitat due to loss of understory cover and forage.

Effects under Alternative B

Under Alternative B, there would be a modest increase in acreage unavailable to grazing, and increased focus on restoration. Effects would be similar to Alternative A.

Effects under Alternative C

Under Alternative C, grazing utilization levels (measured in AUMs) would be reduced to 27 percent of current levels. If the reduced utilization level did not improve the ecological condition of allotments prior to the next periodic review, further reductions could be made based on monitoring. These provisions would improve the health of vegetation in allotments that were not meeting Rangeland Health Standards due to overgrazing, and could reduce soil compaction, disturbance of sensitive riparian areas, or spread of noxious weeds.

Effects under Alternative D

Under Alternative D, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments during a periodic review process. Effects would be similar to Alternative A.

Effects under Alternative E

Under Alternative E, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments during a periodic review process. Effects would be similar to Alternative A.

Vegetation: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Impacts on riparian and wetland vegetation could result from fluid, leasable, and locatable mineral development and mineral material sales and disposal. Most minerals management impacts on vegetation are on the sagebrush and saltbush scrub communities, so impacts on forests and riparian and wetland vegetation are lessened. Direct impacts include removal or damage to vegetation due to excavation and toxic responses from chemical use in mineral extraction; indirect effects include increased exposure to dust associated with construction and use of access roads. Under all alternatives, BMPs would be implemented, and revegetation would be required, thus minimizing impacts. Unnecessary roads would be managed as closed to reduce fragmentation and to restore habitat. In addition, special status species habitat would be avoided, thus protecting some vegetated areas.

Effects under Alternative A

Alternative A opens approximately four million acres (**Table 2-1**) to leasing, and would close 839,100 acres to fluid mineral leasing, and 738,000 acres to nonenergy leasable minerals. Alternative A has the greatest likelihood to impact vegetation.

Effects under Alternative B

Compared to Alternative A, Alternative B would manage a similar number of acres as open to fluid mineral leasing, but would manage 2,120,200 acres as open with CSU stipulations and 404,600 acres as open with NSO stipulations. Due to these additional stipulations, Alternative B would result in fewer impacts on vegetation from mineral leasing.

Effects under Alternative C

Alternative C would open the fewest acres (**Table 2-1**) and would close the most acres to mineral development. Acreage open to mineral materials and nonenergy leasable minerals would be 55 percent less than under current management; acres open to fluid mineral leasing would be 31 percent less than current management. Alternative C would result in the fewest impacts on vegetation from mineral leasing.

Effects under Alternative D

Effects under Alternative D would be similar to those discussed under Alternative B.

Effects under Alternative E

Effects under Alternative E would be similar to those discussed under Alternative B.

Vegetation: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Managing BLM-administered lands to provide dispersed recreation could impact rangeland, forest, and riparian vegetation directly through human trampling or removal of vegetation and indirectly through human disturbance, soil compaction, weed introduction or spread, and increased dust.

OHV use is the most damaging form of recreation, resulting direct damage or removal of vegetation, trampling and disturbance and indirect impacts on vegetation due to in-stream erosion, soil compaction, and potential for human-caused wildfire. OHV management actions that result in increased OHV use would result in localized impacts on forest resources. Impacts could include degradation of habitat or sedimentation of waterways. OHV activities in undisturbed and remote areas could distribute weed seeds into weed- free areas. These effects could decrease plant vigor and productivity and alter community plant composition.

All alternatives would provide a wide range of developed and dispersed recreation opportunities to meet projected recreation demand in the planning area. All alternatives would also manage recreation use on BLM-administered land to protect natural resources, provide for health and safety, and minimize conflicts among land uses.

Effects under Alternative A

Under this alternative the BLM would continue to manage 67,700 acres in the Walker Lake and Alpine SRMAs. Managing lands as SRMAs could encourage additional use of these lands and thus increase damage to soil and vegetation; however, by designating SRMAs, development and logging would be reduced in these areas. Under SRMAs, management actions can reduce the impacts of recreational activities, and adverse impacts can be monitored and addressed.

OHV use would be the most detrimental to vegetation under Alternative A. Most of the planning area (3,840,300 acres) would be open to OHV use with minimal limited (924,300 acres) and closed (31,800 acres) designated areas.

Effects under Alternative B

Under Alternative B, the BLM would manage 76,100 acres as SRMAs, 12 percent more than Alternative A. Alpine and Walker Lake SRMAs would be maintained but reduced in size, and four additional SRMAs would be designated, identifying recreation as the principal use of these lands. Managing lands as SRMAs could encourage additional use of these lands and thus increase soil compaction and dust, but would also protect lands from development. Alternative B would also establish 7 ERMAs, which provide less funding for public access and improvements than SRMAs, and thus may have lower visitation.

Under Alternative B, the BLM would manage 95,300 acres as open to OHV use, 4,677,000 acres as limited, and 26,700 acres as closed. This alternative would reduce impacts from OHV use compared to current management, but less than the other action alternatives.

Effects under Alternative C

Under Alternative C, 74,700 acres would be designated as SRMA, 10 percent more than Alternative A. The Walker Lake SRMA would be maintained and the Alpine SRMA expanded, and one new SRMA would be established, Sand Mountain. Fourteen ERMAs would also be established. OHV use would be the most restricted under this alternative, with 1,190,500 acres closed, 3,013,500 acres limited, and 1,300 acres open to OHV use. Alternative C would result in the fewest impacts on vegetation resources from recreation because management would minimize development of recreational facilities that attract visitors and would place the most limitations on OHV use.

Effects under Alternative D

Effects would be similar to those described under Alternative B, but Alternative D would be more effective at reducing impacts from OHV use by further restricting OHV permitted use areas, including use in important habitat areas. Under this alternative, the BLM would manage 30,600 acres as closed, 4,748,400 acres as limited, and 22,700 acres as open. Three new SRMAs would be designated, and one (Walker Lake) closed, for a total of 67,100 acres in SRMAs,

approximately the same as Alternative A. Four ERMAs would also be established, including one in the urban interface zone.

Effects under Alternative E

This alternative would designate four new SRMAs while reducing the size of Walker Lake for a total of 106,100 acres, 57 percent more than Alternative A. Fourteen ERMAs would also be established. Under this alternative, the BLM would manage 24,100 acres as closed, 4,717,300 acres as limited (including priority wildlife habitat areas), and 55,700 acres as open to OHV use. These closure levels and limitations are more protective of vegetation resources than Alternatives B, but less protective than Alternatives C or D. All the action alternatives are substantially more protective of vegetation from OHV impacts than current management.

Vegetation: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Maintaining roads would allow access to riparian areas and forests for wildfire management and suppression, when necessary. This would protect native vegetation and would help achieve riparian and wetland rehabilitation goals. However, roads may facilitate the spread of noxious weeds into native vegetation. BMPs and mitigation measures to minimize this spread would indirectly help improve vegetation health and stand composition in the long term.

Road and trail construction could directly impact rangelands, forests, and riparian and wetland areas through vegetation removal and could cause indirect impacts through soil compaction, invasive and noxious weed spread, and dust proliferation. This could reduce plant diversity and vigor in the long term. Construction of new roads and trails through riparian areas can alter hydrologic function, which may lead to channelization, incision, and lateral erosion, which can result in loss of riparian vegetation.

Effects under Alternative A

Under Alternative A, there would be no change to the current acreage open to motorized and mechanized travel (see **Table 2-1**) or limited to existing routes. Alternative A would result the greatest impacts from road and trail construction, including vegetation removal, soil compaction, and increased dust. These activities would decrease vegetation health and vigor, alter stand composition, and lower habitat value. However, improved and increased access to stands would also facilitate implementation of vegetation treatments and allow for multiple uses.

Effects under Alternative B

Under Alternative B, over 3,500,000 additional acres (**Table 2-1**) would be limited to existing routes. The same acreage would be managed as closed to

motorized travel as under Alternative A. The increase in acres restricted to existing routes would provide more protection for vegetation resources from road impacts than under current management, while maintaining a focus on economic development.

Effects under Alternative C

Under Alternative C, an additional 1.5 million acres (**Table 2-1**) would be managed as closed to motorized travel and an additional 2 million acres limited to existing routes. The smallest acreage would remain open to motorized travel, resulting in the lowest level of impacts on vegetation, but also increased difficulty in accessing these resources for management or development.

Effects under Alternative D

Alternative D effects would be similar to those described under Alternative B, with fewer acres open to motorized and mechanized travel and more limited to existing routes.

Effects under Alternative E

Under Alternative E, effects would be similar to those described under Alternatives B and D.

Vegetation: Effects from Lands and Realty

Effects Common to All Alternatives

Land and realty management actions would result in direct effects, such as short-term surface disturbance and vegetation removal, and indirect effects such as increased susceptibility to noxious weed invasion or spread of existing weed patches. Disturbed areas would be reclaimed and seeded. Land sales could affect vegetation resources by causing habitat loss and changing the vegetative cover through urbanization or agricultural or industrial development.

Land disposals could affect vegetation through changes in vegetative cover caused by urbanization or agricultural or industrial development. Vegetation and wildlife habitat value would be given consideration in disposal and acquisition decisions. Impacts on rangeland, riparian, or forest vegetation would vary on a case-by-case basis, but impacts would be minimized because only lands with little resource value would be identified for disposal, Acquisition of rangelands, forests or riparian areas would provide additional opportunities to achieve vegetation management objectives.

Direct effects from location of ROWs include surface disturbance and removal of vegetation to construct facilities such as power transmission lines, pipelines, roads and communication facilities. ROWs can indirectly cause habitat alteration, soil compaction, noxious weed invasion, and increased dust. Most of the footprints are localized but ROWs are linear and may stretch for miles, resulting in fragmentation of vegetation communities. In the long term, this would lower vegetation health and vigor, alter stand composition, and lower

habitat value. Implementation of mitigation measures including requirements to reclaim and seed disturbed areas would reduce surface disturbance impacts.

Effects under Alternative A

Alternative A does not delineate additional ROW avoidance or exclusion areas. Existing ROW exclusion areas (**Table 2-1**) would continue current management. Habitat fragmentation, loss of vegetation, and weed spread would continue. Under this alternative, 179,700 acres of BLM-administered land would be identified for disposal. Disposal lands may enhance vegetation resources, if the disposal enables BLM is able to acquire other land to form contiguous habitat parcels.

Effects under Alternative B

Under Alternative B, over a million acres (**Table 2-1**) would be set aside as ROW avoidance areas. Current management includes no areas. ROW exclusion areas and lands identified for disposal would remain at similar levels to Alternative A. Under this Alternative, 273,500 acres of BLM-administered land would be identified for disposal. Overall, management under Alternative B would be more protective of vegetation than current management because of the establishment of avoidance areas.

Effects under Alternative C

Under Alternative C, 2,675,800 acres would be managed as ROW exclusion areas and over 369,000 acres (**Table 2-1**) as avoidance areas. In addition, no BLM-administered land would be identified for disposal under this alternative. This alternative would provide the most protection to vegetation from ROW development on BLM-administered land.

Effects under Alternative D

Impacts under Alternative D would be similar to Alternative B except more avoidance area acres would be designated (1,226,100 acres). This alternative would protect vegetation from ROW development more than current management but less than the other action alternatives.

Effects under Alternative E

Under Alternative E, the BLM would manage 605,900 acres as ROW exclusion areas and 1,448,200 acres as ROW avoidance areas. Acres identified for disposal would also increase.

Vegetation: Effects from Renewable Energy

Effects Common to All Alternatives

Direct impacts on vegetation could occur from renewable energy projects with issuance of ROWs, which require vegetation clearing and would disturb or destroy vegetation. Indirectly, ROWs may spread or introduce invasive and noxious weeds, thereby reducing rangeland or riparian habitat health and

diversity. However, BMPs, stipulations, and mitigation measures would be implemented. This would minimize impacts on vegetation.

Effects under Alternative A

Under current management, no avoidance areas for wind energy have been designated, and approximately 900,000 acres (**Table 2-1**) are variance areas for solar projects. Variance areas allow development, but require provisions to protect resources in the area. Outside variance areas, utility-scale solar energy development is not permitted. Alternative A would provide little protection to vegetation from renewable energy impacts.

Effects under Alternative B

Alternative B would designate approximately 775,000 acres as variance areas for solar energy development and 1,220,200 acres as avoidance areas for wind energy turbines or transmission lines. Designating avoidance areas would protect vegetation from disturbance and limit indirect effects, such as noxious weed invasion or spread caused by development. These provisions would provide more protection to vegetation in the designated areas than current management.

Effects under Alternative C

Renewable energy impacts on fish and wildlife would be reduced most under Alternative C due to the designation of approximately 2,073,200 acres as wind energy exclusion areas. Designating exclusion zones would protect against direct disturbance and limit indirect effects, such as noxious weed invasion, providing the greatest benefit to vegetation. Approximately 580,000 acres would be managed as variance areas for utility-scale solar development, preserving more acreage from large-scale solar projects.

Effects under Alternative D

Impacts under Alternative D would be similar to Alternative B.

Effects under Alternative E

Impacts under Alternative E include 629,900 acres of variance areas designated for utility-scale solar development, and 629,900 acres in wind energy exclusion areas. This alternative would protect vegetation more than current management or Alternatives B or D, but less than Alternative C.

Vegetation: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Special management areas such as ACECs result in increased protection of vegetation resources, and long-term improvement or maintenance of habitat quality as a result of special management and use restrictions in these areas. ACEC management could benefit vegetation in forests, riparian and wetland areas, and rangelands by restricting development in these areas. However, establishment of ACECs could restrict vegetation management activities.

Effects under Alternative A

Under current management, the planning area includes six ACECs, the largest being the Stewart Valley Paleontological Area (**Table 2-1**), for a total of 21,800 acres. These areas restrict development to protect sensitive resources, and provide incidental protection to vegetation from loss or damage. Under this alternative, only 6 acres of riparian and wetland areas are protected in ACECs.

Effects under Alternative B

Under Alternative B, an additional nine ACECs would be established in the planning area, for a total of 371,170 acres, including 1,500 acres of riparian vegetation. Management of ACECs would enhance protection of vegetation resources from development in these areas.

Effects under Alternative C

Under Alternative C, an additional 18 ACECs would be established in the planning area, for a total of 786,270 acres, including 2,400 acres of riparian vegetation. This alternative would protect the largest amount of land in ACECs and includes ACECs for special status plant and wildlife species. Management of ACECs would enhance protection of vegetation resources from development in these areas.

Effects under Alternative D

Under Alternative D, 180,000 acres would be protected in a total of ten ACECs. This amount includes 800 acres of riparian vegetation. This alternative manages more acreage in ACECs than Alternative A, but fewer than Alternatives B or C. Management of ACECs would enhance protection of vegetation resources from development in these areas.

Effects under Alternative E

Under Alternative E, 82,770 acres would be protected in eight ACECs, including 300 acres of riparian vegetation. This alternative manages more acreage in ACECs than Alternative A, but fewer than the other action alternatives. Compared to Alternative A, management of ACECs would enhance protection of vegetation resources from development in newly designated ACECs.

Vegetation: Effects from Back Country Byways

Effects Common to All Alternatives

Back country byways may attract more tourism to areas they access and could increase human use and degradation of nearby vegetated areas through impacts and the introduction and spread of invasive species. Such effects initially would be minor and localized but over time could expand.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from National Trails

Effects Common to All Alternatives
Management actions for preserving national historic trails would provide vegetation protection through habitat preservation by restricting surface-disturbing and other disruptive activities within the protected zone of the trail.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under this alternative, eligible river corridors would be given protection either through continued interim protective management or the development of comprehensive river management plans. This would provide additional measures along the segments of the East Fork Carson River that would promote riparian health and hydrologic function.

Effects under Alternative B
There would be no objective to protect eligible river segments under Alternative B, and therefore no special protection to vegetation found in these segments.

Effects under Alternative C
Alternative C would maintain the free-flowing character of eligible river segments, and allow no activities within the river corridor that would alter the tentative classification of those river segments. These management actions would protect riparian and wetland vegetation found in these river segments, more than Alternatives A or B.

Effects under Alternative D
Management would be the same as under Alternative C.

Effects under Alternative E
Management would be the same as under Alternative C.

Vegetation: Effects from Wilderness Study Areas

Effects Common to All Alternatives
As protected areas, WSAs would prevent disturbance to native vegetation in certain riparian and wetland areas, forests and rangelands. Vegetation treatments in these areas would need to be evaluated for their impacts on wilderness characteristics. All alternatives would maintain the same acreage of WSAs (**Table 2-1**). Lands found to possess wilderness characteristics will be managed for wilderness values along with other uses, while applying management restrictions to reduce impacts on wilderness characteristics. No surface disturbance, permanent new development or ROWs would be allowed in these lands. These restrictions would benefit vegetation resources in the WSAs by reducing loss and fragmentation associated with development.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
No BCWCAs would be designated under this alternative.

Effects under Alternative B
No BCWCAs would be designated under this alternative.

Effects under Alternative C
Under Alternative C, 817,800 acres would be preserved as Back Country Wildlife Concentration Areas, with plans to safeguard habitat, allow only dispersed non-motorized recreation opportunities, and maintain the surface values of back country areas. This management program would benefit vegetation in these conservation areas by preserving native stands and limiting fragmentation and disturbance.

Effects under Alternative D
No BCWCAs would be designated under this alternative.

Effects under Alternative E
No BCWCAs would be designated under this alternative.

Vegetation: Effects from Tribal Interests

Effects Common to All Alternatives
Implementing management actions that protect Native American traditional use areas would help to protect vegetation in these areas. Consulting with tribes to identify culturally significant plants, important habitats, traditional use locations and practices would emphasize protection of natural resources, including riparian and wetland areas. This would indirectly limit disturbance to soils and riparian vegetation over the long term. Consultation could place higher treatment priority in areas not previously identified or could limit actions in planned treatment areas. Impacts are likely to be localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Public Health and Safety

Effects Common to All Alternatives
Existing solid and hazardous waste sites and illegal dump sites would be identified and remediated. Management actions to remediate contaminated sites to would benefit vegetation, especially in riparian and wetland habitats. Other actions not impact vegetation.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
Development of educational and interpretive opportunities to foster environmental literacy, stewardship, and awareness of BLM management strategies could benefit vegetation to the extent the public education and increases awareness of natural resources and reduces damage to sensitive riparian areas, forest resources, and sagebrush habitats.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Effects from Facilities and Transportation Maintenance

Effects Common to All Alternatives
Development of tracks and facilities would damage and fragment vegetation in localized areas. Restrictions on locations of these facilities would protect vegetation in these areas. Impacts would be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Vegetation: Cumulative Impacts
Table 4-1 lists the reasonably foreseeable cumulative actions for the CCD. Large areas of sagebrush habitat throughout the planning area are experiencing active pinyon and juniper expansion. Due to a number of factors, including climate change, wildfires, and surface disturbance caused by multiple uses, tens of thousands of acres of cheatgrass have established and have spread in sagebrush habitats district-wide, creating a potential for habitat conversion following disturbance. Pinyon and juniper are expected to continue expanding into sagebrush communities. Under the alternatives, vegetation treatments, including manual, biological, and mechanical methods would continue in the foreseeable future for pinyon and juniper as well as non-native invasive weeds.

Regarding vegetation in riparian areas, the majority of riparian areas are not currently in proper functioning condition, and many assessments indicate downward trends due to ongoing disturbances, leading to declining conditions and health of riparian vegetation. Implementation of permit stipulations, BMPs, standard operating procedures, and mitigation measures under the alternatives would reduce impacts on vegetation in riparian areas and protect from over-grazing and disturbance. However, despite management under the alternatives,

riparian areas are expected to continue in a downward trend while invasive weeds increase in extent.

Invasive weeds are expected to continue spread into riparian woodlands and sagebrush communities, carried by wind, humans, machinery, and animals. The BLM currently manages weed infestations through integrated weed management, including biological, chemical, mechanical, and educational methods. Though the rate of spread may slow, noxious and invasive weeds are expected to continue to spread on all lands under the alternatives. Due to their ability to tolerate certain conditions, some species are expected to remain a serious long-term challenge in the planning area.

Increase in the extent of urban/wildland interface is expected to increase the loss and fragmentation of vegetation communities in these areas, and land developments, including oil and gas leasing, renewable energy, land disposals, roads, and infrastructure will continue to remove and fragment vegetation throughout CCD. Permit stipulations, BMPs, standard operating procedures, and mitigation measures under the alternatives that include requirements to rehabilitate or restore vegetation after disturbance would reduce impacts.

Grazing pressure on rangeland vegetation from wild horses and burros and livestock is anticipated to continue. Management efforts under the alternatives designed to achieve land health standards or reduced grazing of livestock and wild horses and burros could reduce the size and number of areas where concentrated grazing would occur, resulting in fewer areas vulnerable to erosion or weed spread.

Habitat restoration or improvement projects would improve health and diversity of vegetation. Use restrictions in priority wildlife and watersheds, WSAs, and ACECs would protect native plant communities by restricting activities in those areas.

4.3.5 Fish and Wildlife

Summary

Impacts on fish and wildlife resources from other management programs include loss or alteration of native habitats, decreased food and water availability and quality, increased habitat fragmentation, changes in habitat and species composition, interruption of travel corridors, and disruption of species behavior, leading to reduced reproductive fitness or increased susceptibility to predation, and direct mortality. Surface-disturbing actions that alter vegetation characteristics (e.g., structure, composition, and production) can affect habitat suitability for fish and wildlife, particularly where the disturbance removes or reduces cover and food resources. Even minor changes to vegetation communities can affect resident wildlife populations.

The direct and indirect impacts of management actions on fish and wildlife resources may vary widely, depending on factors such as the dynamics of the habitat (e.g., community type, size, shape, complexity, and condition), season, intensity, duration, frequency, and extent of the disturbance, rate and composition of vegetation recovery, change in vegetation structure, type of soils, topography and microsites, animal species present, and the ability of fish or wildlife species to recolonize a site following disturbance.

Alternative C would best manage habitat to maintain biological diversity of wildlife. Although Alternative B is the resource use alternative, it includes more proactive resource management and conservation measures for fish and wildlife than Alternative A or Alternative D. Management actions in the areas of environmental justice and socio-economic conditions would not affect fish and wildlife resources.

Methods of Analysis

Fish and wildlife health is directly related to the quantity and quality of available habitat, the degree to which habitat is fragmented, habitat protective measures, and use restrictions. Most resource management actions have an indirect effect on fish and wildlife. Impact analysis on fish and wildlife resources includes an assessment of whether each action would result in the possible destruction, degradation, or modification of habitat or could result in the improvement of terrestrial and aquatic habitat. Most of the actions are mitigation and protective measures intended to improve the health or habitat of wildlife populations. This impact analysis identifies both enhancing effects on a resource from a management action as well as those that could degrade a resource. The degree of impact attributed to any one management action or series of actions is influenced by the watershed, the timing and magnitude of an action or actions existing vegetation, and precipitation. Quantifying these impacts is difficult due to the lack of monitoring data for most species.

The health of fisheries is tied to the overall health and functional capabilities of riparian and wetland resources and watershed health. Any activities that affect the ecological condition of the watershed and its vegetative cover would directly or indirectly affect the aquatic environment. As riparian systems adjust in response to the removal of vegetation or changes in hydrologic conditions, the availability of habitats required to fulfill the life history requirements of fish populations might be affected.

Impacts on federally listed, proposed, candidate, state threatened or endangered, or BLM sensitive species are addressed in the Impacts on Special Status Species section.

Indicators

The following indicators were used to assess the degree of impacts on fish and wildlife:

- Loss, fragmentation, degradation, or restoration of habitat
- Disturbance or stress to animals

Nature and Type of Effects

The nature and type of effects vary by resource and alternative as described in the following sections.

Fish and Wildlife: Effects from Air Quality Management

Effects Common to All Alternatives

Air quality has limited direct and indirect effects on wildlife, limited to the impacts of dust, smoke or other air pollution on animal health or habitat quality. Since all the alternatives are designed to meet air quality standards, the impact on wildlife is expected to be minimal.

Fish and Wildlife: Effects from Climate Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under current management, there is no consideration of climate change impacts in project design and operations. Climate change would continue without a planned BLM response, which could decrease contiguity of habitat and change conditions, making habitat more suitable for some species, but less suitable for others.

Effects under Alternative B

Under Alternative B, climate change impacts would be considered in project approval and funding, and specialists would use adaptive management in considering climate change in project design and operation. Rapid Ecological Assessment would be employed to assess impacts of climate change and maintain connectivity. These approaches would increase the ability of BLM management to respond to climate change. Adaptive management for climate change would improve habitat for fish and wildlife species.

Effects under Alternative C

Effects under Alternative C would be the same as under Alternative B.

Effects under Alternative D

Effects under Alternative D would be the same as under Alternative B.

Effects under Alternative E

Effects under Alternative E would be the same as under Alternative B.

Fish and Wildlife: Effects from Soil Resources

Effects Common to All Alternatives
Under all alternatives, implementing conservation measures to reduce or prevent erosion and other degradations to soil would benefit wildlife habitat. Furthermore, reducing or preventing sedimentation in watercourses can improve the health of aquatic and semi-aquatic populations.

Soil litter, maintaining appropriate vegetation, and good infiltration are important to land health and habitat quality. Implementation of BMPs and RAC Standards and Guidelines for soil- disturbing activities and application of reclamation measures will mitigate for soil disturbance and encourage healthy vegetation communities and wildlife habitats.

Effects under Alternative A
Alternative A limits OHV use to designated roads and trails in highly erosive soil areas. This approach provides protection for soils in these areas from OHVs, but does not pro-actively prevent erosion in other locations.

Effects under Alternative B
Alternative B would apply an erosion control plan to projects on slopes, would apply soil amendments to minimize soil disturbance, and apply a CSU stipulation on highly erosive soils. These management approaches would diminish erosion and soil damage and protect habitat more than current management,

Effects under Alternative C
Alternative C management actions that call for applying mulch to reduce biotic soil crust breakage should result in increased vegetation cover, more intact biotic soil crust, and increased litter compared to the other alternatives. As a result, the management approaches under Alternative C would diminish erosion and soil damage relative to Alternatives A and B and would protect habitat.

Effects under Alternative D
Impacts associated with Alternative D would be similar to those associated with Alternative C as vegetative cover would be improved by increasing litter, biotic soil crust and vegetation as appropriate for soil type. Alternative D would also emphasize use of deep-rooted plants to stabilize vegetation and improve the soil surface. Deep-rooted plants would provide more habitat cover and food for wildlife in the long term. Alternative D includes the most specific actions to reduce soil damage and protect habitat.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative D.

Fish and Wildlife: Effects from Water Resources

Effects Common to All Alternatives

Effective watershed management results in the minimization of erosion, the maintenance of hydrologic flow, healthy vegetative communities, and high quality wildlife habitat.

Developing water sources may result in more available water for wildlife, as long as wildlife have access to the developments. Furthermore, developing water sources may lead to an increase in insect populations. If insect populations were to increase, birds, small mammals (e.g. bats), and reptiles could benefit as a result of more available forage; however, increases in insects could also result in more incidences of diseases such as West Nile virus. Development of water sources would require a construction phase during which short-term disturbance to wildlife and habitat would occur. All alternatives have the goals of improving water supply and maintaining water quality and floodplains in accordance with federal, state and local laws.

Effects under Alternative A

Alternative A limits BLM-authorized activities in degrading watersheds and specific portions of urban watersheds at the most immediate risk of degradation, and limits OHV use in riparian areas. These approaches protect wildlife water supply in these local areas, but provide limited oversight of watershed health and water quality on a regional scale.

Effects under Alternative B

In addition to the efforts under current management, Alternative B and the other action alternatives would establish a listing of priority watersheds and priority water supply areas based on presence of threatened and endangered species habitat (occupied and recovery areas), among other factors. Based upon the actions in Alternative B, this alternative will be more effective at managing water resources for wildlife than current management.

Effects under Alternative C

In addition to the approach under Alternative B, Alternative C would also use permitting, land acquisitions, and other realty actions to acquire minimum pool and in-stream flows or to gain access to water sources or developments. Alternative C would also establish priority watersheds and would apply management constraints for protection within these priority watersheds. Water sources would be developed with an emphasis on wildlife needs, increasing the quality of wildlife habitat on BLM-administered land.

Effects under Alternative D

Effects under Alternative D would be similar to those described for Alternative C.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative C.

Fish and Wildlife: Effects from Vegetation Resources

Effects Common to All Alternatives
Vegetation includes upland vegetation, noxious and invasive weeds, and riparian and wetland systems.

Range management actions to promote land health, such as seedings and land treatments, would occur under all alternatives. Land treatments would facilitate the maintenance of habitats in various stages of shrub or understory condition, which should result in increased species diversity. Rangeland health is discussed in more detail in the Livestock Grazing section.

Actions that would improve riparian and wetland PFC would occur under all alternatives. These actions are designed to increase the quantity and quality of riparian vegetation, thereby improving habitats for riparian- and wetland-dependent wildlife species.

The spread of noxious and invasive weeds decreases vegetative diversity and native vegetative production, thus diminishing the quantity and quality of habitat available for wildlife. Weeds out compete native species, in disturbed areas and can create monocultures that are more prone to wildfire. Weed treatments using integrated pest management would be applied under all alternatives. These treatments may use chemical, mechanical, or biological means to reduce competition and improve native species diversity. Although weed treatments generally improve habitat in the long-term, short-term disturbances would occur. Treatments, especially mechanical treatments, would cause disturbance and loss of cover, causing some species to temporarily avoid treated areas, and increasing erosion. Mechanical treatments may also cause mortality to small mammals and reptiles.

Effects under Alternative A
Under Alternative A, integrated pest management would continue to be used for weed control. Land health assessments would monitor the health of rangeland systems.

Under Alternative A, riparian management actions would continue to reduce the potential for degradation of riparian wildlife habitat. The implementation of BMPs that address non-grazing impacts, such as water diversions, roads, and recreation, would avoid and mitigate many surface disturbances and erosion. No pinyon-juniper removal would occur.

Effects under Alternative B

Under Alternative B, a pinyon-juniper removal and thinning program would be initiated to aid in sagebrush restoration. As many as 20,000 acres would be restored annually and an additional 6,500 acres thinned for 10 years. Following the removal program, additional thinning of woodlands will occur annually. Removing pinyon-juniper woodlands would benefit sagebrush-dependent wildlife species, while reducing habitat for species found in pinyon-juniper woodlands. Thinning of pinyon-juniper woodlands, however, may benefit species that utilize open stands of pinyon-juniper by increasing vegetative and structural diversity.

Alternative B would manage for healthy and diverse forestlands to maximize sustained yield of forest products and economic development, and would also allow for salvage logging of burned stands. Alternative B would also limit stream crossings to minimize sedimentation.

Alternative B includes vegetation treatments for rangeland restoration, and aim to maximize ecological site potential to establish desired future condition, to benefit land health. Revegetation efforts would use plant species that have high success rates, not necessarily native species, promote maintenance of ecological integrity, and aim to restore depleted understory vegetation. All these approaches would benefit fish and wildlife by maintaining and restoring habitat, more than current management. Alternative B would allow sagebrush removal when there is a resource or resource use of higher priority (such as mineral extraction), which is less protective than approaches under the other action alternatives. Alternative B lacks provisions to promote native plant use in rehabilitation and stabilization projects and to restrict grazing in riparian areas.

Alternative B and the other action alternatives would use appropriate control methods, including mechanical, biological and chemical to eradicate or control invasive, nonnative species and noxious weeds, and implement other policies to reduce the spread of noxious weeds. All these approaches would benefit fish and wildlife by maintaining and improving habitat, more than current management.

Effects under Alternative C

Under Alternative C, a limited pinyon-juniper removal (as many as 3,500 acres) and thinning project would be initiated, to restore sagebrush ecosystems (**Table 2-1**). These actions would benefit sagebrush-dependent wildlife species, while reducing habitat for species found in pinyon-juniper woodlands, compared to Alternative A. However, these impacts would benefit species found in pinyon-juniper woodlands more, and benefit sagebrush-obligate species less, than Alternative B, which includes a larger-scale program.

Alternative C would manage for healthy and diverse forestlands with a focus on wildlife habitat, forest health and fuels reduction, would allow salvage logging only to protect public safety, and includes mitigation measures for conducting forest and woodland treatments. For rehabilitation projects, Alternative C

promotes use of native plant material and restoration techniques to establish desired plant communities.

Alternative C would limit woodcutting or vegetative removal in riparian areas. Wildlife, livestock, or recreation implementation plans would consider impacts on riparian areas and meadows, and consider limits to livestock grazing in sensitive riparian areas. In attaining PFC, the interim goal would be 85 percent (functioning at risk with an upward trend), progressing towards or attaining PFC, compared to 75 percent under Alternative B.

Rangeland treatments are similar to Alternative B, but Alternative C does the most to promote revegetation with native species and to limit sagebrush removal. Because wildlife are more likely to use native plant assemblages as habitat, these policies would benefit wildlife more than other alternatives.

Effects under Alternative D

Alternative D would study pinyon-juniper removal but does not include a removal or thinning program. Under this Alternative, the BLM would engage interested parties to develop a restoration strategy that may include removal or thinning of pinyon-juniper in the future. Alternative D would also manage for healthy and diverse forestlands, and consider impacts on riparian areas, as under Alternative C. PFC goals would be the same as Alternative C but would protect against sagebrush removal in urban interface areas only.

Alternative D would allow salvage logging for public safety and to meet demand for wood and includes mitigation measures as under Alternative C.

Effects under Alternative E

Alternative E has a pinyon-juniper removal and thinning program to aid in sagebrush restoration. As many as 8,500 acres would be restored and an additional 6,500 acres thinned, less than anticipated under Alternative B, but more than the other alternatives. Implementing Alternative E could result in the conversion of fewer low-density pinyon-juniper areas to sagebrush than Alternative B, but more than Alternative C (on an annual basis). In regards to thinning dense pinyon-juniper woodlands, Alternative E would be the same as Alternative B, but Alternative E could result in thinning more acres of dense pinyon-juniper per year than Alternative C. Species that utilize pinyon-juniper woodlands, particularly open stands of pinyon-juniper, should benefit from the increased vegetative and structural diversity that should result from thinning dense pinyon-juniper stands, but overall the actions would provide most benefit to sagebrush-dependent species.

Alternative E would also manage for healthy and diverse forestlands, consider impacts on riparian areas, and protect sagebrush from removal, as under Alternative C. PFC goals would be the same as Alternative C. Alternative E would allow salvage logging for public safety, forest health, and to meet demand for wood, and includes mitigation measures as under Alternative C.

Fish and Wildlife: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Fish and wildlife resources would benefit from development of specific objectives and actions to protect and enhance habitat conditions. Restrictions on development would lessen disturbance to animals and degradation of habitat.

Actions common to all alternatives include modification of fences to facilitate wildlife passage and marking the structures to reduce collision risk. Water troughs for livestock will be modified to allow wildlife access and prevent trapping, and the BLM will coordinate with other agencies on mitigation measures for wildlife and wildlife habitat protection.

All alternatives would also implement timing restrictions and distance buffers, as appropriate, to minimize impacts on wildlife from activities during important life cycle periods (e.g., breeding or major migrations), and would support research efforts to promote proper and efficient management of fish and wildlife. Implementing management actions to restore or improve wildlife habitat would benefit wildlife populations and maintain diversity.

Effects under Alternative A

Current management is designed to manage wildlife habitat for a long-term goal of providing forage for reasonable numbers of big game. This management regime does not specifically protect non-game fish and wildlife resources.

Effects under Alternative B

Alternative B would also manage for key habitat integrity to support fish and wildlife populations, with an emphasis on priority species and habitats. The BLM would implement additional habitat improvement projects and remove undesirable nonnative aquatic species (such as bullfrogs) from sensitive breeding grounds.

The BLM would apply CSU stipulations to areas surrounding important aquatic habitat, and manage priority wildlife habitat as ROW avoidance areas. Management would mitigate disturbance from land use authorization activities on big game species including pronghorn, bighorn sheep, and mule deer, and avoid disturbance to nesting migratory birds and important migratory pathways. The BLM would inventory for bats before development near caves and restrict development within 0.25 mile of raptor nests.

Effects under Alternative C

Programs under Alternative C would be similar to Alternative B, with stronger protections for raptor nests, NSO instead of CSU stipulations for aquatic habitat areas, and ROW exclusion rather than avoidance areas.

Effects under Alternative D
Programs under Alternative D would be similar to Alternative B, but some policies would only apply within the urban interface zone.

Effects under Alternative E
Programs under Alternative E would be similar to Alternative B, but management would apply NSO stipulations as under Alternative C.

Fish and Wildlife: Effects from Special Status Species Management

Effects Common to All Alternatives
Maintaining or improving habitat for special status species would also benefit other wildlife dependent on similar habitat. In addition, all alternatives would maintain ACECs for protection of some special status species, which also protect other fish and wildlife. More details on ACECs are provided in the ACEC section. All the action alternatives provide management actions and development restrictions to protect Greater Sage-Grouse habitat; fish and wildlife habitat in those areas would also be protected from degradation or loss.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Wild horses and burros compete with wildlife for forage, water, and cover. They consume relatively large amounts of vegetation and water, and can also cause substantial impacts on riparian areas. Wild horses and burros also can trample avian nests located in low vegetation or on the ground. All alternatives identify the need to maintain AMLs within HMAs and would use the gather process as a tool to meet that need. Gathering would help prevent excess impacts from overpopulation of herds and help ensure adequate forage, water, and overall habitat condition for wildlife. Gathers can cause short-term stress and displacement of wildlife and result in the disruption of life-cycle behaviors; however, the timing of gathers can reduce these impacts on most species.

Habitat monitoring, for sustainability, would be undertaken under the action alternatives and may result in adjustment of AML. This would also help in maintaining healthy habitat for wildlife. Fewer horses on the landscape would result in fewer impacts on wildlife habitat.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Wildland fire could be beneficial or detrimental to wildlife and their habitats. Periodic fires may reduce dense understory and restore nutrients to soil. Fire may convert late-successional vegetation to earlier seral stage, increasing habitat and species diversity. However, fire can also result in the loss of habitat for species that prefer late-seral communities, increased potential for erosion, and increased sedimentation and water temperatures in aquatic habitats from removal of upland and riparian vegetation. Fire can also cause long-term alternations of habitat, particularly for sagebrush habitats (or other shrub habitats that experience less than 12 inches of precipitation per year), which are slow to recover from fire, and vulnerable to competition from invasive weeds, which results in a loss of forage and cover for sagebrush-dependent species. Direct mortality of wildlife can also occur from fires.

Under all alternatives, fuel treatments can aid in limiting the size of wildfires, thereby reducing the extent of impacts. ESR activities, such as erosion control measures and reseeding, performed following fires facilitate restoration of burned areas.

Fire suppression also has short-term, localized impacts on fish and wildlife habitats. The use of heavy equipment or hand tools for fire breaks removes or crushes vegetation and disturbs soil, increasing erosion and the risk of invasive species spread. Furthermore, heavy equipment can cause injury or direct mortality to less mobile or burrowing wildlife species. Also, human presence during fuel treatments or fire suppression could disturb species and cause them

to avoid the area. Fire suppression would contribute to minimization of fire size and potential spread into adjacent habitat areas.

Effects under Alternative A
Alternative A manages wildfires in Category A, B C, and D, each with target fire suppression goals to protect property and resources. Fire suppression would protect wildlife and fish habitat in areas threatened by fire, but can contribute to more damaging fires if dense understory vegetation builds up.

Effects under Alternative B
Under Alternative B, the BLM would develop fire management plans to guide response to wildfire and prioritize suppression activities, and improve ESR programs. Alternative B would include provisions to deter cheatgrass and other invasive species from dominating burned areas and altering the natural fire regime by re-establishing appropriate vegetative species. This approach would benefit wildlife habitat more than current management.

Effects under Alternative C
Management under Alternative C would be similar to Alternative B, with more focus on protecting sensitive biological, cultural, and other natural resources, and use of native species in revegetation. This alternative would do the most to protect wildlife habitat from fire damage.

Effects under Alternative D
Management under Alternative D would be similar to Alternative B, but management programs would focus on the urban interface zone.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative B.

Fish and Wildlife: Effects from Cultural Resources Management

Effects Common to All Alternatives
Management for cultural resources and protection of cultural ACECs would provide incidental protection of wildlife and fish habitat in areas that contain identified cultural resources through restriction of disturbance to cultural resource areas in order to minimize damage to artifacts, erosion, and vegetation loss.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Management for paleontological resources and protection of paleontological ACECs would provide incidental protection of wildlife and fish habitat through restriction of disturbance to paleontological resource areas in order to minimize vegetation loss and erosion. Promoting public visitation to areas of paleontological interest or importance could impact wildlife or wildlife habitat, depending on the numbers of visitors to areas. Wildlife could be disturbed or habitat may be trampled, and wildlife may avoid habitat in areas of high visitation, but these impacts would be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Visual Resources Management

Effects Common to All Alternatives
Impacts on fish and wildlife would vary, depending on the number of acres identified by VRM class. In general, management of Class I or II VRM designated areas would allow for fewer intrusions to the landscape, resulting in fewer impacts on wildlife habitat.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Caves and Cave Resource Management

Effects Common to All Alternatives
Under all alternatives, caves would be evaluated for their potential value as bat habitat. Caves with identified bat resources would be assessed and prioritized for public closure to protect bat habitat, minimize potential impacts on roosting bats, and prevent the spread of disease (such as White-nose syndrome, a fast-spreading fungal disease). Implementation of other measures or use restrictions to protect caves and cave resources would also serve to protect wildlife habitat and limit disturbance to bats. However, installation of bat gates could prevent other wildlife, including bighorn sheep, from using caves for refuges or for water sources. If a cave may provide an important water source for wildlife, a cave inventory should be conducted before installing bat gates.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
Harvesting of forest products could impact wildlife due to noise, surface disturbance and loss or fragmentation of habitat. Additionally, harvesting forest

products could result in the mortality of some wildlife species. These activities are relatively limited in the planning area and impacts to wildlife should be localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Livestock grazing may benefit wildlife habitat by maintaining grass and forb diversity and removing fire-prone understory vegetation, but may also be detrimental if excessive levels result in loss of cover and forage for wildlife Overgrazing by livestock can also result in the elimination of bunchgrasses, which results in an increase in bare ground that favors the invasion of cheatgrass (Reisner et al. 2013). Overgrazing by livestock along riparian areas can result in the loss of streamside vegetation, increased sedimentation in the water, and increases in water temperature, which can have negative impacts on fish populations (Kauffman and Krueger 1984). Waste from cattle in waterbodies can result in a decrease in oxygen for fish. Furthermore, nitrites and ammonia from cattle urine and feces are chronically toxic to fish (Taylor et al. 1989).

All alternatives would comply with standards and guidelines for livestock grazing, and manage allotments toward meeting Rangeland Health Standards. Allotments meeting standards provide superior habitat for wildlife because they have healthier vegetation, more native species, and less soil damage. All alternatives would rest burned areas from livestock grazing for a minimum of two growing seasons, and do not allow livestock salting within 0.25 miles of a stream, meadow, or aspen area. New grazing fences would be built to comply with wildlife standards.

These actions would promote habitat conditions for healthy fish and wildlife populations, which is especially important during times when additional stressors (such as drought or fire) impact habitat.

Effects under Alternative A

Under current management, existing range management programs and closures would continue (see **Table 2-1**), These programs promote rangeland health and make provisions to improve habitat for wildlife, but some lands do not meet rangeland health standards and also likely provide poor wildlife habitat due to loss of understory cover and forage.

Effects under Alternative B

Under Alternative B, there would be an increased focus on restoration. Alternative B allows prescriptive grazing for vegetative management purposes as necessary. Acres available and unavailable to grazing would be similar to Alternative A.

Effects under Alternative C

Under Alternative C, grazing utilization levels would be reduced to 40 percent of current levels, resulting in two million acres less habitat available for livestock grazing (**Table 2-1**). Areas containing Greater Sage-Grouse priority or general habitat would not be available for grazing, which would result in more available forage for wildlife that utilize these areas. If the reduced utilization level did not improve the ecological condition of allotments prior to the next periodic review, further reductions could be made based on monitoring. These provisions would improve the health of allotments that were not meeting Rangeland Health Standards due to overgrazing, and could provide more cover for wildlife. Compared to Alternatives A and B, Alternative C would result in more available forage and cover for wildlife species.

Effects under Alternative D

Alternative D allows for prescriptive grazing only within the urban interface area. Under Alternative D, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments during the periodic review process every 10 years or on a case-by-case basis. Effects would be similar to those described for Alternative B.

Effects under Alternative E

Under Alternative E, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments during a periodic review process. Effects would be similar to those described for Alternative B.

Fish and Wildlife: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Impacts on wildlife and habitat from mineral exploration and development generally occur from surface disturbance causing loss and fragmentation of habitat, as well as disturbances to individuals from noise and activity associated with construction, and operation of facilities and roads. Occasionally there is direct mortality to wildlife from mineral exploration and development, though

mitigation measures are generally implemented to decrease the likelihood of mortality.

In some situations, surface water may also be affected. Identifying lands open, closed, or open with standard stipulations and or open with special stipulations would protect wildlife by either restricting mineral uses in areas or providing mitigation for adverse impacts. Generally, greater restriction on disturbance leads to less impact on wildlife and habitat.

All alternatives would make mineral resources (leasable, locatable, salable) available for extraction or development but with differing open acres, stipulations and conditions of approval to protect other resources. Development of new sites and associated impacts on wildlife would be analyzed under the NEPA, with mitigation and stipulations applied to reasonably protect affected resources. Reclamation or rehabilitation of mineral operations before closure would include recontouring, stabilization, revegetation and removal of facilities.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Mineral Materials

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under this alternative, 4,239,100 acres would remain open to mineral material disposal (**Table 2-1**). New proposed sites would be analyzed under site-specific NEPA analysis. Impacts on wildlife and habitat would be avoided or mitigated with applied terms or stipulations.

Mineral material sites would result in loss of habitat for wildlife and long-term disturbance (e.g., surface, noise, and activity) in the vicinity of the sites as long as they remain open and active. These disturbed areas can increase the risk of

invasive weed introduction and spread, while decreasing habitat quality. Sites that require new access roads would also result in loss and fragmentation of habitat. There is also the potential of direct mortality to wildlife as a result of activities at mineral material sites.

Effects under Alternative B

The BLM would manage 3,996,100 acres as open to mineral material disposal as Alternative A with standard authorization terms and stipulations. This alternative would seek to maximize and promote the supply of mineral materials. Wildlife and habitat would continue to be impacted (as described under Alternative A) due to the maximization of material sites. However, under all alternatives, weed stipulations and abatement would continue with the goal of reducing the extent and spread of noxious weeds, which would be a benefit to wildlife and wildlife habitat.

Effects under Alternative C

Under Alternative C, the BLM would manage 1,798,400 acres as open to mineral material disposal, a 58 percent decrease compared to current management (**Table 2-1**). The focus would be on developing the fewest number of material sites necessary while meeting demands. There would be fewer impacts on wildlife and their habitat under this alternative, due to fewer acres open to mineral material disposal, and fewer acres open with standard authorization terms and stipulations. The minimization of new material sites would also result in fewer impacts.

Effects under Alternative D

Management under this alternative would be the same as Alternative B, with the added provision to close facilities if they are incompatible with adjacent land uses within the urban interface.

Effects under Alternative E

Management under Alternative E would manage 3,024,600 acres as open to mineral material exploration and development, a 29 percent reduction from current management.

Fluid Minerals

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under this alternative, the BLM would manage 3,964,200 acres as open to leasing and 700 acres as open to leasing but with a NSO stipulation. Stipulations and conditions of approval would be applied to protect other resources, including fish and wildlife. Fluid mineral exploration and development would result in impacts on wildlife and habitat similar to mineral materials exploration and development. In addition to those impacts, the presence of structures such

as buildings or transmission lines can cause injury or death to avian species as well as providing artificial perching/hunting and nesting opportunity for raptors and ravens. Therefore, predation is unnaturally increased along these lines.

Effects under Alternative B

Under this alternative, the BLM would manage 4,034,700 acres as open to leasing and 404,600 acres as open to leasing but with a NSO stipulation, and 2,120,200 acres as open with a CSU stipulation. This alternative would open more acres to fluid mineral leasing and extraction than current management but would apply restrictive stipulations to large amounts. Impacts on wildlife and habitat would be as discussed under Alternative A, but would occur on fewer acres. NSO stipulations would protect fish and wildlife from all surface disturbance, though disturbance may still occur in the vicinity and noise associated with fluid mineral activities could result in impacts on wildlife. CSU stipulations provide protection from surface disturbance during season of use or sensitive periods (such as fawning). This alternative may reduce impacts on fish and wildlife compared to current management.

Effects under Alternative C

Under this alternative, the BLM would manage 2,721,500 acres as open to leasing with standard lease terms and stipulations, 1,039,200 acres as open to leasing with a NSO stipulation, and 1,242,800 acres with a CSU stipulation. Impacts on wildlife and habitat, as discussed in *Effects under Alternative A*, would be reduced under this alternative with greatly reduced acreage open to leasing compared to Alternative A, greater acreage with restrictive stipulations, and greater acreage closed to leasing. Furthermore, timing limitations will be implemented within big game kidding, lambing, and fawning areas to prevent negative impacts on these species during kidding, lambing, and fawning periods.

Effects under Alternative D

Under this alternative, the BLM would manage 4,066,200 acres as open to leasing, 864,800 acres as open to leasing with a NSO stipulation, and 2,071,400 acres under a CSU stipulation. The same timing limitations that would be applied to big game areas under Alternative C would be applied under this alternative. Impacts on wildlife and habitat would be similar to Alternative B, with reduced impacts on wildlife that utilize those acres with restrictive stipulations applied, which are greater than under current management.

Effects under Alternative E

Under this alternative, the BLM would manage 3,796,000 acres as open to leasing with 1,151,600 acres open to leasing with a NSO stipulation and 1,844,900 acres under a CSU stipulation. The same timing limitations that would be applied to big game area for Alternatives C and D would also be applied to this alternative. Impacts on wildlife and habitat would be similar to Alternative D, with reduced impacts on wildlife that utilize those acres with restrictive stipulations applied, which are greater than under current management.

Nonenergy Leasable and Locatable

Effects under Alternative A

Under this alternative, the BLM would manage 4,064,400 acres as open to leasing. Nonenergy leasable mineral exploration and development would result in impacts on wildlife and habitat similar to those from mineral materials exploration and development.

Under this alternative, 3,700 acres are petitioned for withdrawal. Locatable mineral exploration and development would result in impacts similar to those from mineral materials exploration and development. Impacts on wildlife and habitat would be as described above.

Effects under Alternative B

Under this alternative, the BLM would manage 3,821,300 acres as open to leasing, and 439,600 acres petitioned for withdrawal. Impacts on wildlife and habitat would be as described above. With reduced acreage open to mining compared to Alternative A, and more acreage petitioned for withdrawal, impacts on fish and wildlife would be reduced in the closed areas. Alternative B would also restrict nonenergy mineral leasing within Greater Sage-Grouse habitat, but only if it was determined that there would be adverse impacts on Greater Sage-Grouse or their habitat. This could benefit wildlife species that utilize Greater Sage-Grouse habitat. In other areas, impacts would remain the same as under Alternative A.

Effects under Alternative C

Under this alternative, the BLM would manage 1,842,400 acres as open to leasing, and 117,500 acres petitioned for withdrawal. Impacts on wildlife and habitat would be as described above. With reduced acreage open to mining compared to Alternatives A and B, and similar acreage petitioned for withdrawal as Alternative B impacts on fish and wildlife would be reduced in the closed areas, compared to current management. Alternative C would also close nonenergy mineral leasing within Greater Sage-Grouse habitat. Thus, this alternative would protect more wildlife habitat from mining impacts than Alternative A or B.

Effects under Alternative D

Under this alternative, impacts on wildlife and habitat from nonenergy leasable minerals would be similar to Alternative B. For locatable minerals, 440,800 acres would be petitioned for withdrawal. Impacts would be nearly the same as Alternative C.

Effects under Alternative E

Under this alternative, the BLM would manage 3,017,400 acres as open to nonenergy leasable mineral leasing, and 470,600 acres petitioned for withdrawal from locatable mineral entry. With reduced acreage open to mining compared to Alternatives A, B, and D, and increased acreage petitioned for withdrawal

compared to the other alternatives, impacts on fish and wildlife would be reduced under this alternative. Leasing and disposal would also be restricted within Greater Sage-Grouse habitat, as under Alternative C Thus, this alternative would protect more wildlife habitat from locatable mining impacts than the other alternatives, and would allow impacts from nonenergy leasable minerals on fewer acres than Alternatives A, B, or D, but more than Alternative C.

Fish and Wildlife: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Direct impacts from recreation management actions include loss or modification of habitat from constructing recreational facilities, including roads.

Recreation management actions that result in increased human presence (activities such as hiking, biking, camping, fishing, hunting, and sightseeing) would cause localized disturbance impacts on wildlife and fish species. More specifically, increased human-wildlife interaction resulting from recreation activities could cause animals to alter behaviors, home ranges, and habitat use and to become physiologically stressed. Commercial, competitive, and group recreational activities could have greater impacts, but effects would be short-term, localized, and minimized through use restrictions and mitigation measures.

OHV use is the most damaging form of recreation to fish and wildlife, as a result of habitat trampling and disturbance. OHV management actions that result in increased OHV use would cause localized impacts on wildlife and fish species. Impacts could include stress and displacement of wildlife, and degradation of habitat, introduction and spread of invasive species or sedimentation of waterways. OHV use can alter the seasonal and habitat use patterns of many wildlife species. All alternatives would provide a wide range of developed and dispersed recreation opportunities to meet projected recreation demand in the planning area. All alternatives would also manage recreation use on BLM-administered land to protect natural resources, provide for health and safety, and minimize conflicts among land uses. The BLM strives to increase public awareness of land stewardship through interpretation and education.

Effects under Alternative A

Under this alternative the BLM would continue to manage 67,700 acres in the Walker Lake and Alpine SRMAs. Managing lands as SRMAs could encourage additional use of these lands and thus increase disturbances to wildlife; however, by designating SRMAs, disruption of other wildlife areas may be reduced by focusing recreationalists in specific areas. Under SRMAs, management actions can reduce the impacts of recreational activities, and adverse impacts can be monitored and addressed.

OHV use would be the most detrimental to wildlife under Alternative A. Most of the planning area (3,840,300 acres) would be managed as open to OHV use with minimal limited (924,300 acres) and closed (31,800 acres) designated areas.

Effects under Alternative B

Under Alternative B, the BLM would manage 76,100 acres as SRMAs, 12 percent more than Alternative A. Alpine and Walker Lake SRMAs would be maintained but reduced in size, and four additional SRMAs would be designated, identifying recreation as the principal use of these lands. Managing lands as SRMAs could encourage additional use of these lands and thus increase the level of disturbances to wildlife in these areas. Alternative B would also establish 7 ERMAs, which provide less funding for public access and improvements than SRMAs, and thus may have less visitation and fewer impacts on fish and wildlife populations.

Under Alternative B, the BLM would manage 95,300 acres as open to OHV use, a 98 percent reduction from Alternative A, with 4,677,000 acres limited and 26,700 acres closed. Areas that would be managed as closed to OHV use include priority wildlife habitat areas. This alternative would reduce impacts from OHV use compared to current management, but less than the other action alternatives.

Effects under Alternative C

Under Alternative C, 74,700 acres would be designated as SRMAs, a 10 percent increase over Alternative A. The Walker Lake SRMA would be maintained and the Alpine SRMA expanded, and one new SRMA, Sand Mountain, would be established. The BLM would also establish 14 ERMAs. OHV use would be the most restricted under this alternative, with 1,190,500 acres closed, 3,013,500 acres limited, and only 1,300 acres open to OHV use. Alternative C would minimize development of recreational facilities that attract visitors and would place the most limitations on OHV use, resulting in the fewest impacts on wildlife resources.

Effects under Alternative D

Effects would be similar to those described under Alternative B, but Alternative D would be more effective at reducing impacts from OHV use by further restricting OHV permitted use areas, including use in important habitat areas. Under this alternative, the BLM would manage 30,600 acres as closed, 4,748,400 acres as limited (including priority wildlife habitat areas), and 22,700 acres as open. Three new SRMAs would be designated, and one (Walker Lake) closed, for a total of 67,100 acres in SRMAs, approximately the same as Alternative A. Four ERMAs would also be established, including one in the urban interface zone.

Effects under Alternative E

This alternative would designate four new SRMAs while reducing the size of the Walker Creek SRMA, for a total of 106,100 acres, a 57 percent increase from

Alternative A. Impacts on fish and wildlife in SRMAs may be increased by human visitation; however, SRMAs may serve to concentrate recreation away from other areas. Fourteen ERMAs would also be established. Under this alternative, the BLM would manage 24,100 acres was closed, 4,717,300 acres as limited (including priority wildlife habitat areas), and 55,700 acres as open to OHV use. These closure levels and limitations are more protective of wildlife than Alternatives B, but less protective than Alternatives C or D. All the action alternatives are far more protective of wildlife from OHV impacts than current management.

Fish and Wildlife: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Under all alternatives, roads could decrease wildlife habitat quality and quantity. Roads and trails can result in an increase in invasive plant species, an increase in human-wildlife interactions, fragment habitats, and reduce wildlife refugia. Motorized vehicle use and associated human uses can degrade wildlife habitats from surface disturbance, alter wildlife foraging, reproductive, and movement behaviors, cause direct mortality from collisions, and displace and stress animals. Flooding and erosion from poorly maintained roads and trails can degrade surrounding aquatic habitats. Species such as big game that have large home ranges, follow distinct migration patterns, or are wary of humans are affected the most by roads.

Effects under Alternative A

Under Alternative A, there would be no change to current acreage open to motorized and mechanized travel (see **Table 2-1**) or limited to existing routes. The impacts described above would continue.

Effects under Alternative B

Under Alternative B, over 3,500,000 additional acres (**Table 2-1**) would be limited to existing routes. The same acreage would be managed as closed to motorized travel as under Alternative A. The increase in acres restricted to existing routes would provide more protection for fish and wildlife from road impacts than under current management.

Effects under Alternative C

Under Alternative C, approximately an additional 1.5 million acres (**Table 2-1**) would be managed as closed to motorized travel and an additional 2 million acres limited to existing routes. The smallest amount of acreage would remain open to motorized travel, resulting in the highest level of protection to fish and wildlife species from motorized travel impacts.

Effects under Alternative D

Alternative D management would be similar to Alternative B, with fewer acres open to motorized and mechanized travel and more limited to existing routes.

Effects under Alternative E

Under Alternative E, effects would be similar to those under Alternatives B and D.

Fish and Wildlife: Effects from Lands and Realty

Effects Common to All Alternatives

Impacts on fish and wildlife from lands and realty management include habitat loss, fragmentation, and degradation; disturbance to species; direct mortality to species; and loss of species diversity from ROW development and other permitted facilities. Power lines, pipelines and road increase the density off human presence which would increase stress on wildlife during breeding, migration, and wintering periods. Mitigation may limit the extent of these impacts. Lands and realty management may also benefit fish and wildlife species by acquiring sensitive habitat and reducing the checkerboard pattern of public lands ownership and the size of publicly owned blocks of land. Larger blocks of contiguous lands allow for consistent management and increase habitat quality and allow for restoration of degraded habitat on acquired lands.

Under all alternatives, BLM will continue to manage authorized ROWs, including 440,000 acres within utility corridors, will encourage new transmission corridors and facilities (60 kilovolts or larger) proposed on BLM-administered lands to utilize existing corridors and underground components in visually sensitive areas and will consider natural, visual, and cultural resources, and wildlife habitat in analyzing utility proposals.

Effects under Alternative A

Alternative A does not delineate additional ROW avoidance or exclusion areas. Existing ROW exclusion areas (**Table 2-1**) would continue under current management. Important wildlife habitat areas would not be protected from ROW development, increasing the likelihood of disturbance and other impacts mentioned above. Habitat fragmentation would continue affecting species that need large areas of contiguous habitat to sustain populations. Under this alternative, 179,700 acres of BLM-administered land would be identified for disposal. Disposal lands may benefit wildlife if BLM is able to acquire other land to form contiguous habitat parcels, or may harm wildlife if the disposal moves the land to a less protective management regime.

Effects under Alternative B

Under Alternative B, over a million acres (**Table 2-1**) would be set aside as ROW avoidance areas, including implementation of mitigation measures to avoid or reduce impacts to wildlife or habitat. Current management includes no avoidance areas. ROW exclusion areas and lands identified for disposal would remain at similar levels to Alternative A. Under this alternative, 273,500 acres of BLM-administered land would be identified for disposal. Overall, management

under Alternative B would be more protective of wildlife than current management because of the establishment of avoidance areas.

Effects under Alternative C

Under Alternative C, 2,675,800 acres would be managed as ROW exclusion areas and over 369,000 acres (**Table 2-1**) as avoidance areas. In addition, no BLM-administered land would be identified for disposal under this alternative. This alternative would provide the most protection to fish and wildlife habitat from ROW development on BLM-administered land.

Effects under Alternative D

The impacts on wildlife under Alternative D would be similar to Alternative B except more avoidance area acres would be designated (1,226,100 acres). This alternative would protect wildlife habitat from ROW development more than current management but less than the other action alternatives.

Effects under Alternative E

Under Alternative E, the BLM would manage 605,900 acres as ROW exclusion areas and 1,448,200 acres as ROW avoidance areas. Acres identified for disposal would also increase to 267,200. Wildlife in ROW exclusion and avoidance areas would be protected from habitat degradation and other impacts, while wildlife on lands identified for disposal might face increased impacts, depending on the purpose of the disposal.

Fish and Wildlife: Effects from Renewable Energy

Effects Common to All Alternatives

Renewable energy development could impact wildlife by removing vegetation for construction of power lines, roads, communication sites and other facilities. Human disturbances from construction and operation of facilities, including noise, movement, and vibrations, could alter wildlife behavior within the vicinity of the facilities. Wind turbines cause injury and mortality to raptors, bats, and migratory birds that collide with them. In summary, impacts on wildlife from renewable energy projects include direct mortality, habitat fragmentation, habitat degradation and loss, and the alteration of normal behavior. BMPs, stipulations, and mitigation measures applied as part of these projects would limit impacts to some degree.

Effects under Alternative A

Under current management, no avoidance areas for wind energy have been designated, and approximately 900,000 acres (**Table 2-1**) are variance areas for solar projects. Variance areas allow development, but require provisions to protect resources in the area. Outside variance areas, utility-scale solar is not permitted.

Effects under Alternative B

Alternative B would designate approximately 775,000 acres as variance areas for solar development, and 1,220,200 acres as avoidance areas for wind energy turbines or transmission lines. These provisions would protect wildlife in the designated areas more than current management.

Effects under Alternative C

Renewable energy impacts on fish and wildlife would be reduced most under Alternative C due to 2,073,200 acres being managed as ROW exclusion for wind development. Approximately 580,000 acres would be variance areas for utility-scale solar, preserving more acreage from large-scale solar projects than Alternative A.

Effects under Alternative D

Impacts under Alternative D would be similar to Alternative B.

Effects under Alternative E

Impacts under Alternative E include 629,900 acres of variance areas designated for utility-scale solar, and 956,900 acres in wind energy avoidance areas. This alternative would protect fish and wildlife populations more than current management or Alternatives B or D, but less than Alternative C.

Fish and Wildlife: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Generally, special management areas such as ACECs result in increased protection of fish and wildlife, and long-term improvement or maintenance of habitat quality as a result of special management and use restrictions in these areas. Under all alternatives, species would receive some protection via BLM compliance with ESA and Section 7 consultation. While actions that "adversely affect" the species may be permitted by the BLM and USFWS, mitigation and conservation measures would be incorporated into any take permit issued by the USFWS in order to reduce the amount of take.

Effects under Alternative A

Under current management, the planning area includes six ACECs, the largest being the Stewart Valley Paleontological Area (**Table 2-1**), for a total of 21,800 acres. These areas restrict development to protect sensitive resources, and provide incidental protection to fish and wildlife habitat from loss or damage.

Effects under Alternative B

Under Alternative B, an additional nine ACECs would be established in the planning area, for a total of 371,170 acres. Management of ACECs would also enhance protection of fish and wildlife species from development in these areas.

Effects under Alternative C

Under Alternative C, an additional 18 ACECs would be established in the planning area, for a total of 786,270 acres. This alternative would protect the largest amount of land in ACECs and includes ACECs for botanical species and for Greater Sage-Grouse. Management of ACECs would also enhance protection of fish and wildlife species from development in these areas.

Effects under Alternative D

Under Alternative D, 180,000 acres would be protected in a total of ten ACECs. This alternative manages more acreage in ACECs than Alternative A, but less than Alternatives B or C. Management of ACECs would also enhance protection of fish and wildlife species from development in these areas.

Effects under Alternative E

Under Alternative E, 82,770 acres would be protected in eight ACECs. This alternative manages more acreage in ACECs than Alternative A, but less than the other action alternatives. Management of ACECs would also enhance protection of fish and wildlife species from development in these newly designated ACECs.

Fish and Wildlife: Effects from Back Country Byways

Effects Common to All Alternatives

Fish and wildlife resources may be displaced and habitat fragmented by development of Back Country Byways in their immediate environments. Wildlife could be disturbed by increased human presence during sensitive seasonal periods, such as breeding, nesting, and migration. These adverse impacts would be localized, and the public educational benefit of increased wildlife awareness might indirectly benefit wildlife species.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from National Trails

Effects Common to All Alternatives
Management actions for preserving national historic trails would provide wildlife and fish protection through habitat preservation by restricting surface-disturbing and other disruptive activities within the protected zone of the trail. However, preserving national historic trails may limit or prohibit land treatments and habitat restoration projects that could benefit wildlife.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under this alternative, eligible river corridors would be given protection either through continued interim protective management or the development of comprehensive river management plans. This would provide additional measures along the segments of the East Fork Carson River that would promote fish and wildlife habitat health and hydrologic function.

Effects under Alternative B
There would be no objective to protect eligible river segments under Alternative B, and therefore no special protection to fish and wildlife species found in these segments.

Effects under Alternative C
Alternative C would maintain the free-flowing character of eligible river segments, and allow no activities within the river corridor that would alter the tentative classification of those river segments. These management actions would protect fish and wildlife populations found in these river segments, more than Alternatives A or B.

Effects under Alternative D
Effects under Alternative D would be the same as those described for Alternative C.

Effects under Alternative E
Effects under Alternative E would be the same as those described for Alternative C.

Fish and Wildlife: Effects from Wilderness Study Areas

Effects Common to All Alternatives
All alternatives would maintain the same acreage of WSAs (**Table 2-1**). Lands found to possess wilderness characteristics will be managed for wilderness values along with other uses, while applying management restrictions to reduce impacts on wilderness characteristics. No surface disturbance, permanent new development or ROWs would be allowed in these lands. These restrictions would benefit fish and wildlife populations found in the WSAs by limiting disturbance to animals and reducing habitat loss and fragmentation associated with development.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
No BCWCAs would be designated under this alternative.

Effects under Alternative B
No BCWCAs would be designated under this alternative.

Effects under Alternative C
Under Alternative C, 817,800 acres would be preserved as BCWCAs, with plans to safeguard fish and wildlife habitat, allow only dispersed non-motorized recreation opportunities, and maintain the surface values of back country areas. This management program would benefit fish and wildlife species found in these conservation areas by preserving habitat quality and limiting fragmentation and disturbance.

Effects under Alternative D
No BCWCAs would be designated under this alternative.

Effects under Alternative E
No BCWCAs would be designated under this alternative.

Fish and Wildlife: Effects from Tribal Interests

Effects Common to All Alternatives
Implementing management actions that protect Native American traditional use areas for religious and other traditional practices would help to protect and sustain fish and wildlife habitat. Tribal consultation is not likely to adversely impact fish and wildlife resources.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Public Health and Safety

Effects Common to All Alternatives
Management actions to provide for public safety could also benefit wildlife. Closing abandoned mines could cause loss of bat habitat; however, if the mines are closed in a manner that allows access for bats, these impacts would be avoided. Installing fences around and bat gates within abandoned mines would prevent injury to the public as well as reduce disturbance to bats, especially during the critical hibernation or maternity periods. Furthermore, fencing may

reduce the potential for wildlife mortality by keeping wildlife away from dangerous shafts.

Actions to remediate contaminated sites would benefit wildlife habitats and populations, especially those that depend on riparian and wetland habitats. Reducing contaminants in the environment reduces the potential for ingestion by animals and bioconcentration via the food chain.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Effects from Facilities and Transportation Maintenance

Effects Common to All Alternatives
Development of tracks and facilities would damage and fragment wildlife habitat in localized areas. Restrictions on locations of these facilities would protect wildlife and fish habitat in other areas. Impacts would be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Fish and Wildlife: Cumulative Impacts
Table 4-1 lists the reasonably foreseeable cumulative actions for the CCD. Anticipated increases in mineral exploration and extraction, lands and realty

actions, renewable energy development, OHV use and recreational activities under the alternatives would increase disturbance and habitat fragmentation for fish and wildlife species. Pinyon and juniper encroachment in sagebrush areas will continue to degrade habitat for sagebrush-dependent species while expanding habitat for pinyon-juniper dependent species. Factors, including drought (climate change), wildfires, and surface disturbance caused by multiple uses, have contributed to conversion of tens of thousands of acres of native habitat to cheatgrass, impacting wildlife habitat and sustainability. Planned fuel breaks and prescribed burns under the alternatives would reduce the chance of large-scale fire and the likelihood of establishment and spread of invasive weeds. Some land uses would be prohibited or restricted, to varying degrees, in priority habitat, special status species habitat, ACECs, and priority watersheds under the alternatives, reducing disturbance and increasing habitat restoration. In addition, all alternatives would implement BMPs, standard operating procedures, and required mitigation measures and permit stipulations to minimize impacts on wildlife and its habitat.

4.3.6 Special Status Species

Summary

Impacts on special status fish, wildlife, and plant resources in the planning area include loss or alteration of native habitats, increased habitat fragmentation, changes in habitat and species composition, disruption of species behavior leading to reduced reproductive fitness, and direct mortality. In general, impacts on fauna would be similar to those discussed in the Fish and Wildlife section, but may be more severe on special status species because of their rarity.

The direct and indirect impacts of management actions on special status species may vary widely, depending on factors such as the dynamics of the habitat (e.g., community type, size, shape, complexity, and condition), season, intensity, duration, frequency, and extent of the disturbance, rate of vegetation recovery, change in vegetation structure, type of soils, topography and microsites, species present, and the ability of species to recolonize a site following disturbance.

Alternative C would best manage habitat to maintain biological diversity. Although Alternative B is the resource use alternative, it includes more proactive resource management and conservation measures for special status species than Alternatives A or D.

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on special status species:

- The health of special status species is directly related to the overall health and abundance of their habitat. Special status plant health is

also directly related to an abundance of individual plants as well as the condition and abundance of their habitat. Many resource management actions have an effect on special status species. Impact analysis on special status species included an assessment of whether each action would result in the possible destruction, degradation, or modification of habitat, as well as impacts that could improve terrestrial and aquatic habitat for wildlife and plants. The evaluations are confined to the actions that have direct, immediate, and more important effects on the planning area, instead of identifying and evaluating all possible interactions and cause-effect relationships, even those that are minor.

- Some impacts will be direct, while others will be indirect and affect special status species and their habitats through a change in another resource. Some impacts may be direct for special status plants but indirect for special status wildlife that use the area. Direct impacts on special status species include disruption, potential trampling; and direct mortality.
- Indirect impacts include loss of habitat suitable for colonization and/ or alteration of ecological natural processes that create and maintain habitat over time due to surface disturbance; introduction of noxious weeds; increased noise; and general loss of habitat due to surface occupancy or surface compaction. Potential indirect impacts include those that cannot be absolutely linked to one action, such as decreased plant health from reduced air or water quality.
- Most of the actions are mitigation and protective measures intended to improve health or habitat of special status plant and wildlife populations. Quantifying these impacts is difficult due to the lack of monitoring data for most species. In absence of quantitative data, best professional judgment was used.
- The health of fisheries is directly related to the overall health and functional capabilities of riparian and wetland resources, which in turn are a reflection of watershed health. Any activities that affect the ecological condition of the watershed and its vegetative cover would directly or indirectly affect the aquatic environment. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, time and degree of disturbance, existing vegetation, and precipitation. As riparian systems adjust in response to the removal of vegetation or changes in hydrologic conditions, the availability of habitats required to fulfill the life history requirements of fish populations might be affected.

- Only impacts on federally listed, proposed, or candidate, state threatened or endangered, or BLM sensitive species are discussed in this section.

Indicators
The following indicators were used to assess the degree of impacts on special status species:

- Loss, fragmentation, degradation or restoration of habitat
- Disturbance or stress to individuals

Nature and Type of Effects
Potential impacts to special status species within the planning area are discussed below with an additional section that specifically addresses impacts on Greater Sage-Grouse under the various alternatives.

Special Status Species: Effects from Air Quality Management

Effects Common to All Alternatives
Air quality has limited direct and indirect effects on special status plants or wildlife, limited to the impacts of dust, smoke or other air pollution on health or habitat quality. Since all the alternatives are designed to meet air quality standards, including abatement of dust deposition on vegetation, the impact on special status species is expected to be minimal.

Special Status Species: Effects from Climate Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under current management, there is limited consideration of climate change. Current climate change management centers on collecting data, managing drought conditions and areas where conversion of natural vegetation communities to cheatgrass or pinyon-juniper is occurring. Climate change impacts would continue, based on implementation of limited management responses which could decrease contiguity of habitat and change conditions, making habitat more suitable for some species, but less suitable for others.

Effects under Alternative B
Alternative B would prioritize treatments to remove threats that may exacerbate the negative effects of climate change on BLM special status species and ecosystem functions. Under Alternative B, climate change impacts would be prioritized, considered in project approval and funding, and specialists would use adaptive management in to address existing threats resulting from climate change. Climate change would be considered in project design and operation. Rapid Ecological Assessment would be employed to assess impacts of climate

change and maintain connectivity. These approaches would increase the ability of BLM management to respond to climate change.

Effects under Alternative C
Effects under Alternative C would be the same as under Alternative B.

Effects under Alternative D
Effects under Alternative D would be the same as under Alternative B.

Effects under Alternative E
Effects under Alternative E would be similar to under Alternative B, however proactive steps would be implemented to mitigate effects of climate change on BLM special status species. More timely mitigation efforts would occur to reduce impacts.

Special Status Species: Effects from Soil Resources

Effects Common to All Alternatives
Conservation measures to prevent erosion and other soil degradations are included under all alternatives. Protection of soil indirectly conserves plant and wildlife habitat, and preventing sedimentation in watercourses can improve the health of aquatic and semi-aquatic populations. Soil litter, appropriate vegetation, and good infiltration are important to land health and habitat quality. Implementation of BMPs and RAC Standards and Guidelines for soil- disturbing activities and application of reclamation measures will mitigate for soil disturbance, encourage healthy vegetation communities and wildlife habitats. Implementing BMPs and other mitigation measures for proposed activities located on sensitive soil types would minimize soil erosion and maintain soil stability and would indirectly help maintain and benefit sensitive plants.

Effects under Alternative A
Alternative A limits OHV use to designated roads and trails in highly erosive soil areas. This approach provides protection for soils in these areas from OHVs, but does not pro-actively prevent erosion in other locations.

Effects under Alternative B
Alternative B would apply an erosion control plan to projects on slopes, would apply soil amendments to minimize soil disturbance, and apply a CSU stipulation on highly erosive soils. These management approaches would diminish erosion and soil damage relative to current management, and better protect sensitive species habitat.

Effects under Alternative C
Alternative C should result in increased vegetation cover, more intact biotic soil crust, and increased litter compared to the other alternatives. As a result, the management approaches under Alternative C would diminish erosion and soil damage relative to current management and Alternative B and would protect

sensitive species habitat by reducing soil crust breakage through application of applying mulch.

Effects under Alternative D
Alternative D mandates that deep-rooted stabilizing vegetation, including native and nonnative plants, will be utilized to improve the soil surface. It also includes the approaches under Alternatives B and C to protect sensitive species habitat. Along with Alternative E, Alternative D includes the most specific actions to reduce soil damage and protect habitat.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative D.

Special Status Species: Effects from Water Resources

Effects Common to All Alternatives
Effective watershed management results in the minimization of erosion, the maintenance of hydrologic flow, healthy vegetative communities, and high quality habitat for special status species.

Developing water sources may result in more available water for special status wildlife species, as long as these species have access to the developments. Furthermore, developing water sources may lead to an increase in insect populations. If insect populations were to increase, special status birds, and small mammals (e.g. bats) could benefit as a result of more available forage; however, increases in insects could also result in more incidences of diseases such as West Nile virus. Development of water sources would require construction, during which short-term disturbance to special status species and their habitat would occur. All alternatives have the goals of improving water supply and maintaining water quality and floodplains in accordance with federal, state, and local laws.

Water resources sustain life, maintain vegetative community health, deliver hydrologic flow to channels and provide habitat to special status species, Effective watershed management minimizes erosion, maintains hydrologic flow, saturates soils and replenishes nutrients to maintain vegetative community health and special status species habitat. Developing water sources for human uses may lead to an increase in insect populations the increase is beneficial in providing food for special status birds and bats but may also increase the incidence of diseases such as West Nile virus.

Effects under Alternative A
Alternative A limits BLM-authorized activities in degrading watersheds and specific portions of urban watersheds at the most immediate risk of degradation, and limits OHV use in riparian areas. These approaches protect

water supply for special status species in these local areas, but provide limited oversight of watershed health and water quality on a regional scale.

Effects under Alternative B
In addition to the efforts under current management, Alternative B and the other action alternatives would establish a listing of priority watersheds and priority water supply areas based on presence of threatened and endangered species habitat (occupied and recovery areas), among other factors. These policies may improve management of water supply for special status species.

Effects under Alternative C
In addition to the approach under Alternative B, Alternative C would also use permitting, land acquisitions, and other realty actions to acquire minimum pool and in-stream flows or to gain access to water sources or developments. Alternative C would also establish priority watersheds and would apply management constraints for protection within these priority watersheds. Water sources would be developed with an emphasis on wildlife needs, increasing the quality of special status species habitat on BLM-administered land.

Effects under Alternative D
Effects under Alternative D would be similar to those described for Alternative C.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative C.

Special Status Species: Effects from Vegetation Resources

Effects Common to All Alternatives
Vegetation includes upland vegetation, noxious and invasive weeds, and riparian and wetland systems.

Range management actions to promote land health, such as seedings and land treatments, would occur under all alternatives. Land treatments would facilitate the maintenance of habitats in various stages of shrub or understory condition. Special status species would benefit as a result of actions that promote rangeland health. Rangeland health is discussed in more detail in the Livestock Grazing section.

Actions that would improve riparian and wetland PFC would occur under all alternatives. These actions are designed to increase the quantity and quality of riparian vegetation, thereby improving habitats for riparian- and wetland-dependent special status species.

Spread of noxious and invasive weeds decreases vegetative diversity and native vegetative production, thus diminishing habitat for special status species. Weeds

out-compete native species in disturbed areas and can create mono-cultures that are more prone to wildfire. Weed treatments using integrated pest management would be applied under all alternatives. These treatments may use chemical, mechanical, or biological means to reduce competition and improve native species diversity. Although weed treatments generally improve habitat in the long-term, short-term disturbances would occur, including disturbance and loss of cover, causing some species to temporarily avoid treated areas.

Effects under Alternative A

Under Alternative A, integrated pest management would continue to be used for weed control. Land health assessments would monitor the health of rangeland systems. Riparian management actions would continue to reduce the potential for degradation of riparian special status species habitat. The implementation of BMPs that address non-grazing impacts, such as water diversions, roads, and recreation, would avoid and mitigate many surface disturbances and erosion. No pinyon-juniper removal would occur.

Effects under Alternative B

Under Alternative B, a pinyon-juniper removal and thinning program would be initiated to aid in sagebrush restoration. As many as 20,000 acres would be restored annually, and an additional 6,500 acres thinned. Following the removal program, additional thinning of woodlands will occur annually. Removing pinyon-juniper woodlands would benefit sagebrush-dependent special status species, while reducing habitat for special status species found in pinyon-juniper woodlands. Thinning of pinyon-juniper woodlands, however, may benefit species that utilize open stands of pinyon-juniper by increasing vegetative and structural diversity.

Alternative B would manage for healthy and diverse forestlands to maximize sustained yield of forest products and economic development, and would also allow for salvage logging of burned stands. It would also limit stream crossings to minimize sedimentation.

Alternative B would allow sagebrush removal when needed for mineral extraction or other higher priority uses, which is less protective than approaches under the other action alternatives. It lacks provisions to promote native plant use in rehabilitation and stabilization projects and to restrict grazing in riparian areas. Alternative B and the other action alternatives would use appropriate control methods, including mechanical, biological and chemical to eradicate or control invasive, nonnative species and noxious weeds, and implement other policies to reduce the spread of noxious weeds.

Alternative B includes vegetation treatments for rangeland restoration, and aim to maximize ecological site potential to establish desired future condition, to benefit land health. Revegetation efforts would use the most effective plant species, not necessarily native species; would promote maintenance of ecological integrity; and would aim to restore depleted understory vegetation.

All these approaches would benefit special status species by maintaining and restoring habitat, more than current management.

Effects under Alternative C

Under Alternative C, a limited pinyon-juniper removal (as many as 3,500 acres) and thinning project would be initiated, to restore sagebrush ecosystems (**Table 2-1**). These actions would benefit sagebrush-dependent special status species, while reducing habitat for species found in pinyon-juniper woodlands, compared to Alternative A. However, these impacts would benefit species found in pinyon-juniper woodlands more, and benefit sagebrush-obligate species less, than Alternative B,

Alternative C would manage for healthy and diverse forestlands with a focus on wildlife habitat, forest health and fuels reduction, would allow salvage logging only to protect public safety, and includes mitigation measures for conducting forest/woodland treatments. For rehabilitation projects, Alternative C promotes use of native plant material and restoration techniques to establish desired plant communities. Alternative C would limit woodcutting or vegetative removal in riparian areas. Wildlife, livestock, or recreation implementation plans would consider impacts on riparian areas and meadows, and consider limits to livestock grazing in sensitive riparian areas (also D and E). In attaining PFC, the interim goal would be 85 percent (functioning at risk with an upward trend), progressing towards or attaining PFC, compared to 75 percent under Alternative B.

Rangeland treatments are similar to Alternative B, but Alternative C does the most to promote revegetation with native species and to limit sagebrush removal. Because special status wildlife species are more likely to use native plant assemblages as habitat, these policies would benefit special status species more than other alternatives (as long as the revegetation with native species was successful).

Effects under Alternative D

Alternative D would study pinyon-juniper removal but does not include a removal or thinning program. However, pinyon-juniper obligate special status species would be protected. Under this alternative, the BLM would engage interested parties to develop a restoration strategy that may include removal or thinning of pinyon-juniper in the future. Alternative D would also manage for healthy and diverse forestlands, and consider impacts on riparian areas, as under Alternative C. PFC goals would be the same as Alternative C. It protects against sagebrush removal in urban interface areas only.

Alternative D would allow salvage logging for public safety and to meet demand for wood. It includes mitigation measures, as under Alternative C. Alternative D would promote habitat for special status species more than current management, but less than Alternatives C or E.

Effects under Alternative E

Alternative E has a robust pinyon-juniper removal and thinning program to aid in sagebrush restoration. As many as 8,500 acres would be restored and an additional 6,500 acres thinned, less than anticipated under Alternative B, but more than the other alternatives. These actions would benefit sagebrush-dependent species, such as Greater Sage-Grouse, while reducing habitat for species found in pinyon-juniper woodlands.

Implementing Alternative E could result in the conversion of fewer low density pinyon-juniper areas to sagebrush than Alternative B, but more than Alternative C (on an annual basis). In regards to thinning dense pinyon-juniper woodlands, Alternative E is the same as Alternative B, but Alternative E could result in thinning more acres of dense pinyon-juniper per year than Alternative C.

Species that utilize pinyon-juniper woodlands, particularly open stands of pinyon-juniper, should benefit from the increased vegetative and structural diversity that would result from thinning dense pinyon-juniper stands, but overall the actions would provide most benefit to sagebrush-dependent species.

Alternative E would also manage for healthy and diverse forestlands, consider impacts on riparian areas, and protect sagebrush from removal, as under Alternative C. PFC goals would be the same as Alternative C. Alternative E would allow salvage logging for public safety, forest health, and to meet demand for wood. It includes mitigation measures as described under Alternative C. Alternative E has the highest potential to protect and promote habitat for special status species compared to other alternatives

Special Status Species: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Special status species would benefit from the development of specific objectives and actions to protect and enhance habitat conditions for fish and wildlife. Restrictions on development within sensitive or priority habitats would lessen disturbance to special status terrestrial, aquatic, and semi-aquatic species, damage to plants, and degradation of habitat.

Actions common to all alternatives include modification of fences to facilitate wildlife passage, and marking the structures to reduce wildlife collision risk. Water troughs for livestock will be modified to allow wildlife access and prevent trapping, and BLM will coordinate with other agencies on mitigation measures for wildlife and wildlife habitat protection. All alternatives would also implement timing restrictions and distance buffers, as appropriate, to minimize impacts on wildlife from activities during important life cycle periods (e.g., breeding or major migrations). Implementing management actions to restore or improve wildlife habitat would benefit special status species.

Management to protect raptors, bats, migratory birds, and big game would also protect special status species in these groups or special status species that utilize similar habitats.

Effects under Alternative A

Current management is designed to manage wildlife habitat for a long-term goal of providing forage for reasonable numbers of big game. This approach could provide benefits to most special status species; however, managing solely for forage for big game may not provide some special status species with the most ideal habitat.

Effects under Alternative B

Alternative B would also manage for key habitat integrity to support fish and wildlife populations, with an emphasis on priority species and habitats. It would implement additional habitat improvement projects, and remove undesirable nonnative aquatic species (such as bullfrogs) from sensitive breeding grounds.

The BLM would apply CSU stipulations to areas surrounding important aquatic habitat, and manage priority wildlife habitat as ROW avoidance areas. Management would mitigate disturbance from land use authorization activities on big game species including pronghorn, bighorn sheep, and mule deer, and avoid disturbance to nesting migratory birds and important migratory pathways. It would inventory for bats before development near caves and restrict development within ¼-mile of raptor nests. All these programs would benefit special status species.

Effects under Alternative C

Programs under Alternative C would be similar to Alternative B, with stronger protections for raptor nests, NSO instead of CSU stipulations for aquatic habitat areas, and ROW exclusion rather than avoidance areas. These programs would benefit special status species more than the other alternatives.

Effects under Alternative D

Programs under Alternative D would be similar to Alternative B, but some policies would only apply within the urban interface zone. Benefits to special status species would be greater than current management but less than the other action alternatives.

Effects under Alternative E

Programs under Alternative E would be similar to Alternative B, but would apply NSO stipulations as under Alternative C. These programs would enhance benefits to special status species compared to current management.

Special Status Species: Effects from Special Status Species Management

Effects Common to All Alternatives

Special status fish, wildlife, and plant management actions would protect and work toward recovery of listed species and to prevent the federal listing of sensitive species. Actions common to all alternatives that would protect special status species include management of ACECs that protect special status species, special status species inventories of project areas prior to authorization of surface disturbance, mitigation and monitoring for special status plants and suitable nearby habitat. Under all alternatives, recovery and management plans would be implemented, recovery and conservation teams would be formed, and USFWS conservation recommendations would be implemented.

All the action alternatives provide management actions and development restrictions to protect Greater Sage-Grouse habitat.

Effects under Alternative A

Alternative A would work toward the reintroduction of Lahontan cutthroat trout, bighorn sheep and other endemics into suitable habitat. This approach benefits these species but does not adequately address concerns for all the special status species in the planning area.

Effects under Alternative B

Alternative B and the other action alternatives would promote maintenance and recovery of federally listed and proposed species by conserving and protecting their habitats. One new ACEC would be established for special status species under this alternative. Extensive management actions would be put in place to protect Greater Sage-Grouse habitat under this alternative, including soil treatments, limits on prescribed fire, pinyon-juniper treatments, limitations on mineral leasing, buffers around leks to protect from disturbance, restrictions on fence construction and ROW avoidance areas. This alternative would do more to benefit special status species than current management, but does not include reintroduction.

Effects under Alternative C

Under Alternative C, seven new ACECs would be established for management and protection of special status species. Alternative C would implement similar protections for Greater Sage-Grouse to Alternative B, but with stronger provisions, such as wider buffer zones around leks or other sensitive habitat areas, and ROW exclusion rather than avoidance areas. Protections to special status species would be greatest under Alternative C, as habitat- and species-disturbing activities would be the most restricted.

Effects under Alternative D

Actions under Alternative D would be similar to Alternative B; however two special status botanical species ACECs would be established under this alternative. Greater Sage-Grouse protections would be similar to Alternative B.

This alternative would protect special status species habitat more than current management, but less than the other action alternatives.

Effects under Alternative E
Alternative E would implement similar protections for Greater Sage-Grouse to Alternative B, with greater protections in some instances, such as wider fence restriction buffers. Reintroduction of special status endemic species is included, but only two ACECs (Churchill Narrows & Virginia Williams Pine Nut Mountains Williams Combleaf) would be established to protect special status plants. This alternative would benefit special status species and their habitat more than current management, Alternative B or Alternative D, but less than Alternative C.

Special Status Species: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Wild horses and burros compete with some special status species for forage, water and cover. They consume relatively large amounts of vegetation (which can include special status plant species) and water, and can also cause substantial impacts on riparian areas. Wild horses and burros can also trample avian nests located in low vegetation or on the ground. All alternatives identify the need to maintain AMLs within HMAs and would use the gather process as a tool to meet that need. Gathering would help prevent excess impacts from overpopulation of herds and help ensure adequate forage, water and overall habitat condition for special status species. Gathers can cause short-term stress and displacement of special status species resulting in the disruption of life-cycle behaviors; however, the timing of gathers can reduce these impacts on most species.

Habitat monitoring, for sustainability would be undertaken under the action alternatives and may result in adjustment of AML. Fewer horses on the landscape would result in fewer impacts on wildlife habitat. This would also help in maintaining healthy habitat for special status species.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Wildland fire could be beneficial or detrimental to special status species and their habitats. Periodic fires may reduce dense understory and restore nutrients to soil. Fire may convert some late-successional vegetation to an earlier seral stage, increasing habitat and species diversity. However, fire can also result in the loss of habitat for species that prefer late seral communities, increased potential for erosion, and increased sedimentation and water temperatures in aquatic habitats from removal of upland vegetation. Fire can also cause long-term alternations of habitat, particularly for sagebrush habitats (or other shrub habitats that experience less than 12 inches of precipitation per year), which are slow to recover from fire, and vulnerable to competition from invasive weeds, which results in a loss of forage and cover for sagebrush-dependent species. Mortality of special status plants and wildlife can also occur from fires.

Under all alternatives, fuel treatments can aid in limiting the size of wildfires, thereby reducing the extent of impacts. ESR activities, such as erosion control measures and reseeding, performed following fires facilitate restoration of burned areas.

Fire suppression also has short-term, localized impacts on habitats for special status species. The use of heavy equipment or hand tools for fire breaks removes or crushes vegetation and disturbs soil, increasing erosion and the risk of invasive species spread. Furthermore, fire suppression actions can disturb special status species and cause them to avoid treatment areas.

Effects under Alternative A
Alternative A manages wildfires in Category A, B C, and D, each with target fire suppression goals to protect property and resources. Fire suppression could protect some special status species habitat, but can contribute to more damaging fires if dense understory vegetation builds up.

Effects under Alternative B
Alternative B would develop fire management plans to guide response to wildfire and prioritize suppression activities, and improve ESR. It includes provisions to prevent cheatgrass and other invasive species from dominating burned areas and altering the natural fire regime by re-establishing appropriate species based on the site potential and the probability of success. This approach would benefit special status species habitat more than current management.

Effects under Alternative C
Management under Alternative C would be similar to Alternative B, with more focus on protecting sensitive biological, cultural, and other natural resources, and use of native species in revegetation. This alternative would do the most to protect special status species habitat from fire damage.

Effects under Alternative D
Effects under Alternative D would be similar to those described for Alternative B, but would focus on the urban interface zone.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative B.

Special Status Species: Effects from Cultural Resources Management

Effects Common to All Alternatives
Management for cultural resources and protection of cultural ACECs would provide incidental protection of special status species habitat in areas that contain identified cultural resources through restriction of disturbance to cultural resource areas in order to minimize damage to artifacts, erosion, and vegetation loss.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Management for paleontological resources and protection of paleontological ACECs would provide incidental protection of special status plant, wildlife, and fish habitat, through restriction of disturbance to paleontological resource areas in order to minimize vegetation loss and erosion. Promoting public visitation to areas of paleontological interest or importance could impact special status

species habitat, depending on the numbers of visitors to areas. Wildlife could be disturbed, plants may be trampled, invasive species introduced and spread, and wildlife may avoid habitat in areas of high visitation, but these impacts would be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Visual Resources Management

Effects Common to All Alternatives
Impacts on special status species would vary, depending on the number of acres identified by VRM class. In general, management of Class I or II VRM designated areas would allow fewer intrusions to the landscape resulting in fewer impacts on plant and wildlife habitat.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Caves and Cave Resource Management

Effects Common to All Alternatives
Under all alternatives, caves would be evaluated for their potential value as bat habitat. Caves with identified bat resources would be assessed and prioritized for public closure to protect bat habitat, minimize potential impacts on roosting bats, and prevent the spread of disease (such as White-nose syndrome, a fast-spreading fungal disease). Implementation of other measures or use restrictions to protect caves and cave resources would also serve to protect habitat and limit disturbance to special status bats. However, installation of bat gates could prevent other wildlife, including bighorn sheep, from using caves for refuges or for water sources. If a cave may provide an important water source for wildlife, a cave inventory should be conducted before installing bat gates.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
Noise, surface disturbance and loss or fragmentation of habitat resulting from the harvest of forest products could impact special status species. Additionally, harvesting forest products could result in the mortality of some species. These activities are relatively limited in the planning area, and impacts on special status species should be localized, minor, or not likely to occur within critical special status plant species habitat

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Appropriately managed livestock grazing may benefit special status species habitat by maintaining grass and forb diversity and removing fire-prone understory vegetation, but may also be detrimental if excessive levels result in loss of cover and forage for special status species, or trampling of sensitive riparian habitat.

Overgrazing by livestock can also result in the elimination of bunchgrasses, which results in an increase in bare ground that favors the invasion of cheatgrass (Reisner et al. 2013). Overgrazing by livestock along riparian areas can result in the loss of streamside vegetation, increased sedimentation in the water, and increases in water temperature, which can have negative impacts on fish populations (Kauffman and Krueger 1984). Waste from cattle in waterbodies can result in a decrease in oxygen for fish. Furthermore, nitrites and ammonia from cattle urine and feces are chronically toxic to fish (Taylor et al. 1989).

All alternatives would comply with standards and guidelines for livestock grazing, and manage allotments toward meeting Rangeland Health Standards. Allotments meeting standards provide superior habitat, because they have healthier vegetation, more native species, and less soil damage. All alternatives would rest burned areas from livestock grazing for a minimum of two growing seasons. New grazing fences would be built to comply with wildlife standards.

These actions would promote habitat conditions for healthy special status plant, fish and wildlife populations, which is especially important during times when additional stressors (such as drought or fire) impact habitat.

Effects under Alternative A
Under current management, existing range management programs and closures would continue (see **Table 2-1**). These programs promote rangeland health and make provisions to improve habitat for wildlife, including special status species, but some lands do not meet rangeland health standards and also likely provide poor habitat due to loss of species diversity, understory cover, and forage and riparian degradation.

Effects under Alternative B

Under Alternative B, there would be a modest increase in acreage unavailable for livestock grazing, and increased focus on restoration. Alternative B allows prescriptive grazing for vegetative management purposes as necessary. Acres available and unavailable for grazing would be similar to Alternative A.

Effects under Alternative C

Under Alternative C, land open to grazing would be reduced by 2.6 million acres and grazing utilization levels would be reduced to 73 percent of current AUM levels (**Table 2-1**). Areas containing Greater Sage-Grouse priority habitat would not be available for grazing, resulting in more available forage for special status species. If the reduced utilization level did not improve the ecological condition of allotments prior to the next periodic review, further reductions could be made based on monitoring. These provisions would improve the health of allotments that were not meeting Rangeland Health Standards due to overgrazing, and could provide more cover for special status species. Compared to Alternatives A and B, Alternative C would result in more available forage and cover for special status species.

Effects under Alternative D

Alternative D allows for prescriptive grazing only within the urban interface area. Under Alternative D, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments during periodic review process every 10 years or on a case-by-case basis. Effects would be similar to those described for Alternative A.

Effects under Alternative E

Under Alternative E, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments conducted during a periodic review process. Effects would be similar to those described for Alternative A.

Special Status Species: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Impacts on special status species and habitat from mineral exploration and development generally occur from surface disturbance causing loss and fragmentation of habitat, as well as disturbances from noise and activity associated with construction, and operation of facilities and roads. For special status plants growing within materials of commercial value, removal of the material would result in a loss of habitat nutrients and a disruption in natural processes and habitat structure. Occasionally, there is direct mortality to special status species animals or plants, though mitigation measures are adopted to significantly reduce this potential.

Impacts on special status plants include disturbance to soil horizons, loss of habitat nutrients, and disruptions in natural processes that are conducive to sensitive species plant survival and re-establishment.

In some situations, surface water may also be affected. Identifying lands open or closed to mineral development, open with standard stipulations or open with special stipulations would protect special status species by either restricting mineral uses in areas or providing mitigation for adverse impacts. Generally, greater restriction on disturbance leads to less impact on special status species and habitat.

All alternatives would make mineral resources (leasable, locatable, salable) available for extraction or development but with differing open acres, stipulations and conditions of approval to protect other resources. Development of new sites and associated impacts on special status species would be analyzed under the NEPA, with mitigation and stipulations applied to reasonably protect affected resources. Reclamation or rehabilitation of mineral operations before closure includes recontouring, stabilization, revegetation, and removal of facilities. Under all alternatives, 194,900 acres are withdrawn from locatable mineral entry.

Special Status Species: Effects from Mineral Materials Management

Effects under Alternative A

Under this alternative, 4,239,100 acres would remain open to mineral material disposal (**Table 2-1**). New proposed sites would be analyzed under NEPA requirements. Impacts on wildlife and habitat would be avoided or mitigated with applied terms or stipulations.

Mineral material sites would result in loss of habitat for special status species and long-term disturbance (e.g., surface, noise, and activity) in the vicinity of the sites as long as they remain open and active. These disturbed areas can increase the risk of invasive weed introduction and spread, while decreasing habitat quality. Sites that require new access roads would also result in loss and fragmentation of habitat and an increase in dust impacts depending on frequency of use and proximity. There is also the potential of direct mortality to special status wildlife species as a result of activities associated with mineral material sites.

Effects under Alternative B

The BLM would manage 3,996,100 acres as open to mineral material disposal, almost the same number of acres as under Alternative A with standard authorization terms and stipulations. This alternative would seek to maximize and promote the supply of mineral materials. Special status species and habitat would continue to be impacted (as described under Alternative A) due to the maximization of material sites.

Effects under Alternative C

Under this alternative, the BLM would manage 1,798,400 acres as open to mineral material disposal, a 58 percent decrease compared to current management (**Table 2-1**). The focus would be on developing the fewest number of material sites necessary while meeting demands. Special status species and habitat would receive fewer impacts due to fewer acres open to mineral material disposal, and fewer acres open with standard authorization terms and stipulations. The minimization of new material sites would also result in fewer impacts.

Effects under Alternative D

Management under this alternative would be the same as Alternative B, with the added provision to close facilities if they are incompatible with adjacent land uses within the urban interface. This management would reduce impacts in localized areas only.

Effects under Alternative E

Management under Alternative E would manage 3,024,600 acres as open to mineral material exploration and development, a 29 percent reduction from current management. Therefore, this alternative would result in fewer impacts on special status species than current management.

Special Status Species: Effects from Fluid Minerals Management

Effects under Alternative A

Under this alternative, the BLM would manage 3,964,200 acres as open to leasing with 700 acres open to leasing but with NSO stipulations. Stipulations and conditions of approval would be applied to protect other resources, including special status species habitat. Fluid mineral exploration and development would result in impacts on wildlife and habitat similar to those for management of mineral materials. In addition to those impacts, the presence of structures such as buildings or transmission lines can cause injury or death to avian species as well as providing artificial perching/hunting and nesting opportunity for raptors and ravens. Therefore, predation is unnaturally increased along these lines. Construction of geothermal wells would affect groundwater levels in aquifers and affect surface water flows, which would impact special status species habitat. The degree to which habitat would be impacted is dependent on water demand or usage that would affect surface water quantity. Developments can cause disruptions to aquifers and resultant dewatering of springs, damaging the habitat for special status plants, These impacts would be reduced based on implementation of BMPs, permit stipulations, and mitigation measures.

Effects under Alternative B

Under this alternative, the BLM would manage 4,034,700 acres as open to leasing, with 404,600 acres open to leasing with a NSO stipulation and 2,120,200

acres open with a CSU stipulation. This alternative would open more acres to fluid mineral leasing and extraction than current management but would apply restrictive stipulations to many acres. Impacts on special status species and habitat would be as discussed under Alternative A, but on fewer acres. NSO stipulations would protect special status species from all surface disturbance, though disturbance may still occur in the vicinity. CSU stipulations would provide protection from surface disturbance during season of use or sensitive periods. However, subsurface disturbance may still harm special status species habitat by interrupting aquifer flow or dewatering springs critical to habitat use. Overall, this alternative may reduce impacts on special status species compared to current management.

Effects under Alternative C

Under this alternative, the BLM would manage 2,721,500 acres open to leasing with standard lease terms and stipulations, 1,039,200 acres as open to leasing with a NSO stipulation, and 1,242,800 acres with a CSU stipulation. Impacts on special status species and habitat, as discussed under Alternative A, would be reduced under this alternative with greatly reduced acreage open to leasing. Alternative C would apply restrictive stipulations on more acres, and greater acreage would be managed as closed to leasing, which would protect special status species.

Effects under Alternative D

Under this alternative, the BLM would manage 4,066,200 acres as open to leasing with 864,800 acres open to leasing with a NSO stipulation and 2,071,400 under a CSU stipulation. Impacts on special status species and habitat would be similar to Alternative B, with reduced impacts on special status species on those acres with restrictive stipulation applied, which are greater than under current management.

Effects under Alternative E

Under this alternative, the BLM would manage 3,796,000 acres as open to leasing with 1,151,600 acres open to leasing with a NSO stipulation and 1,844,900 acres under a CSU stipulation. Impacts on special status species and habitat would be similar to Alternative B, with reduced impacts on special status species on those acres with restrictive stipulation applied, which are greater than under current management.

Special Status Species: Effects from Nonenergy Leasable and Locatable Minerals Management

Effects under Alternative A

Under this alternative, the BLM would manage 4,064,400 acres as open to leasing. Nonenergy leasable mineral exploration and development would result in impacts on wildlife and habitat similar to those from salable minerals exploration and development.

Under this alternative, 3,700 acres are petitioned for withdrawal. Locatable mineral and solid mineral exploration and development would include the potential to remove special status species habitat through surface disturbances associated with exploration road construction and drilling, mine development including; mine pits, haul roads, processing, waste dumps, substations, power lines and other infrastructure. The degree of impacts on special status species is dependent on the proximity of facilities to special status species habitat and the size of the disturbance footprint.

Effects under Alternative B

Under this alternative, the BLM would manage 3,821,300 acres as open to leasing, and 439,600 acres petitioned for withdrawal. However, there would be more acres petitioned for withdrawal. Impacts on special status species would be reduced as a result of the reduction in open acreage to mining. Alternative B would also restrict nonenergy mineral leasing and mineral material disposal within Greater Sage-Grouse habitat, but only if it was determined that there would be adverse impacts on Greater Sage-Grouse or their habitat. In other areas, impacts would remain the same as under Alternative A.

Effects under Alternative C

Under this alternative, the BLM would manage 1,842,400 acres as open to leasing, and 117,500 acres petitioned for withdrawal. With reduced acreage open to mining compared to Alternative A impacts on special status species would be reduced as a result of the closed areas, compared to current management. Alternative C would also restrict nonenergy mineral leasing and mineral material disposal within Greater Sage-Grouse habitat, without the requirement to determine adverse impacts first. Thus, this alternative would protect more special status species habitat from mining impacts than Alternative A and would allow impacts on fewer acres.

Effects under Alternative D

Under this alternative, impacts on special status species and habitat from nonenergy leasable minerals would be similar to Alternative C. For locatable minerals, 440,800 acres would be petitioned for withdrawal, Impacts would nearly be the same as Alternative C.

Effects under Alternative E

Under this alternative, the BLM would manage 3,017,400 acres as open to nonenergy leasable mineral leasing, and 727,100 acres petitioned for withdrawal from locatable mineral entry. With fewer acres open to mining compared to Alternative A and impacts on special status species would be reduced under this alternative. Leasing and disposal would also be restricted within Greater Sage-Grouse habitat. Thus, this alternative would protect more habitat from locatable mining impacts than Alternative A, and would allow impacts from nonenergy leasable minerals on fewer acres than Alternative.

Special Status Species: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Direct impacts from recreation management actions include loss or modification of habitat from constructing recreational facilities, including roads. Recreation management actions that result in increased human presence could have localized disturbance impacts on special status species from dispersed activities such as hiking, biking, camping, fishing, hunting, and sightseeing. Commercial, competitive, and group recreational activities could have greater impacts, but effects would be minimized through use restrictions and mitigation measures. Increased human-wildlife interaction could cause physiological stress, net or habitat abandonment by sensitive animals.

OHV use is the most damaging form of recreation to special status species, as a result of habitat trampling and disturbance. OHV management actions that result in increased OHV use would result in localized impacts on special status species. Impacts could include stress and displacement of wildlife, destruction of plants, and degradation of habitat or sedimentation of waterways. OHV use can also alter the seasonal use patterns of wildlife species.

All alternatives would provide a wide range of developed and dispersed recreation opportunities to meet projected recreation demand in the planning area. All alternatives would also manage recreation use on BLM-administered land to protect natural resources, provide for health and safety, and minimize conflicts among land uses. The BLM strives to increase public awareness of land stewardship through interpretation and education.

Effects under Alternative A

Under this alternative the BLM would continue to manage 67,700 acres in the Walker Lake and Alpine SRMAs. Managing lands as SRMAs could encourage additional use of these lands and thus increase disturbances to special status species; however, by designating SRMAs, disruption of other special status species areas may be reduced by focusing recreationalists in specific areas. Management within SRMAs can reduce the impacts of recreational activities, and adverse impacts can be monitored and addressed.

OHV use would be the most detrimental to special status species under Alternative A. Most of the planning area (3,840,300 acres) would be open to OHV use with minimal limited (924,300 acres) and closed (31,800 acres) designated areas.

Effects under Alternative B

Under Alternative B, the BLM would manage 76,100 acres as SRMAs, 12 percent more than Alternative A. The Alpine and Walker Lake SRMAs would be maintained but reduced in size, and four additional SRMAs designated, identifying recreation as the principal use of these lands. Managing lands as SRMAs could encourage additional use of these lands and thus increase the level

of disturbances to special status species in these areas. Alternative B would also establish 7 ERMAs, which provide less funding for public access and improvements than SRMAs, and thus may have less visitation and fewer impacts on special status species populations.

Under Alternative B, the BLM would manage 95,300 acres as open to OHV use, with 4,677,000 acres limited and 26,700 acres closed. Areas that would be managed as closed to OHV use include priority habitat areas. This alternative would reduce impacts from OHV use compared to current management, but less than the other action alternatives.

Effects under Alternative C

Under Alternative C, 74,700 acres would be designated as SRMA, 10 percent more than Alternative A. The Walker Lake SRMA would be maintained and the Alpine SRMA expanded, and one new SRMA, Sand Mountain, would be established. Fourteen ERMAs would also be established. OHV use would be the most restricted under this alternative, with 1,190,500 acres closed, 3,013,500 acres limited, and 1,300 acres open to OHV use. Alternative C would minimize development of recreational facilities that attract visitors and would place the most limitations on OHV use, resulting in the fewest impacts on special status species.

Effects under Alternative D

Effects would be similar to those described under Alternative B, but Alternative D would be more effective at reducing impacts from OHV use by further restricting OHV permitted use areas, including use in important habitat areas. Under this alternative, the BLM would manage 30,600 acres as closed, 4,748,400 acres as limited (including priority habitat areas), and 22,700 acres as open. Three new SRMAs would be designated, and one (Walker Lake) closed, for a total of 67,100 acres in SRMAs, approximately the same as Alternative A. Four ERMAs would also be established, including one in the urban interface zone.

Effects under Alternative E

This alternative would designate four new SRMAs while reducing the size of the Walker Creek SRMA, for a total of 106,100 acres, 57 percent more than Alternative A. Impacts on special status species in SRMAs may be increased by human visitation; however, SRMAs may serve to concentrate recreation away from other areas. Fourteen ERMAs would also be established. Under this alternative, the BLM would manage 24,100 acres as closed, 4,717,300 acres as limited (including priority habitat areas), and 55,700 acres as open to OHV use. These closure levels and limitations are more protective of special status species than Alternative B, but less protective than Alternatives C or D. All the action alternatives are far more protective of wildlife from OHV impacts than current management.

Special Status Species: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Under all alternatives, roads can decrease the quantity and quality of habitat for special status species. Roads and trails can result in an increase in invasive plant species, can increase human-wildlife interactions, and can fragment habitats, reduce wildlife refugia, cause mortality to special status species, and alter home range and migration corridors. Motorized vehicle use and associated human uses can degrade habitats from surface disturbance, including critical habitat niches, such as den sites, nest sites, important foraging areas, travel corridors, and refugia, and can displace and stress animals. Flooding and erosion from poorly maintained roads and trails can degrade surrounding aquatic habitats.

All alternatives would develop, implement, and monitor travel and transportation implementation plans for all identified travel management areas, and manage uses on BLM-administered lands to meet the travel and transportation needs of all types of land users.

Effects under Alternative A

Under Alternative A, there would be no change to the current acreage open to motorized and mechanized travel (see **Table 2-1**) or limited to existing routes. The impacts described above would continue.

Effects under Alternative B

Under Alternative B, over 3,750,000 additional acres (**Table 2-1**) would be limited to existing routes. Alternative B would manage 4,300 acres as closed to motorized and mechanized travel and an additional 26,700 acres as closed to motorized travel but limited to mechanized travel. The increase in acres restricted to existing routes and closed areas would provide more protection for special status species and their habitat from road impacts than under current management.

Effects under Alternative C

Under Alternative C, approximately an additional 1.7 million acres (**Table 2-1**) would be managed as closed to motorized travel and an additional 2 million acres limited to existing routes. The smallest amount of acreage would remain open to motorized travel, resulting in the highest level of protection to special status species and their habitat from motorized travel impacts.

Effects under Alternative D

Alternative D effects would be similar to those described for Alternative B, though with fewer impacts because fewer acres would be managed as open to motorized and mechanized travel and more would be limited to existing routes.

Effects under Alternative E

Under Alternative E, effects would be similar to those described for Alternatives B and D.

Special Status Species: Effects from Lands and Realty

Effects Common to All Alternatives

Impacts on special status species from lands and realty management include habitat loss, fragmentation, and degradation, introduction and spread of invasive species; disturbance to species; direct mortality to species, and loss of species diversity from ROW development and other permitted facilities. Power lines, pipelines and road increase the density of human presence which would increase stress on special status wildlife during critical periods (e.g. breeding, migration, and wintering periods). Mitigation may limit the extent of these impacts. Lands and realty management may also benefit special status species by acquiring sensitive habitat and reducing the checkerboard pattern of BLM land administration and the size of BLM-administered blocks of land. Larger blocks of contiguous lands allow for consistent management and increase habitat quality and allow for restoration of degraded habitat on acquired lands.

Under all alternatives, BLM will continue to manage authorized ROWs, including 440,000 acres within utility corridors, will encourage new transmission corridors and facilities (60 kilovolts or larger) proposed on BLM-administered lands to utilize existing corridors and underground components in visually sensitive areas and will consider natural, visual, and cultural resources, and wildlife habitat in analyzing utility proposals.

Effects under Alternative A

Alternative A does not delineate additional ROW avoidance or exclusion areas. Existing ROW exclusion areas (**Table 2-1**) would continue under current management. Important wildlife habitat areas would not be protected from ROW development, increasing the likelihood of disturbance, habitat fragmentation, and other impacts on special status species. Under this alternative, 179,700 acres of BLM-administered land would be identified for disposal. Disposal lands may benefit special status species if BLM is able to acquire other land to form contiguous habitat parcels. The BLM would not identify any lands for disposal that were known to contain special status species.

Effects under Alternative B

Under Alternative B, over a million acres (**Table 2-1**) would be set aside as ROW avoidance areas, including implementation of mitigation measures to avoid or reduce impacts on special status species habitat. ROW exclusion areas and lands identified for disposal would remain at similar levels to Alternative A. Under this alternative, 273,500 acres of BLM-administered land would be identified for disposal. Overall, management under Alternative B would be more

protective of special status species than current management because of the establishment of avoidance areas.

Effects under Alternative C

Under Alternative C, 2,675,800 acres would be managed as ROW exclusion areas and over 369,000 acres (**Table 2-1**) as avoidance areas. In addition, no BLM-administered land would be identified for disposal under this alternative. This alternative would provide the most protection to special status species habitat from ROW development on BLM-administered land.

Effects under Alternative D

The impacts on special status species under Alternative D would be similar to Alternative B except fewer acres of avoidance area would be designated (1,226,100 acres). This alternative would protect special status species habitat from ROW development more than current management but less than the other action alternatives.

Effects under Alternative E

Under Alternative E, the acreage set aside as ROW exclusion areas would increase over 40,000 acres compared to current management. ROW avoidance areas would be established on 1,448,200 acres. Acres identified for disposal would also increase. Special status species would be protected from habitat degradation and other impacts more under this alternative than under current management.

Special Status Species: Effects from Renewable Energy

Effects Common to All Alternatives

Renewable energy development could impact special status species by removing vegetation for construction of power lines, roads, and communication sites and other facilities, which fragment habitat and remove vegetation comprising wildlife habitat. Human disturbances from construction and operation of facilities, including noise, movement, and vibrations, could cause short-term disruption of special status wildlife behavior. Wind turbines cause injury and mortality to raptors, such as Golden Eagle and other birds, and injury and barotrauma to special status bats in their vicinity. In summary, impacts on special status species from renewable energy projects include direct mortality, habitat fragmentation, habitat degradation, and the alteration of normal behavior. BMPs, stipulations, and mitigation measures applied as part of these projects would limit impacts to some degree.

Effects under Alternative A

Under current management, no avoidance areas for wind energy have been designated, and approximately 900,000 acres (**Table 2-1**) are variance areas for solar projects. Variance areas allow development but require provisions to protect resources in the area. Outside variance areas, utility-scale solar is not

permitted. Special status species in variance areas are at risk from the impacts described above.

Effects under Alternative B

Alternative B would designate approximately 775,000 acres as variance areas for solar energy development, and 1,220,200 acres as avoidance areas for wind energy turbines or transmission lines. These provisions would protect special status species in the designated areas more than current management.

Effects under Alternative C

Renewable energy impacts on special status species would be reduced most under Alternative C due to the designation of 2,073,200 acres as wind energy exclusion areas. Approximately 580,000 acres would be variance areas for utility-scale solar development, preserving more acreage from the impacts associated with large-scale solar projects.

Effects under Alternative D

Impacts under Alternative D would be similar to those described for Alternative B.

Effects under Alternative E

Impacts under Alternative E include 629,900 acres of variance areas designated for utility-scale solar, and 956,900 acres in wind energy avoidance areas. This alternative would protect special status species populations more than current management or Alternatives B or D, but less than Alternative C.

Special Status Species: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Generally, special management areas such as ACECs result in increased protection of special status species, and long-term improvement or maintenance of habitat quality as a result of special management and use restrictions in these areas.

Effects under Alternative A

Under current management, the planning area includes six ACECs, the largest being the Stewart Valley Paleontological Area (**Table 2-1**), for a total of 21,800 acres. These areas restrict development to protect sensitive resources, and provide incidental protection to special status species habitat from loss or damage. Current ACECs designated specifically for special status species are the Carson Wandering Skipper ACEC and the Virginia Range Williams Combleaf Habitat Area ACEC.

Effects under Alternative B

Under Alternative B, an additional 9 ACECs would be established in the planning area, for a total of 371,170 acres. Management of ACECs would also

enhance protection for special status species from development in these areas as an incidental result of protection of other resources, primarily cultural resources. Churchill Narrows Buckwheat Botanical ACEC and the Virginia Range Williams Combleaf Habitat Area ACEC would be designated under this alternative specifically for special status species.

Effects under Alternative C

Under Alternative C, an additional 18 ACECs would be established in the planning area, for a total of 786,270 acres. This alternative would protect the largest amount of land in ACECs and includes ACECs for special status botanical species, the Carson Wandering Skipper, and Greater Sage-Grouse. Management of ACECs would also enhance protection for other special status species from development in these areas.

Effects under Alternative D

Under Alternative D, 180,000 acres would be protected in a total of ten ACECs. This alternative manages more acreage in ACECs than Alternative A, but less than Alternatives B or C. Management of ACECs would also enhance protection for special status species from development in these areas. ACECs designated specifically for special status species are the Pine Nut Mountains Williams Combleaf Botanical ACEC, Churchill Narrows Buckwheat Botanical ACEC, and Virginia Range Williams Combleaf Botanical ACEC.

Effects under Alternative E

Under Alternative E, 82,770 acres would be protected in eight ACECs. This alternative manages more acreage in ACECs than Alternative A, but less than the other action alternatives. It would provide additional protection in newly designated ACEC areas, compared to current management. ACECs designated specifically for special status species are the Churchill Narrows Buckwheat Botanical ACEC and Virginia Range Williams Combleaf Botanical ACEC.

Special Status Species: Effects from Back Country Byways

Effects Common to All Alternatives

Special status species may be displaced and habitat fragmented by development of Back Country Byways in their immediate environments. Plants could be trampled, invasive species introduced and wildlife could be disturbed by increased human presence during sensitive seasonal periods, such as breeding, nesting, and migration. These adverse impacts would be localized, with the exception of invasive species, and the public educational benefit of increased wildlife awareness might indirectly benefit special status species.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from National Trails

Effects Common to All Alternatives
Management actions for preserving national historic trails would provide special status species protection through habitat preservation by restricting surface-disturbing and other disruptive activities within the protected zone of the trail.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under this alternative, eligible river corridors would be given protection either through continued interim protective management or the development of comprehensive river management plans. This would provide additional measures along the segments of the East Fork Carson River that would promote the health of habitat for special status species along with hydrologic function.

Effects under Alternative B
There would be no objective to protect eligible river segments under Alternative B, and therefore no additional special protection to special status species found in these segments.

Effects under Alternative C
Under Alternative C, the BLM would maintain the free-flowing character of eligible river segments, and allow no activities within the river corridor that would alter the tentative classification of those river segments. These management actions would protect special status species populations found in these river segments, more than Alternatives A or B.

Effects under Alternative D
Effects under Alternative D would be the same as under Alternative C.

Effects under Alternative E
Effects under Alternative E would be the same as under Alternative C.

Special Status Species: Effects from Wilderness Study Areas

Effects Common to All Alternatives
All alternatives would maintain the same acreage of WSAs (**Table 2-1**). Lands found to possess wilderness characteristics will be managed for wilderness values along with other uses, while applying management restrictions to reduce impacts on wilderness characteristics. No surface disturbance, permanent new development or ROWs would be allowed in these lands. These restrictions would benefit special status species populations found in the WSAs by limiting disturbance to animals and reducing habitat loss and fragmentation associated with development.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
No BCWCAs would be designated under this alternative.

Effects under Alternative B
No BCWCAs would be designated under this alternative.

Effects under Alternative C
Under Alternative C, 817,800 acres would be preserved as BCWCAs, which would safeguard special status species habitat within these locations, allow only dispersed non-motorized recreation opportunities, and maintain the surface values of back country areas. This management program would benefit special status species found in these conservation areas by preserving habitat quality and limiting fragmentation and disturbance.

Effects under Alternative D
No BCWCAs would be designated under this alternative.

Effects under Alternative E
No BCWCAs would be designated under this alternative.

Special Status Species: Effects from Tribal Interests

Effects Common to All Alternatives
Implementing management actions that protect Native American traditional use areas would help to protect and sustain special status species habitat. Tribal consultation is not likely to adversely impact special status species.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Public Health and Safety

Effects Common to All Alternatives
Management actions to provide for public safety could also benefit special status species. Closing abandoned mines could cause loss of bat habitat; however, if the mines are closed in a manner that allowed access to bats, these impacts

would be avoided. More specifically, installing fences around and bat gates within abandoned mines would prevent injury to the public as well as reduce disturbance to bats, especially during the critical hibernation or maternity periods. Furthermore, fencing may reduce the potential for special status species mortality by keeping these species away from dangerous shafts.

Actions to remediate contaminated sites would benefit wildlife habitats and populations, especially those that depend on riparian and wetland habitats. Reducing contaminants in the environment reduces the potential for ingestion by animals and bioconcentration via the food chain.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Special Status Species: Effects from Facilities and Transportation Maintenance

Effects Common to All Alternatives
Development of tracks and facilities would damage and fragment special status species habitat in localized areas. Restrictions on locations of these facilities would protect special status species habitat in these areas. Impacts would be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Impacts on Greater Sage-Grouse
The BLM, in conjunction with the Forest Service, is currently preparing the Greater Sage-Grouse Land Use Plan Amendment (LUPA) and EIS, for the Nevada-Northeastern California Sub-Region. The LUPA/EIS addresses a range of alternative conservation measures for Greater Sage-Grouse in the Great Basin population areas. A separate LRMP/EIS effort led by the Forest Service will address conservation needs for Greater Sage-Grouse in the Bi-State Distinct Population Segment, an isolated population located near Mono Lake and the White Mountains. Within CCD, Greater Sage-Grouse are found in both the Southern Great Basin population area as well as in the Bi-State Distinct Population Segment, CCD alternatives management actions for Greater Sage-Grouse apply to both range-wide (Great Basin) populations and the Bi-State Distinct Population Segment. All Greater Sage-Grouse habitat in the Bi-State Distinct Population Segment is considered PPMA; thus management actions for PGMA apply only to the range-wide population and not the Bi-State Distinct Population Segment.

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, management of threats to Greater Sage-Grouse populations and habitat from pinyon-juniper encroachment, invasive weeds, infrastructure, mineral development, fencing, and wildfire would continue in accordance with existing land use planning documents and current BLM policy and guidance. Grazing would continue at current levels in Greater Sage-Grouse habitat areas. Developments, infrastructure, and invasive weeds would continue to spread and fragment habitat. This alternative would be inadequate to address threats to Greater Sage-Grouse populations in the Great Basin and Bi-State Distinct Population Segment area.

Effects under Alternative B
Alternative B and the other action alternatives would remove pinyon and juniper in Greater Sage-Grouse habitat areas to limit encroachment into sagebrush. All the action alternatives would require mitigation for disturbance in Greater Sage-Grouse habitat that resulted in habitat loss, would avoid using pesticides during the nesting and early brood-rearing season, and would limit the construction of tall structures and fences in the vicinity of leks. Livestock grazing would not be limited in Greater Sage-Grouse habitat.

Alternative B would undertake habitat enhancement projects, such as weed removal, in PPMA, and would limit use of prescribed fire within PPMA. After soil disturbance or seeding, the land would be protected from further disturbance for two growing seasons or until desired habitat conditions have been met.

These management approaches should enhance the quality of Greater Sage-Grouse habitat in PPMA but would not benefit PGMA.

Alternative B would restrict activities within two miles of active leks during nesting season. For fluid minerals, Alternative B would apply CSU timing limitations for activity within PPMA and PGMA, from May 15 to August 15 for the Great Basin, and to September 15 for the Bi-State Distinct Population Segment. Locatable mineral projects would require off-site mitigation. Nonenergy mineral leasing and mineral material disposal would be permitted. The BLM would manage PPMA as ROW avoidance areas. These approaches would protect habitat in PPMA but would provide only limited protection to PGMA.

Effects under Alternative C

Alternative C has the most restrictions on development and disturbance in Greater Sage-Grouse habitat, both PPMA and PGMA. It would undertake habitat enhancement projects in both PPMA and PGMA and would restrict soil disturbances for two growing seasons following re-seeding. Prescribed fire would be prohibited within PPMA and PGMA.

Under Alternative C all allotments in PPMA and PGMAs would not be available for livestock grazing (see **Table 2-1**). Water developments would be drained when possible to avoid spreading West Nile Virus.

Alternative C would restrict activities within 4 miles of active leks in PPMA and PGMA during the lekking season. Both PPMA and PGMA would be managed as closed to fluid mineral leasing under Alternative C. Off-site mitigation would be required for locatable mineral projects. PPMA and PGMA would be managed as closed to nonenergy mineral leasing and mineral material disposal. The BLM would manage both PPMA and PGMA as ROW exclusion areas, more restrictive than avoidance areas. Alternative C would be more protective of Greater Sage-Grouse and habitat areas than Alternatives A, B or D.

Effects under Alternative D

Alternative D would require re-seeding after soil disturbance, encourage habitat enhancement, and limit use of prescribed fire similar to Alternative B. Management for West Nile Virus under Alternative D would be similar to Alternative C. Alternative D would maintain livestock grazing in Greater Sage-Grouse habitat.

The BLM would manage PPMA and PGMA with NSO stipulations for fluid mineral leasing. Locatable mineral mitigation would be required, and nonenergy mineral leasing and mineral material disposal would be permitted. The BLM would manage both PPMA and PGMA as ROW avoidance areas. Activities would be restricted within 4 miles of leks during the lekking season. Overall, Alternative D would better protect Greater Sage-Grouse and their habitat than current management, and more protective than Alternative B because most

restrictions cover both PPMA and PGMA. However, it would place fewer restrictions on development than Alternatives C or E.

Effects under Alternative E

Alternative E would require re-seeding after soil disturbance. Alternative E would encourage habitat enhancement and West Nile Virus avoidance similar to Alternative C. Alternative E would limit use of prescribed fire would be limited in both PPMA and PGMA. Livestock grazing would continue in PPMA.

Alternative E would restrict activity within 4 miles of leks during the lekking season. Alternative E would apply NSO stipulations on fluid mineral leasing and manage ROW avoidance areas in PPMA and PGMA. Alternative E would also require mitigation for locatable mineral development. PPMA and PGMA would be managed as closed to nonenergy mineral leasing and mineral material disposal. Overall, Alternative E would better protect Greater Sage-Grouse and habitat than Alternatives A, B, or D. Alternative E would allow more management flexibility than Alternative C by using avoidance rather than exclusion areas and continuing to permit livestock grazing in PPMA.

Special Status Species: Cumulative Impacts

Table 4-1 lists the reasonably foreseeable cumulative actions for the CCD. Incremental cumulative impacts on special status species would be similar to those discussed in Cumulative Effects for fish and wildlife, but effects under the alternatives may be more severe because of the rarity of these species.

4.3.7 Wild Horse and Burros

This section discusses impacts on wild horses from proposed management actions of other resources and resource uses. Existing conditions concerning wild horses are described in **Section 3.3.7**, Wild Horse and Burros.

Summary

In general, Alternative A would not provide the management necessary to sustain the thriving natural ecological balance for wild horses and burros in the currently managed HMAs.

Alternative B generally prioritizes development and recreational use while relying on mitigation to reduce, rather than prevent, adverse impacts. Alternative B would result in greater impacts on wild horses and burros than under Alternative A.

Alternative C is the most protective of natural resources (and most beneficial to wild horses and burros) because it involves the least new development, excludes potentially impacting uses, and prioritizes protection and restoration of resources when conflicts among uses occur.

Alternative D management actions focus on the urban interface area. Implementation of specific management actions in this area may limit wild horse

and burro access, but is likely to reduce conflicts between recreation and wild horses and burros, which are high in the urban interface.

Alternative E combines actions from other alternatives and balances limitations on wild horse and burro management with increased flexibility, especially in situations where rangeland health is maintained, thereby mitigating impacts on wild horse and burro management.

Quantitative impacts pertaining to wild horses are displayed in **Table 4-3**, Acreage Impacts within HMAs per Alternative.

Table 4-3
Acreage Impacts within HMAs per Alternative

Management Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Motorized Use-Open to Unrestricted Vehicle Use	804,200	2,500	0	0	0
Motorized Use-Limited to Existing Routes	390,500	992,700	597,100	995,200	1,068,900
Motorized Use-Closed to Motorized, limited to Mechanized	0	0	181,700	0	8
Motorized Use-Closed to Motorized and Mechanized	1,300	1,300	311,200	1,300	1,300
ROW Avoidance Areas	0	201,400	48,800	179,600	269,400
ROW Exclusion Areas	320,800	311,100	789,400	311,100	311,100
Lands Available for Disposal	2,400	2,400	0	2,400	2,400
Available for Livestock Grazing	1,196,000	996,500	427,200	996,500	1,070,200
Open to Fluid Mineral Leasing	866,300	685,400	504,200	685,400	752,700
Subject to NSO Stipulation	0	93,900	263,500	186,800	285,800
Subject to CSU Stipulation	0	457,400	311,900	420,900	464,800
Closed to Fluid Mineral Leasing	329,700	311,100	585,800	311,100	317,500
Open for Mineral Material Sales	875,200	626,400	262,500	626,400	600,100

Table 4-3
Acreage Impacts within HMAs per Alternative

Management Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Closed for Mineral Material Sales	320,800	370,100	827,500	370,100	470,100
Open for Nonenergy Mineral Leasing	870,900	626,400	262,800	626,400	515,900
Closed to Nonenergy Mineral Leasing	325,000	370,100	827,200	370,100	554,300
Lands Petitioned for Withdrawal from Mineral Entry	0	152,200	30,500	152,300	152,200
VRM I	320,800	311,100	311,100	311,100	311,100
SRMAs	2,500	2,500	0	0	0
ACECs	0	67,900	208,700	10,100	0

Source: BLM GIS 2014a, BLM GIS 2014b

Methods of Analysis

Assumptions

The following assumptions were used to assess the impacts on wild horses and burros:

- The wild horse population will continue to increase through recruitment of foals. Recruitment rates will vary depending on fertility control program and natural mortality.
- Excess wild horses will be removed when monitoring data indicate there is no longer a thriving natural ecological balance or preferably at the point where the next year's recruitment would lead to nonattainment of a thriving natural ecological balance within BLM-administered HMAs.
- Wild horse herds within CCD HMAs will be managed within the AML range through gathers and the selected application of additional population control practices.
- Water is the primary resource associated with wild horse distribution. Water developments can improve wild horse distribution. Furthermore, human-made water developments that employ some type of mechanical device (e.g., windmill and electric pump) can fail and cause horses to go without or go elsewhere for water. The BLM does not have the resources to monitor and maintain water sources reliant upon mechanical devices. If a device were to fail, which is a common event, many horses could perish.

- Fences and other disturbances can restrict wild horse movement and access to water sources and optimal forage. Fences are sometimes necessary to control livestock movement within an HMA, restrict horse distribution to areas inside HMAs, or to protect sensitive resources within HMAs.
- While wild horses and burros may be found on lands outside HMAs, these areas have no forage allocated to wild horses and burros and the BLM has no authority to manage (except to remove) wild horses and burros outside of HMAs.
- Wild horse and burro gather operation scheduling is a product of a national priority process. Factors affecting gather priorities include determinations of excess horses and overpopulations, wild horse and range condition, annual appropriations, litigation and court orders, emergency situations (e.g., disease, weather, or fire), availability of contractors, adoption market, and long-term holding availability for unadoptable excess horses.
- Population growth suppression (e.g., fertility control agents, sterilization, and sex ratio adjustments) can aid in population control, but periodic gathers are still necessary to remove excess wild horses.
- Wild horse and burro distribution will and can vary by season, climatic conditions, water and forage availability, and population size.

Indicators

The following indicators were used to assess the degree of impacts on wild horses and burros:

- Changes in acres
- Changes in available forage and water
- Changes in AML
- Changes in body condition
- Changes in wild horse behavior

Nature and Type of Effects

Impacts on wild horses generally result from activities that affect available forage and water or cause harassment to the wild horses Forage conditions could generally be affected by surface-disturbing activities and use of forage by livestock. Surface disturbance or restrictions on surface disturbance within individual HMAs could affect forage conditions. Likewise, management actions that disturb or restrict access or reduce disturbance to water resources could also affect wild horses or their habitat.

Management actions that improve or increase the availability of grasses and water will tend to benefit wild horse herds within HMAs. In these areas, wild horses can be managed and viewed with limited impediments on their movement across the landscape. Management actions that substantially alter the landscape and/or increase human disturbances and presence could reduce the wild and free-roaming nature of wild horses by disrupting their use of habitat and impeding normal wild horse behavior.

Healthy uplands, watersheds, and soils would increase the potential for maintenance or an increase of forage and water productivity for wild horses and burros. Management actions and BMPs designed to reduce erosion and maintain or improve soils and vegetative cover and reclaim disturbed areas could increase forage plants and maintain or improve the plant communities thereby improving the habitat for wild horses and burros.

Proper management of springs and riparian areas would help to ensure reliable water sources. Control or eradication of noxious weeds would provide improved forage for wild horses and burros by increasing the potential for the presence and vigor of forage plants.

Protecting special status plants and special status species habitat could directly affect wild horses and burros by limiting access to site-specific areas or preventing forage improvement projects. Conversely, protecting areas that support special status species could prevent activities that inhibit wild horses and burros and could provide cleaner and more dependable water sources for wild horses and burros in the long term.

Wildlife species could compete with wild horses for forage, water, and cover when they occupy the same area. In the long term, wildlife management actions to improve water quality, improve vegetation or habitat conditions, and increase forage production would also benefit wild horses and burros.

Effects of wildland fire on wild horses and burros would vary depending on fire size and intensity, the timing of the fire, and fuel moisture content. Wildland fire would initially displace wild horses and burros, and depending on the proximity of the horses to the fire, wild horses and burros could be stressed, or injured. Wildland fire would remove vegetation and forage over the short term. Over the long term, wildland fire could improve forage production, especially when fire rehabilitation efforts are implemented. Restoring natural disturbance regimes such as fire, and using vegetative treatments to accomplish biodiversity objectives in resilient plant communities, would also benefit wild horses and burros by maintaining productive habitat.

Mineral extraction and energy development could temporarily or permanently remove forage areas for wild horses and burros, depending on the location of the development. Activities associated with exploration and extraction could open the potential for human activity to disturb herds. Activities associated with

mineral development include construction of fences, well pads, roads, pipelines and other facilities for processing. Loss of rangeland and forage could be mitigated by post-mining reclamation. Roads associated with mineral extraction would remove vegetative habitat until or if they were reclaimed. Withdrawal or closure of areas for mineral development would reduce the potential for human-herd interaction and rangeland and forage loss. Protection of resources through mitigation measures, standard operating procedures, and BMPs would preserve and restore range health.

Applying NSO stipulations would prohibit surface occupancy and surface-disturbing activities year-round, reducing the risk of forage degradation and disturbance of wild horses and burros. The NSO stipulation acreages would vary by alternative.

The application of CSU stipulations would mitigate surface-disturbing activities and limit disturbances to wild horses and burros and their habitat. The CSU stipulation acreages would vary by alternative.

Short-term impacts of recreation activities on wild horses and burros include degradation of habitat, introduction and spread of invasive species, loss of forage, and spatial disturbance. Long-term impacts of recreation on wild horses include loss of forage, reduced forage palatability because of dust on vegetation, disturbance and harassment caused by increased levels of human activities, altering traditional use areas, and the potential for recreational opportunities that help foster stewardship of the wild horse and burro herd. Long-term impacts on wild horse and burro distribution and usage patterns would reduce the horses' free-roaming nature.

The short-term impacts of travel within HMAs include degradation of habitat, introduction and spread of invasive species, loss of forage, and temporary displacement of horses. Long-term impacts of motorized use on wild horses and burros include loss of forage, and disturbance and harassment caused by human and vehicle presence. These impacts are reduced when travel is closed or limited to designated trails.

Actions to limit erosion and the spread of weeds would impact wild horses and burros by improving the general health of wild horse and burro habitat in the long term. However, if wild horses and burros were the cause of erosion, changes would be made to AML or their behavior patterns. This could include treatment of other areas that could improve distribution of use.

Short-term impacts from site-specific lands and realty actions such as small land transfers, construction of power lines and pipelines, and other construction activities within ROWs could include the temporary removal of forage and harassment and the displacement of wild horses and burros. Long-term impacts from site-specific lands and realty actions include loss of forage, and disturbance and harassment from increased levels of human activities. Managing ROW

avoidance and exclusion areas would reduce impacts to wild horse and burro habitat by mitigating or excluding surface-disturbing activities. Specific areas managed as ROW avoidance or exclusion areas differ per alternative and are identified below.

Management of wild horses and burros would help ensure healthier viable herds by preventing overpopulation that could lead to overgrazing ranges, which can lead to the loss of desirable forage grasses and replacement by less palatable grasses or unpalatable invasive species, damage to water sources, and increased competition with wildlife.

Managing ACECs increase protection of vegetation/ forage, and provide long-term improvement or maintenance of rangeland habitat quality as a result of special management and use restrictions in these areas.

Continuing to manage WSAs that overlap HMAs would result in direct and indirect impacts. In general, the protections afforded to WSAs such as restrictions on surface-disturbing and other disruptive activities would help maintain and improve vegetation conditions, thereby maintaining or improving the wild horse and burro forage base. Managing an area as a WSA would also restrict some activities that would be beneficial for wild horse and burro management such as vegetative treatments and construction of water facilities.

Interpretation and environmental education could serve as an important tool in fostering understanding and stewardship of wild horse and burro herds.

Management for the following resources would not result in an effect on wild horses and burros: air, geology, tribal interests, and WSRs.

Wild Horse and Burros: Effects from Climate Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under current management, there are no specific management actions identified for climate change. The BLM response to drought conditions would continue on a case-by-case basis in order to ensure sustainability of wild horse and burro herds and rangelands.

Effects under Alternative B
Prioritizing treatments to remove existing threats that may exacerbate the negative effects of climate change on BLM special status species and habitat would increase forage for wild horses and burros in the long term.

Effects under Alternative C
Prioritizing treatments to remove existing threats that may exacerbate the negative effects of climate change on BLM special status species and habitat would increase forage for wild horses and burros in the long-term.

Adaptively managing ecosystems to create connectivity through utilizing ecological studies could promote a healthy rangeland and forage base for wild horses and burros in the long-term unlike Alternative A.

Effects under Alternative D
Impacts would be the same as Alternative B.

Effects under Alternative E
Impacts would be the same as Alternative C.

Wild Horse and Burros: Effects from Soil Resources

Effects Common to All Alternatives
Conservation measures to prevent erosion and other soil degradations are included under all alternatives. Protection of soil indirectly conserves habitat and healthy forage for wild horses and burros, and preventing sedimentation in watercourses can improve water quality. Soil litter, appropriate vegetation, and good infiltration are important to land health and habitat quality. Implementation of BMPs and RAC Standards and Guidelines for soil-disturbing activities and application of reclamation measures will mitigate for soil disturbance and encourage healthy forage and habitat.

Effects under Alternative A
Alternative A would limit OHV use to designated roads and trails in highly erosive soil areas. This approach promotes a healthy rangeland and forage base for wild horses and burros but does not pro-actively prevent erosion.

Effects under Alternative B
Alternative B would apply an erosion control plan to projects on slopes, would apply soil amendments to minimize soil disturbance, and apply a CSU stipulation on highly erosive soils. These management approaches would diminish erosion and soil damage and protect water supply, forage, and habitat for wild horses and burros more than current management.

Effects under Alternative C
Effects under Alternative C would be similar to those described for Alternative B.

Effects under Alternative D
Effects under Alternative D would be similar to those described for Alternative B. Alternative D would also mandate re-seeding of disturbed soils to minimize

erosion. Reseeding would increase forage for wild horses and burros in the long term.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative D.

Wild Horse and Burros: Effects from Water Resources

Effects Common to All Alternatives
Effective watershed management minimizes erosion and maintains hydrologic flow. This results in maintaining healthy wild horse and burro forage and habitat. All alternatives have the goals of improving water supply and maintaining water quality and floodplains in accordance with federal, state, and local laws that benefit wild horses and burros.

Acquisition and development of new sources and protection of watersheds and existing sources, quantity, quality, and access would generally directly benefit wild horses and burros. More dispersed water sources would prevent wild horses and burros from concentrating around current water sources and would allow for changes in utilization patterns, which may result in an increase in available forage. Plant species, that require mycorrhizal crusts or little disturbance as well as the wildlife species that use these habitats may be adversely impacted by this alternative as grazing and the disturbances associated with grazing would impact a greater area.

Effects under Alternative A
Alternative A would limit BLM-authorized activities in degrading watersheds and specific portions of urban watersheds at the most immediate risk of degradation. Alternative A would also limit OHV use in riparian areas. These approaches would protect wild horse and burro water supply in these local areas and limits harassment from OHVs, but would provide limited oversight of watershed health and water quality on a regional scale.

This alternative does not specify management for importation and exportation of water in the district. Importation and exportation under Alternative A would be least beneficial to wild horses and burros if the exported water came from a critical water source for the herd.

Effects under Alternative B
Developing water sources and acquiring water rights to benefit the resources on BLM-administered lands would be beneficial to wild horses and burros if it occurs in areas within HMAs.

Alternative B would place restrictions on water importation and exportation that would ensure that exported water would not come from critical water sources for individual herds.

Effects under Alternative C
Alternative C would place restrictions on water importation and exportation that would ensure that exported water would not come from critical water sources for individual herds. In addition, Alternative C would prohibit surface disturbing activities within source water protection zones, indirectly protecting water quality and sources for wild horses and burros.

Effects under Alternative D
Alternative D would place restrictions on water importation and exportation that would ensure that exported water would not come from critical water sources for individual herds. In addition, Alternative C would restrict surface disturbing activities within source water protection zones, indirectly protecting water quality and sources for wild horses and burros.

Effects under Alternative E
Impacts would the same as under Alternative D.

Wild Horse and Burros: Effects from Vegetation Resources

Effects Common to All Alternatives
Range management actions to promote land health, such as seedings and land treatments, would occur under all alternatives. Land treatments would facilitate the maintenance of habitats in various stages of shrub or understory condition. This would provide a range of forage for wild horses and burros.

The spread of noxious and invasive weeds decreases wild horse and burro forage diversity and production and reduces water quality, thus diminishing a healthy range. Weeds out compete native species and can create monocultures that are more prone to wildfire. Weed treatments using integrated pest management would be applied under all alternatives. These treatments may use chemical, physical, or biological means to reduce competition and improve native species diversity. Although weed treatments generally improve the forage base in the long term, short-term disturbances would occur. Treatments, especially mechanical treatments, would cause disturbance and loss of cover, causing wild horses and burros to temporarily avoid treated areas.

Habitat restoration projects would continue in the planning area under all alternatives, with long-term benefits of a sustained forage base for horses and burros. Vegetation could be managed to improve forage, and impacts on wild horses and burros from vegetation management would likely be minimal.

Restoration of riparian areas would benefit wild horse and burro populations through water availability and improved habitat condition. However, should management require increased fences to protect vegetation during restoration, this could limit wild horse and burro movement and access to riparian areas and reduce water availability. This could result in potential need for reduction of

wild horses and burro numbers within an HMA in order to meet vegetation objectives.

The shortest minimum rest time under the alternatives is two years. In the long term, resting treated areas would enhance vegetation by allowing seedlings to establish, resulting in a sustained forage base. Encroachment of weeds into HMAs reduces the availability of preferred forage for wild horses and burros.

Actions to prevent and control invasive and noxious weeds using integrated weed management techniques could directly affect wild horse and burro grazing in the short term if wild horses and burros are excluded in the treatment areas until revegetation has taken place. Control, reduction, and eradication of noxious weeds would provide the native plant community an opportunity to improve and maintain resilience. Wild horses and burros would benefit from healthy plant communities as they are more diverse and productive, and would provide more forage and sustainability.

Effects under Alternative A
Impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative B
Alternative B includes vegetation treatments for rangeland restoration, and aim to maximize ecological site potential to establish desired future condition, to benefit land health. Revegetation efforts would use plant species that have high success rates, not necessarily native species, promote maintenance of ecological integrity, and aim to restore depleted understory vegetation. All these approaches would benefit wild horses and burros by maintaining and restoring habitat, more than current management.

Effects under Alternative C
For rehabilitation projects, Alternative C promotes use of native plant material only and restoration techniques to establish desired plant communities. While native plant material would provide optimal forage for wild horses and burros, it may take longer for the native grasses to produce and be available for wild horse and burro consumption.

Effects under Alternative D
Impacts would be the same as identified under *Effects Common to All Alternatives* and Alternative B.

Effects under Alternative E
Impacts would be the same as identified under *Effects Common to All Alternatives* and Alternative B.

Wild Horse and Burros: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Management designed to maintain and improve big game habitat and cover would indirectly impact wild horses and burros by providing a solid forage base and range within HMAs.

Authorizing water developments to specifically exclude wild horses and burros would reduce opportunities for wild horses and burros during times of stress (e.g., fire or drought) and, depending on the distribution and quantity of other water sources, wild horses and burros could focus their use to other areas necessitating a lower AML

Effects under Alternative A

Under Alternative A, direct impacts on wild horses and burros from wildlife management would be limited.

Effects under Alternative B

Under Alternative B, fences that may inhibit big game movement would be evaluated on a case-by-case basis. If changes to fencing were required, it could impact the free-roaming nature of wild horses and burros.

Management of priority habitat as a ROW avoidance area may limit conflict in this area with wild horses and burros.

Management actions designed to restrict disturbance to big game indirectly restricts disturbance to wild horses and burros.

Effects under Alternative C

Under Alternative C, construction of fences that would conflict with big game movement would be prohibited. This would benefit the free-roaming nature of wild horses and burros.

Management of priority habitat as a ROW avoidance area may limit conflict in this area with wild horses and burros.

In general, actions under Alternative C that would limit mineral and energy use in sensitive wildlife habitat would also limit disturbance of forage and conflicts with wild horses and burros in these areas.

Management actions designed to prohibit disturbance to big game indirectly prohibits disturbance to wild horses and burros.

Effects under Alternative D

Management actions designed to restrict disturbance to big game indirectly restricts disturbance to wild horses and burros.

Effects under Alternative E
Under Alternative E, fences in big game movement corridors would need to be built in a manner that would not obstruct movement. This would benefit the free-roaming nature of wild horses and burros.

Impacts of closing Carson wandering skipper habitat to grazing would be as described under Alternative B.

Management actions designed to prohibit disturbance to big game indirectly prohibits disturbance to wild horses and burros.

Wild Horse and Burros: Effects from Special Status Species Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, impacts from special status species management would be minimal.

Effects under Alternative B
Actions to improve PPMA/PGMA habitat (85,500 acres within HMAs) would result in some site-specific limitations on wild horses and burros, should for example, exclosures be imposed. However, actions to improve PPMA/PGMA habitat would improve wild horse and burro forage base in the long-term.

Actions to improve habitat conditions would also improve forage in the long term by removing encroaching conifers and reducing catastrophic fire risk. Restrictions on surface disturbing activities would limit conflicts in PPMA with wild horses and burros.

Effects under Alternative C
Alternative C would prohibit the use of prescribed fire in PPMA and PGMA. This would take away a tool that could help reduce fire risk and impacts on wild horses and burros as stated in *Nature and Type of Effects*.

Draining water developments when not in use would limit optional water sources for wild horses and burros but would also reduce the risk of an outbreak of West Nile Virus, which could be lethal to wild horses and burros.

Effects under Alternative D
Alternative D includes habitat improvement projects such as removing encroaching junipers in PPMA and PGMA, improving forage quality, and reducing long-term fire risk in these areas (85,500 acres within HMAs).

Restrictions on disturbance and impacts would be similar to that described under Alternative B. Alternative D would place timing limitations within 4 miles of active leks. This would reduce disturbance of wild horses and burros.

NSO stipulations in PPMA would limit impacts from fluid mineral leasing, exploration, and development on wild horses and burros in this area.

Draining water developments when not in use would limit optional water sources for wild horses and burros but would also reduce the risk of an outbreak of West Nile Virus.

Effects under Alternative E
Impacts would be similar to those under Alternative D.

Wild Horse and Burros: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
All alternatives identify the need to maintain AMLs within HMAs and would use various tools to meet that need. Gathering and implementing population growth suppression tools would help prevent impacts from overpopulation of herds and help ensure adequate forage, water, and overall habitat condition for wild horses and burros in the long-term. Water provided to wild horses and burros during times of stress (e.g., fire or drought) would ensure herd viability. Reverting Horse Mountain and Tule Ridge/Mahogany Flat HMAs to HA status would free BLM staff labor hours to focus management on HMAs that have concentrated uses or resource issues. Additional management would increase the likelihood that wild horse and burro herds could be maintained at thriving natural ecological balance.

Effects under Alternative A
Alternative A would continue to use resources to manage wild horses and burros in HMAs that do not support viable populations or have adequate water sources. Managing these HMAs an inefficient way to manage wild horses and burros that could be better used protecting the range and thriving viable horse populations. These HMAs are small in size; therefore the horses continually use areas outside of the HMAs as part or all of their habitat.

Effects under Alternative B
HMAs that do not contain one or more of four essential habitat components (e.g., forage, water, cover, and space) in sufficient quantities to sustain wild horse and burro use over the long term would be reverted back to HA status under this alternative. This management action would allow for efficient management of viable wild horses and burros on the range. However, if conditions change, all or part of an HA may be reconsidered for designation as an HMA through the land use planning process.

Completing a carrying capacity analysis would allow the BLM to adjust AML's based on current land health and water sources. Adjusting AML would help ensure healthier herds by preventing overpopulation that could lead to overgrazing ranges, damage to riparian areas, and increased competition with domestic stock and other wildlife.

Under Alternative B, the BLM would manage a non-reproducing herd within the Lahontan HMA and arrangements would be made with Lahontan State Park to allow horses access to water within the park. By maintaining a non-reproducing herd and coordinating with the state a viable herd would be able to be managed that the range could support and BLM resources could maintain.

Maintaining current MOUs and developing interagency and interoffice MOUs would standardize management and reduce the potential for possible interagency conflicts regarding proper management. This would also facilitate the dissemination of information and innovative management practices among agencies.

Effects under Alternative C

HMAs that do not contain one or more of four essential habitat components (e.g., forage, water, cover, and space) in sufficient quantities to sustain wild horse and burro use over the long term would be reverted back to HA status under this alternative. This management action would allow for efficient management of viable wild horses and burros on the range. However, if conditions change, all or part of an HA may be reconsidered for designation as an HMA through the land use planning process. Completing a carrying capacity analysis would allow the BLM to adjust AMLs based on current land health and water sources and the IBLA ruling. Adjusting AML would help ensure healthier herds by preventing overpopulation that could lead to overgrazing ranges, damage to riparian areas, and increased competition with domestic stock and other wildlife. Flexibility and numerical ranges in management options, and allowing adjustments based on observed conditions would generally be better than rigidity because wild horse and burro herds are dynamic units.

Implementing a population control program within HMAs would provide an alternative tool to reduce the number of excess wild horses on a case-by-case basis; however, gathering some excess wild horses will likely still be needed. Reducing the population growth rates of horses by using population control strategies would provide for healthier herds of animals by limiting the stress of continual pregnancy on the mares. This would also hold true for any non-breeding herds with geldings as they would not be exerting extra energy fighting to control mares. Sterilized mares would also be in better condition because energy would not be used raising a foal. Another benefit to the wild horses and burros would be less stress from being gathered as the gathers would be scheduled farther apart due to horses remaining within the AML range for a longer period of time. The action would also result in fewer wild horses and

burros being placed in short- or long-term holding or the adoption and sale programs over the next 5 to 10 years.

Maintaining current MOUs and developing interagency and interoffice MOUs would standardize management and reduce the potential for any possible interagency conflicts regarding proper management. This would also facilitate the dissemination of information and innovative management practices among agencies.

Effects under Alternative D

HMAs that do not contain one or more of four essential habitat components (e.g., forage, water, cover, and space) in sufficient quantities to sustain wild horse and burro use over the long term would be reverted back to HA status under this alternative. This management action would allow for efficient management of viable wild horses and burros on the range. However, if conditions change, all or part of an HA may be reconsidered for designation as an HMA through the land use planning process.

Completing a carrying capacity analysis would allow the BLM to adjust AMLs based on current land health and water sources. Adjusting AMLs would help ensure healthier herds by preventing overpopulation that could lead to overgrazing ranges, damage to riparian areas, and increased competition with domestic stock and other wildlife.

Implementing a population control program within HMAs would provide an alternative tool to reduce wild horse numbers from exceeding AML on a case-by-case basis. Reducing the population growth rates of horses by using population control strategies would provide for healthier herds of animals by limiting the stress of continual pregnancy on the mares. This would also hold true for any non-breeding herds with geldings as they would not be exerting extra energy fighting to control mares. Sterilized mares would also be in better condition because energy would not be used raising a foal. Another benefit is that wild horses and burros would experience less stress from being gathered because gathers would be scheduled less frequently. The action would also result in fewer wild horses and burros being placed in short- or long-term holding or the adoption and sale programs over the next 5 to 10 years.

Maintaining current MOUs and developing interagency and interoffice MOUs would standardize management to prevent the potential for possible interagency conflicts regarding proper management. This would also facilitate the dissemination of information and innovative management practices among agencies.

Effects under Alternative E

HMAs that did not contain one or more of four essential habitat components (e.g., forage, water, cover, and space) in sufficient quantities to sustain wild horse and burro use over the long term would be reverted back to HA status

under this alternative. This management action would allow for efficient management of viable wild horses and burros on the range. However, if conditions change, all or part of an HA may be reconsidered for designation as an HMA through the land use planning process.

Completing a carrying capacity analysis would allow the BLM to adjust AMLs based on monitoring current land health and water sources. Adjusting AML would help ensure healthier herds by preventing overpopulation that could lead to overgrazing ranges, damage to riparian areas, and increased competition with domestic stock and other wildlife.

Implementing a population control program within HMAs would provide an alternative tool to reduce wild horse numbers from exceeding AML on a case-by-case basis. Reducing the population growth rates of horses by using population control strategies would provide for healthier herds of animals by limiting the stress of continual pregnancy on the mares. This would also hold true for any non-breeding herds with geldings as they would not be exerting extra energy trying to breed the mares. Sterilized mares would also be in better condition because energy would not be used raising a foal. Another benefit is that wild horses and burros would suffer less stress from being gathered because gathers would be scheduled less frequently. The action would also result in fewer wild horses and burros being placed in short- or long-term holding or the adoption and sale programs over the next 5 to 10 years.

Alternative E would increase AMLs contingent upon arrangements being made with Lahontan State Park to allow horses access to water within the park. By coordinating with the state a viable wild horse herd would be able to be managed that the range and water sources could support.

Maintaining current MOUs and developing interagency and interoffice MOUs would standardize management to prevent individual management plans that are at odds with one another and reduce any possible interagency conflicts regarding proper management. This would also facilitate the dissemination of information and innovative management practices among agencies.

Wild Horse and Burros: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Wildland fire could impact wild horses and burros in the short and long-term. Periodic fires may reduce dense understory and change nutrient composition in soils. Fire may convert late-successional vegetation to earlier stage, increasing forage for wild horses and burros. However, fire also causes loss of habitat, increases potential for erosion, and increased sedimentation and water temperatures in aquatic habitats from removal of upland vegetation. Fire can also cause long-term alternations of habitat, particularly for sagebrush habitats, which are slow to recover from fire, and vulnerable to competition from

invasive weeds, which results in a loss of forage for wild horses and burros. Mortality of wild horses and burros can also occur from fires.

Effects under Alternative A
Alternative A would manage wildfire with categories A, B C, and D, each with target fire suppression goals to protect property and resources. Fire suppression would protect special status species habitat in areas threatened by fire. This would indirectly protect wild horse and burro forage and habitat, but could also contribute to more damaging fires if dense understory vegetation builds up.

Effects under Alternative B
Alternative B would develop fire management plans to guide response to wildfire and prioritize suppression activities, and improve ESR. Alternative B includes provisions to prevent cheatgrass and other invasive species from dominating burned areas and altering the natural fire regime by re-establishing appropriate species/subspecies. This approach would provide healthier forage and habitat for wild horses and burros more than current management.

Effects under Alternative C
Management under Alternative C would be similar to Alternative B, with more focus on protecting sensitive biological, cultural, and other natural resources, and use of native species for revegetation. This alternative would do the most to protect wild horse and burro forage and habitat from fire damage.

Effects under Alternative D
Management under Alternative D would be similar to Alternative B, but would focus on the urban interface zone. This would directly impact wild horses and burros in the few areas where wild horses and burros travel within that zone.

Effects under Alternative E
Management under Alternative E would be similar to Alternative B.

Wild Horse and Burros: Effects from Cultural Resources Management

Effects Common to All Alternatives
In general, management actions designed to protect cultural resources are localized and minimally impact wild horses and burros. Limiting surface disturbance activities near cultural sites would protect forage for wild horses and burros.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Management for paleontological resources and protection of paleontological ACECs would protect wild horse and burro forage, and minimize vegetation loss and erosion. Promoting public visitation to areas of paleontological interest or importance could impact wild horse and burro range, depending on the numbers of visitors to areas. Wild horses and burros could be disturbed, plants may be trampled, and wild horses and burros may avoid areas of high visitation, but these impacts would be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Visual Resources Management

Effects Common to All Alternatives
Impacts on wild horses and burros would vary, depending on the number of acres identified by VRM class. In general, management for VRM Class I or II designated areas would allow fewer intrusions to the landscape resulting in fewer impacts on wild horses and burros and their range. Overall, impacts are expected to be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Caves and Cave Resource Management

Effects Common to All Alternatives
In general, management actions to protect caves would not have any effect on wild horses or burros. Efforts to inform or educate the public about caves could increase visitation and adversely disturb surrounding wild horse and burro habitat. Impacts would be minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
Harvesting of forest products would impact wild horses and burros due to noise, surface disturbance, removal of trees, and loss or fragmentation of the range habitat and cover. These activities are relatively limited in the planning area. These negative impacts would be short term and may improve the forage base in the long term.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Livestock Grazing Management

Effects Common to All Alternatives
All alternatives would comply with standards and guidelines for livestock grazing, and manage allotments toward meeting Rangeland Health Standards. Allotments meeting standards provide superior habitat, because they have healthier vegetation, more native species, and less soil damage. All alternatives would rest burned areas from livestock grazing for a minimum of two growing seasons, and would not allow livestock grazing near springs, meadows, streams, or aspen areas. While this would exclude livestock and wild horses and burros in the short-term, it would provide a healthy forage base in the long-term.

Effects under Alternative A
Under current management, existing range management programs and closures would continue (see **Table 2-1**), These programs promote rangeland health and make provisions to improve habitat for wildlife, and wild horses and burros, but some lands do not meet rangeland health standards and also likely provide poor habitat due to loss of understory cover and forage.

Lack of restriction on continuous year-round grazing may contribute to failure of allotments to meet land health standards if forage resources become limited and adjustments are not made to grazing practices, with long-term impacts on the health of the wild horse and burro forage base.

Effects under Alternative B
Alternative B would result in approximately 996,500 acres available for livestock grazing within HMAs.

Continuous grazing would not be allowed in any one allotment, reducing conflicts with wild horses and burros and limiting impacts on land health in any one area.

Under Alternative B, retaining allotments overlapping the Pinenut HMA would retain the potential for conflict between wild horses and livestock, particularly in drought years, when forage would be more limited.

Under Alternative B, allotments would be discontinued where management changes have failed to stop decreasing in ecological function due to livestock. This action would increase the amount of forage and water available to wild horses and burros.

Effects under Alternative C

Alternative C would result in approximately 427,200 acres (64 percent reduction from Alternative A) available for livestock grazing within HMAs. In addition, under Alternative C, reduction in AUMs may be required and grazing utilization levels would be reduced to 27 percent of current levels on allotments not meeting land-health standards. If the reduced utilization level did not improve the ecological condition of allotments prior to the next periodic review, further reductions could be made based on monitoring. These provisions would improve the health of allotments that were not meeting Rangeland Health Standards due to overgrazing, and could provide more forage for wild horses and burros.

Under Alternative C, livestock grazing would be unavailable on allotments once they become vacant. In particular, livestock grazing in the Pinenut HMA would no longer be available as allotments become vacant, reducing conflicts between wild horses and livestock. Areas containing Greater Sage-Grouse priority or general habitat would not be available for grazing. In addition, no continuous grazing would be allowed on any allotment. These actions would all increase the amount of forage and water available to wild horses and burros.

Reducing grazing on BLM-administered lands could reduce erosion caused by high livestock use, improving upland, riparian and wetland habitat at a faster rate. Conflicts between livestock and wild horses, burros, and wildlife would also be reduced however, eliminating grazing would allow vegetation to build up faster on rangelands and may increase susceptibility to fire and disease and not improving rangeland health in the long term.

Effects under Alternative D

Alternative D would result in approximately 996,500 acres available for livestock grazing (the same as Alternative B) within HMAs. Under Alternative D, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments conducted during the periodic review process.

Continuous grazing would be permitted with impacts as described under Alternative B.

Under Alternative D, as under Alternative B, livestock grazing would be unavailable in allotments where management changes have been implemented and the allotment is still decreasing in ecological function with impacts as discussed under B. Under D, however, discontinuation is extended to areas

where livestock use is incompatible with urban uses which could increase the forage base and water sources for wild horses and burros in the WUI interface.

Impacts from making the Pinenut allotments unavailable would be as described under Alternative C.

Effects under Alternative E

Alternative E would result in approximately 1,070,200 acres available for livestock grazing (similar to Alternatives B and D) within HMAs. Under Alternative E, grazing would continue to be managed at existing levels, with re-examination based on monitoring and land health assessments during a periodic review process. Impacts would be similar to Alternative A except, those impacts from retaining allotments in Pinenut HMA would be as discussed under Alternative B.

Wild Horse and Burros: Effects from Geology and Mineral Management

Effects Common to All Alternatives

All alternatives would make mineral resources (leasable, locatable, salable) available for extraction or development but with differing open acres, stipulations and conditions of approval to protect other resources. Impacts on wild horses and burros from mineral exploration and development generally occur from surface disturbance causing loss of forage and wild horse and burro range, as well as disturbances to individuals from noise and activity associated with construction, and operation of facilities and roads.

Mineral material sites specifically would result in loss of wild horse and burro forage and long-term disturbance (e.g., surface, noise, and activity) in the vicinity of the sites as long as they remain open and active. Sites that require new access roads would also result in loss of forage and fragmentation of the range. Control methods for the reduction of weeds would result in short-term impacts on soil resources from compaction or ripping by heavy machinery, introduction of herbicides, or heavy grazing methods to remove unwanted vegetation within treatment areas. These areas would eventually benefit from such treatments as vegetation composition of native species would be restored.

Effects under Alternative A

Approximately 866,300 acres would continue to be open to fluid mineral development in HMAs under Alternative A. The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

The BLM would continue to manage approximately 870,900 acres as open to nonenergy leasable development in HMAs under Alternative A. The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

The BLM would manage approximately 875,200 acres as open to mineral material sales within HMAs under Alternatives A. The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative B

The BLM would manage approximately 685,400 acres as open to fluid mineral leasing within HMAs under Alternative B. Out of the 685,400 acres, 93,900 acres would be subject to NSO stipulations and 457,400 acres would be covered under CSU stipulations.

NSO stipulations would place stringent restrictions on fluid mineral leasing and surface-disturbing activities decreasing loss of forage and disturbance of wild horses and burros. The CSU stipulation would only require mitigating measures for fluid mineral leasing and could present the opportunity for activities harmful to the herd, however the stipulation would provide for fewer impacts on wild horses and burros than under Alternative A.

The BLM would manage approximately 626,400 acres as open to mineral material sales within HMAs under Alternatives B. The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

The BLM would manage approximately 626,400 acres as open to nonenergy leasable development within HMAs under Alternatives B (the same as under Alternative A). The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative C

The BLM would manage approximately 504,200 acres (42 percent decrease in acreage than under Alternative A) as open to fluid mineral leasing within HMAs under Alternative C. Out of the 504,200 acres, 260,500 acres would be subject to NSO and 311,900 acres would be covered under CSU stipulations. Impacts would be similar to those identified under Alternative B. This alternative provides for the fewest impacts on wild horses and burros from fluid mineral leasing.

The BLM would manage approximately 262,900 acres as open to nonenergy leasable development within HMAs under Alternatives C (70 percent decrease compared to Alternative A). The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

The BLM would manage approximately 262,500 acres as open to mineral material sales within HMAs under Alternative C (70 percent decrease compared to Alternative A). The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative D

The BLM would manage approximately 685,400 acres (21 percent decrease in acreage compared to Alternative A) as open to fluid mineral leasing within HMAs under Alternative D. Out of the 685,400 acres, 186,800 acres would be subject to NSO and 420,900 acres would be covered under CSU stipulations. Impacts would be the similar to those identified under Alternative B.

The BLM would manage approximately 626,400 acres as open to nonenergy leasable development within HMAs under Alternatives D (the same as under Alternative B). The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

The BLM would manage approximately 626,400 acres as open to mineral material sales within HMAs under Alternatives D (the same as under Alternative B). The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative E

The BLM would manage approximately 752,700 acres (13 percent decrease in acreage compared to Alternative A) as open to fluid mineral leasing within HMAs under Alternative E. Out of the 752,700 acres, 285,800 acres would be subject to NSO and 464,800 acres would be covered under CSU stipulations. Impacts would be the similar to those identified under Alternative B.

The BLM would manage approximately 515,900 acres as open to nonenergy leasable development within HMAs under Alternatives E (41 percent decrease compared to Alternative A). The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

The BLM would manage approximately 600,100 acres as open to mineral material sales within HMAs under Alternative E (31 percent decrease compared to Alternative A). The types of impacts would be the same as identified under *Effects Common to All Alternatives*.

Wild Horse and Burros: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Direct impacts from recreation management actions include loss or modification of habitat from constructing recreational facilities, including roads. Recreation management actions that result in increased human presence could have localized disturbance impacts on wild horses and burros from dispersed activities such as hiking, biking, camping, fishing, hunting, and sightseeing. Promoting scientific research and educational outreach would also increase public awareness and visitation. Impacts could include disruption of wild horses and burros, interference during foaling season, and damage to forage. Commercial, competitive, and group recreational activities could have greater impacts, but effects would be minimized through use restrictions and mitigation

measures. Increased human-wild horse and burro interaction could result in physiological stress and or harassment of wild horses and burros.

OHV use is the most damaging form of recreation to wild horses and burros, as a result of vegetative trampling and disturbance. OHV management actions that result in increased OHV use would cause localized impacts on wild horses and burros. Impacts could include stress and displacement of wild horses and burros, destruction of plants, and degradation of habitat or sedimentation of waterways. OHV high-use areas (e.g., Bedell Flat) can also alter the use patterns of wild horses and burros.

Effects under Alternative A

Under this alternative, the BLM would continue to manage 2,520 acres of the Walker Lake SRMA within the Wassuk HMA. Managing lands as SRMAs could encourage additional use of these lands and thus increase disturbances to wild horses and burros; however, disruption of wild horses and burros in other HMAs may be reduced by focusing recreationalists in specific areas. Under SRMAs, management actions can reduce the impacts of recreational activities, and adverse impacts can be monitored and addressed.

Effects under Alternative B

In addition to continuing to manage the Walker Lake SRMA within the Wassuk HMA, Alternative B would also establish 3 ERMAs that would overlap HMAs. 1,888 acres of the Middlegate ERMA would fall within the Desatoya HMA and 502,013 acres of the Pine Nut ERMA would fall within the Pine Nut HMA. ERMAs generally provide less funding for public access and improvements than SRMAs, and thus may have less visitation and fewer impacts on wild horses and burros. The Mina ERMA, however, promotes long distance trail riding for ATVs and UTVs through three HMAs (Marietta, Montgomery Pass and Pilot Mountain) increasing the risk of displacement and harassment of wild horses and decreasing wild horse forage availability than under Alternative A.

Effects under Alternative C

The BLM would continue to manage the Walker Lake SRMA under Alternative C, however the Wassuk HMA would be reverted back to an HA and there would be no impacts on wild horses and burros. Alternative B would also establish 5 ERMAs that would overlap HMAs. 14,325 acres of the Dry Valley and Virginia Mountain ERMAs would fall within the Flanigan HMA; 1,937 acres of the Dry Valley ERMA would fall within the Ft. Sage HMA; 125,352 acres of the Mina ERMA would fall within the Garfield Flat HMA; 64,607 acres of the Mina ERMA would fall within the Montgomery Pass HMA; and 93,432 acres of the Pine Nut and Singatse ERMAs would pass within the Pine Nut Mountains HMA.

Alternative C would minimize development of recreational facilities that attract visitors and would place the most limitations on OHV use, resulting in the fewest impacts on wild horses and burros from recreational use.

Effects under Alternative D

Under Alternative D, the Walker Lake SRMA would be managed as closed and impacts resulting from this SRMA would no longer affect the wild horses and burros within the Wassuk HMA. In addition 50,213 acres of the newly established Pine Nut ERMA would overlap with the Pine Nut Mountains HMA. Impacts would be similar to those described under Alternative B.

Effects under Alternative E

Alternative E would establish 6 ERMAs that would overlap HMAs. 1,888 acres of the Middlegate ERMA would fall within the Desatoya HMA; 14,325 acres of the Dry Valley and Virginia Mountain ERMAs would fall within the Flanigan HMA; 1,937 acres of the Dry Valley ERMA would fall within the Ft. Sage HMA; 125,352 acres of the Mina ERMA would fall within the Garfield Flat HMA; 64,607 acres of the Mina ERMA would fall within the Montgomery Pass HMA; and 93,432 acres of the Pine Nut and Singatse ERMAs would pass within the Pine Nut Mountains HMA. Impacts would be similar to those described under Alternative B.

Wild Horse and Burros: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Under all alternatives, roads decrease wildlife habitat quality. Roads and trails increase human-wild horse and burro interactions and can displace and stress animals, cause direct mortality from collisions, and alter home range. Flooding and erosion from poorly maintained roads and trails can also degrade wild horse and burro water sources.

Effects under Alternative A

OHV use would be the most detrimental to wild horses and burros under Alternative A. Under Alternative A, 804,200 acres would continue to be open, 390,500 acres limited, and 1,300 acres closed to motorized and mechanized OHVs within HMAs.

Effects under Alternative B

Under Alternative B, the BLM would manage 2,500 acres as open, 992,700 acres as limited, and 1,300 acres as closed to motorized and mechanized OHVs within HMAs. This alternative would significantly reduce impacts from OHV use compared to current management.

Effects under Alternative C

OHV use would be the most restricted under this alternative. The BLM would manage 1,300 total acres as open (no open acres within HMAs), 597,100 acres as limited, 311,200 acres as closed to motorized and mechanized OHVs, and 181,700 acres as closed to motorized but limited to mechanized OHVs within HMAs.

Effects under Alternative D

Alternative D would be more effective at reducing impacts from OHV use than Alternative A by further restricting OHV permitted use areas. Under this alternative, the BLM would manage 1,300 acres as closed to motorized and mechanized OHVs, 995,200 acres as limited, and 22,700 total acres as open (no open acres within HMAs).

Effects under Alternative E

Under Alternative E, the would manage 71,200 total acres as open, 1,300 acres as closed to motorized and mechanized travel, and 1,068,900 acres as limited to existing roads. Impacts would be similar to those under Alternative D, but the BLM would manage 55,700 total acres as open to OHV travel (no open acres within HMAs). Less protection would be provided for wild horses and burros.

Wild Horse and Burros: Effects from Lands and Realty

Effects Common to All Alternatives

Impacts on wild horses and burros from lands and realty management actions include forage loss and wild horse range degradation due to surface disturbance locally from construction of power lines, pipelines, roads, and other infrastructure. Implementing mitigation measures would reduce the extent of these impacts.

Effects under Alternative A

The BLM would continue to exclude 320,800 acres from ROW development within HMAs under Alternative A. Habitat fragmentation would continue outside of the exclusion areas, affecting wild horses and burros, which need areas of contiguous habitat to sustain populations. Under this Alternative, 2,400 acres within HMAs would be identified for disposal. Impacts from disposal include loss of forage and habitat for wild horse and burro herds.

Effects under Alternative B

Under Alternative B, 201,400 acres within HMAs would be set aside as ROW avoidance areas, including implementation of mitigation measures to avoid or reduce impacts on wild horse and burro habitat. ROW exclusion areas and lands identified for disposal would remain at similar levels to Alternative A. Overall; management under Alternative B would be more protective of special status species than current management because of the establishment of avoidance areas.

Effects under Alternative C

Under Alternative C, 789,400 acres would be managed as ROW exclusion areas and 48,800 acres as avoidance areas within HMAs. In addition, no BLM-administered land would be identified for disposal under this alternative. This alternative would provide the most protection to wild horses and burros from lands and realty actions within HMAs.

Effects under Alternative D

The impacts on wild horses and burros under Alternative D would be similar to Alternative B. Under Alternative D, 179,600 acres are identified as avoidance areas and 311,100 acres are identified for exclusion from ROW development within HMAs. The same number of acres would be identified for disposal within HMAs under Alternative D as under current management. This alternative would protect wild horses and burros and their range from ROW development more than Alternative A.

Effects under Alternative E

Under Alternative E, the acreage within HMAs identified for ROW exclusion would be similar compared to current management (311,100 acres exclusion). Wild horses and burros in ROW exclusion and avoidance areas would be protected from habitat degradation and other impacts. The same number of acres is identified for disposal within HMAs under Alternative E as under current management.

Wild Horse and Burros: Effects from Renewable Energy

Effects Common to All Alternatives

Renewable energy development could impact wild horses and burros by removing vegetation for construction of wind turbines, solar panels or towers, power lines, roads, and other facilities, which fragment the range and remove vegetation comprising wild horse and burro range. Human disturbances from construction and operation of facilities, including noise, movement, and vibrations, would cause disruption of wild horse and burro behavior. BMPs, stipulations, and mitigation measures applied as part of these projects would limit impacts to some degree. Control methods for the reduction of weeds would result in short-term impacts on soil resources from compaction or ripping by heavy machinery, introduction of herbicides, or heavy grazing methods to remove unwanted vegetation within treatment areas. These areas would eventually benefit from such treatments as vegetation composition of native species would be restored.

Effects under Alternative A

Under current management, no avoidance areas for wind energy have been designated, and approximately 102,500 acres within HMAs are designated as variance areas for solar projects. Variance areas allow development, but require provisions to protect resources in the area. Outside variance areas, utility-scale solar is not permitted. Impacts would be the same as those identified in *Effects Common to All Alternatives*.

Effects under Alternative B

Alternative B would designate approximately 430,800 acres within HMAs as avoidance areas for wind energy turbines or transmission lines and 65,300 acres

within HMAs as variance areas for solar. These provisions would protect wild horses and burros in the designated areas more than current management.

Effects under Alternative C

Renewable energy impacts on wild horses and burros would be reduced most under Alternative C due to the designation of approximately 615,700 acres within HMAs as wind energy exclusion areas. Approximately 47,000 acres would be variance areas for utility-scale solar, preserving more acreage from large-scale solar projects than current management.

Effects under Alternative D

Alternative D would designate approximately 430,800 acres as avoidance areas for wind energy turbines or transmission lines and 50,200 acres as variance areas for solar. These provisions would protect wild horses and burros in the designated areas more than current management.

Effects under Alternative E

Alternative E would designate approximately 420,400 acres as avoidance areas for wind energy turbines or transmission lines and 53,900 acres as variance areas for solar. These provisions would protect wild horses and burros in the designated areas more than current management.

Wild Horse and Burros: Effects from Areas of Critical Environmental Concern

Effects under Alternative A

Under current management, no ACECs overlap with HMAs, therefore no additional protections to wild horses and burros or their rangeland habitat would occur.

Effects under Alternative B

Under Alternative B, the Namazii Wunu and the Tagim aša Cultural ACECs fall within 66,625 acres of the Pine Nut Mountains HMA. The Black Mountain/Pistone Archaeological District would also fall within 1,310 acres of the Wassuk HMA. These two HMAs would receive additional protections identified in *Effects Common to All Alternatives* above.

Effects under Alternative C

Alternative C would provide the greatest potential for providing additional protections to wild horses and burros and their range as identified in Effects Common to All Alternatives. **Table 4-4**, Acres of ACECs that Would Overlap HMAs under Alternative C, identifies the Acres of ACECs that would overlap HMAs under Alternative C.

Table 4-4
Acres of ACECs that Would Overlap HMAs under Alternative C

HMA	ACEC	Acres
Augusta Mountains	Clan Alpine Greater Sage-Grouse	23
Clan Alpine	Clan Alpine Greater Sage-Grouse	58,716
Desatoya	Desatoya Greater Sage-Grouse	9,048
Flanigan	Virginia Mountains Greater Sage-Grouse	12,093
Fort Sage	Virginia Mountains Greater Sage-Grouse	1,597
New Pass-Ravenwood	Desatoya Greater Sage-Grouse	3,730
Pine Nut Mountains	-Namazii Wunu Cultural	123,622
	-Pine Nut Bi-State Greater Sage-Grouse	
	-Pine Nut Mountains Williams Combleaf Botanical	
	-Tagim aša Cultural	

Source: BLM GIS 2014a, BLM GIS 2014b

Effects under Alternative D

Under Alternative D, the Pine Nut Mountains Williams Combleaf Botanical ACEC and the Tagim aša Cultural ACEC fall within 9,135 acres of the Pine Nut Mountains HMA. The Black Mountain/Pistone Archaeological District would also fall within 998 acres of the Wassuk HMA. These two HMAs would receive additional protections identified in *Effects Common to All Alternatives* above.

Effects under Alternative E

Under Alternative E, no ACECs overlap with HMAs, therefore impacts would be the same as under Alternative A (no additional protections for wild horses and burros or their rangeland habitat would be implemented).

Wild Horse and Burros: Effects from Back Country Byways

Effects Common to All Alternatives

Wild horses and burros may be displaced by development of Back Country Byways in their immediate environments. These adverse impacts would be localized, and the public educational benefit of increased wild horse and burro awareness might indirectly benefit wild horses and burros.

Effects under Alternative A

Under Alternative A, 17.4 miles of the Fort Churchill to Wellington Back Country Byway fall within the Pine Nut Mountains HMA under Alternative A. Impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative B

Under Alternative B, 17.8 miles of the Marietta Back Country Byway fall within the Marietta HMA; 26.2 miles of the New Pass to Hawthorne Back Country Byway fall within the Pilot Mountain HMA; and 17.4 miles of the Fort Churchill to Wellington Back Country Byway fall within the Pine Nut Mountains HMA. Impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative C
Under Alternative C, 17.8 miles of the Marietta Back Country Byway fall within the Marietta HMA. Impacts would be the same as identified under *Effects Common to All Alternatives*.

Effects under Alternative D
No Back Country Byways fall within any HMAs under Alternative D and there would be no impacts on wild horses and burros.

Effects under Alternative E
Under Alternative E, 17.8 miles of the Marietta Back Country Byway fall within the Marietta HMA; 26.2 miles of the New Pass to Hawthorne Back Country Byway fall within the Pilot Mountain HMA; and 17.4 miles of the Fort Churchill to Wellington Back Country Byway fall within the Pine Nut Mountains HMA. Impacts would be the same as identified under *Effects Common to All Alternatives*.

Wild Horse and Burros: Effects from National Trails

Effects Common to All Alternatives
Management actions for preserving national historic trails would provide wild horses and burros protection through rangeland preservation by restricting surface-disturbing and other disruptive activities within the protected zone of the trail.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Wilderness Study Areas

Effects Common to All Alternatives
Management of WSAs would impact wild horses and burros when they overlap with HMAs. In general, the protections afforded to these areas, such as restrictions on surface-disturbing and other disruptive activities, would reduce potential harassment of wild horses and burros and help maintain and improve vegetation conditions, thereby maintaining or improving the rangeland health

and ensuring a thriving natural ecological balance. Limiting motorized vehicles and providing fewer travel ways would reduce disturbance to wild horses and burros and the range that supports them. **Table 4-5**, Acres of WSAs within HMAs, identifies the Acres of WSAs that would overlap HMAs under all alternatives.

Table 4-5
Acres of WSAs within HMAs

HMA	WSA	Acres
Augusta Mountains	Augusta Mountains	46,300
Clan Alpine	Clan Alpine Mountains	165,700
Desatoya	Desatoya Mountains	18,700
North Stillwater	Stillwater Range	8,800
Pilot Mountain	Gabbs Valley Range	71,600
South Stillwater	Job Peak	9,700

Source: BLM GIS 2014a, BLM GIS 2014b

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
No BCWCAs would fall within any HMAs under Alternative A; therefore there would be no impacts on wild horses and burros.

Effects under Alternative B
No BCWCAs would fall within any HMAs under Alternative B; therefore there would be no impacts on wild horses and burros.

Effects under Alternative C

Under Alternative C, 309,000 acres would be preserved as Back Country Wildlife Concentration Areas within HMAs, with plans to safeguard fish and wildlife habitat, allow only dispersed non-motorized recreation opportunities, and maintain the surface values of back country areas. This management program would impact wild horses and burros found in these conservation areas by preserving rangeland quality and limiting disturbance. **Table 4-6**, Acres of Back Country Wildlife Conservation Areas within HMAs, identifies the acres of BCWCAs that would overlap HMAs under all alternatives.

Table 4-6
Acres of Back Country Wildlife Conservation Areas within HMAs

HMA	Back Country Wildlife Conservation Areas	Acres
Clan Alpine	Clan Alpine	59,802
Garfield Flat	Excelsiors	82,248
Marietta	Excelsiors	4,982
Pilot Mountain	-Gabbs Valley Range North -Gabbs Valley Range South -Pilot Mountains	161,971

Source: BLM GIS 2014a, BLM GIS 2014b

Effects under Alternative D

No BCWCAs would fall within any HMAs under Alternative D; therefore there would be no impacts on wild horses and burros.

Effects under Alternative E

No BCWCAs would fall within any HMAs under Alternative E; therefore there would be no impacts on wild horses and burros.

Wild Horse and Burros: Effects from Public Health and Safety

Effects Common to All Alternatives

Actions to clean up contaminated sites could temporarily impact wild horses and burros by fencing off part of an HMA during cleanup and restoration of that site. Actions to correct and clean up hazards and to protect closed sites would also protect wild horses and burros from possible injury or contamination and would improve the vegetative conditions in the long term within those sites.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
Development of educational and interpretive opportunities to foster environmental literacy, stewardship, and awareness of BLM management strategies could benefit wild horses and burros by increasing awareness of wild horses and burros and reduces disturbance to animals and damage to the rangeland, forage and water sources.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wild Horse and Burros: Cumulative Effects
Cumulative impacts on wild horses and burros are similar to those described under *Nature and Types of Effects*, above. Wild horses and burros would directly benefit from actions to increase forage opportunities, to improve range conditions, to maintain or improve water sources, and to eliminate barriers to movement.

Incremental cumulative impacts on wild horses and burros under all alternatives should gradually decrease based on completing carrying capacity analyses that would allow the BLM to adjust AML's based on current land health and water sources along with maintaining AML, achieving standards for rangeland health and/or reducing livestock grazing. Other management strategies and permit requirements, including implementation of mitigation measures and permit stipulations applicable to minerals, lands and realty, and renewable energy development to reduce impacts on vegetation and reclaim disturbed areas would maintain and/or restore thriving ecological conditions within HMAs.

Incremental impacts would vary based on the size and location of disturbance that occurs within HMAs. Management of OHV travel would reduce impacts on wild horses and burros based on the number of acres of open, limited, or closed to OHV use. OHV travel management and use restrictions in PPMAs and PGMAs, other sensitive species management, and ACEC management would protect wild horses and burros by limiting uses in areas where HMAs overlap these areas. Coordination with the state and counties would reduce impacts on wild horses and burros that roam along the WUI and in and out of private lands. Continued removal of excess wild horses and burros above AML would maintain a thriving natural ecological balance within HMAs. Based on the Wild and Free-Roaming Horse and Burro Act of 1971, BLM policy and proposed management actions, a thriving natural balance would continue to exist as cumulative effects of multiple uses within HMAs would not cause unacceptable impacts or deterioration of rangeland. Overall incremental impacts would range from low to moderate and would be dependent on the location and size of disturbance within HMAs, the types of uses and the degree of use restrictions associated with HMAs and managing herds to AML.

4.3.8 Wildland Fire Ecology and Management

The impact analysis affecting Wildland Fire and Ecology management takes into consideration direct, indirect, and cumulative effects of proposed objectives and management actions by resource or uses as proposed under each alternative. The impact analysis includes impacts that may be both beneficial and adverse. Management for the following resources would not result in an effect on wildland fire ecology and management: ACECs, Back Country Byways, WSRs, BCWCAs, and public safety.

Summary

This section describes the direct, indirect, and cumulative impacts associated with fire management including fire suppression, fuels management, and post-fire ESR.

Methods of Analysis

Assumptions

The following assumptions were used to assess the impacts applicable to wildland fire ecology and management. These assumptions are included for the purpose of the analysis and do not represent existing or potential BLM RMP decisions.

- Historical trends indicate that the number or intensity of wildfires will gradually increase over time based on climate.
- Suppression priorities to protect human life and property will increase due to expansion of WUI areas.
- Increased use of BLM-administered lands will increase the potential for human-caused fires.

- BLM-administered lands managed as open to unrestricted OHV travel will result in a higher potential for human-caused fires. Lands containing motocross tracks and facilities will also result in a higher potential for human caused wildfire.
- Implementing fuel treatments will likely reduce fire intensity and the potential for fire spread and will protect resource values and provide public safety.
- ESR treatment priorities are to provide for human life and safety, soil/water stabilization, restoration of important habitat for special status species and would deter establishment of invasive plants.
- Areas dominated by annual invasive plants will continue to increase as a result of wildfire and/or surface disturbance.
- Treatments to improve vegetation health or re-establish vegetation will deter establishment and spread of invasive plants.
- Land tenure adjustments to dispose BLM-administered lands to private ownership will potentially increase the size of WUI areas and increase the need for fire suppression and fuel treatments to protect WUI areas.
- Acquisition of private lands to BLM-administration will increase BLM fire suppression, fuels, and ESR priorities.
- Managing VRM Classes I or II will affect the location, number, and type of fuel treatments in order to maintain the visual integrity view sheds.

Nature and Type of Effects

The nature and type of effects vary by resource and alternative as described in the following sections.

Wildland Fire Ecology and Management: Effects from Air Quality Management

Effects Common to All Alternatives

Compliance with federal, state, local laws, regulations, and standards would restrict the number, timing and location of prescribed fire projects due to federal, state, or local smoke emission restrictions.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Climate Management

Effects Common to All Alternatives
Utilizing adaptive management to prioritize treatments addressing potential climate change threats includes addressing threats from wildland fire and new invasions of exotic plants. Demands to develop fuel breaks, green strips, and rehabilitation seeding projects would increase. Suppression and fuel treatments would be prioritized in areas containing special status species and areas with important ecosystem functions in order to address wildfire threats caused by climate change.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Soil Resources

Effects Common to All Alternatives
Implementation of erosion control treatments to protect soils may increase the number and types of ESR treatments necessary to reduce water and wind erosion of soils following a wildland fire. Impacts would depend on the nature and degree of erosion control required.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Water Resources

Effects Common to All Alternatives
Implementing actions to protect surface water quality and quantity could restrict efficiency of fire suppression operations. Restrictions on retardant use or use of heavy equipment to construct fire lines in and around water sources could allow an increase fire size and/or increase the time to control fires.

Effects under Alternative A
Impacts would be similar to effects common to all.

Effects under Alternative B
Developing water sources on BLM-administered lands for fire suppression activities would improve availability and the strategic location of water sources necessary for fire suppression. Suppression operations would be more efficient and effective.

Effects under Alternative C
Developing water sources concentrating on wildlife use would reduce water development priorities in other areas. Suppression operations protecting other values at risk besides important wildlife areas may be less efficient if water sources are not available.

Effects under Alternative D
Impacts would be similar to those described under Alternative B.

Effects under Alternative E
Impacts would be similar to those described under Alternative B.

Wildland Fire Ecology and Management: Effects from Vegetation Resources (Forest and Woodlands)

Effects Common to All Alternatives
Managing and monitoring forest health would identify areas with high fuel loadings and serve to identify fuel treatments to reduce fire hazards. Management efforts to reduce fuel loadings would ensure forest health is maintained or improved. Fuel treatments would reduce fire intensity and/or size.

Effects under Alternative A

The impacts and effects of current management would be similar to those effects described under *Effects Common to All Alternatives*.

Effects under Alternative B

Alternative B would convert as many as 20,000 low-density pinyon-juniper areas to sagebrush dominated communities per year until 200,000 acres of sagebrush has been restored. In addition 8,500 acres of low-density pinyon-juniper would be removed and 6,500 acres of medium density pinyon juniper woodlands would be treated per year. This alternative affords the greatest number of woodland treatments and treatment acres compared to other alternatives. Fuel treatments (fuel breaks, green strips, thinning) would lower the potential for fire ignition, spread, and intensity. Alternative B would allow the full suite of fuel treatment methods including; prescribed fire in areas with riparian stands. Wild fires would be less intense and not spread as quickly in areas treated. Allowing salvage of fire-killed trees would reduce fuel loads and potential for fire ignition and spread. Insect killed stands would not be salvaged making those areas vulnerable to fire. Allowing extraction of wood products commercially and for biomass would further reduce fuel loads reducing the potential for high fire intensity and spread.

Effects under Alternative C

Alternative C would remove 3,500 acres of low-density pinyon pine and thin 1,500 acres of medium- to high-density pinyon pine annually. Lower fuel loadings would occur to a lesser extent than Alternative B. Fuel breaks would also reduce the potential for ignition, fire spread, and intensity but at lower levels compared to Alternative B. No commercial harvesting and biomass harvesting of wood products would be allowed leaving fewer areas where fuels have been thinned or removed. The potential for higher fire intensity and spread would be greater compared to Alternative B. Management of riparian stands would be similar to Alternative B except mechanical treatments or mastication would not occur. Fuel treatments may not be as effective in areas where mastication would be the most effective treatment means to reduce fuels. Allowing salvage of fire-killed trees and from insects and disease would reduce fuel loads near roads and campgrounds. Areas not near roads or campgrounds would result in higher potential for increased fire intensity and spread.

Effects under Alternative D

Management of fuels under Alternative D would focus on scenic, recreation, and wildlife habitat values and around communities. Managing fuels for wildlife habitat and around communities would increase demands for fuel treatments. Focusing management based on scenic values would limit the placement of fuel breaks in areas having high scenic values as some fuel break locations or treatment methods may not be desirable. Under this alternative treatments would be less effective. Implementing mitigation measures when conducting fuel treatments would help ensure adverse impacts from fuel treatments are

reduced. Fuel treatments within riparian stands would be limited to protect biological diversity, water yield, native plant and tree health and provide wildlife habitat. Fewer treatment methods would be available and would be limited hand thinning. Fuel treatments would be smaller and less effective making riparian stands more vulnerable to wildfire. Alternative D would allow salvage to meet local wood product demand and protect public safety. Fuel loads and vulnerability to fire would be higher in areas where public demand for wood products is low.

Effects under Alternative E

Under Alternative E 8,500 acres of low-density pinyon-juniper areas would be removed and 6,500 acres of medium- and high-density pinyon juniper lands would be thinned annually. Fire suppression would benefit from lower fuel loadings and construction of fuel breaks. Fire intensity and spread would be reduced. Allowing extraction of wood products for personal use would further reduce fuel loads and the potential for high fire intensity and spread.

Wildland Fire Ecology and Management: Effects from Vegetation Resources (Restoration and Rehabilitation)

Effects Common to All Alternatives

Successful fire rehabilitation projects would stabilize and rehabilitate areas that have burned. The BLM may, as appropriate, conduct ESR treatments in accordance with the ESR Handbook #1742-1. Objective priorities include: human health and safety; soil and water stabilization; designated critical habitat for federal/state, listed, proposed or candidate species; critical heritage resources; invasive plants; and monitoring. Areas would be stabilized and rehabilitated in the long term.

Effects under Alternative A

Effects under Alternative A would be similar to *Effects Common to All Alternatives*.

Effects under Alternative B

Under Alternative B, ESR efforts would include the use of native or non-native plant species with the focus on reducing the establishment of cheatgrass and other invasive species. Establishment of seeded species would most likely occur and be successful in the short term as seed from more plant species; both native and non-natives would be available. Long-term rehabilitation objectives to re-establish wildlife habitat or diverse vegetation communities may not be achieved as the short-term objectives would focus on deterring invasive plant species.

Effects under Alternative C

Under Alternative C, ESR treatments would focus on rehabilitation of high valued wildlife habitat. ESR re-vegetation success would be dependent on achieving wildlife habitat objectives. Overall short-term success would be lower compared to Alternative B as wildlife habitat rehabilitation requires a longer period of time to establish a diverse vegetation community providing necessary

wildlife cover and food. A diverse native seed mix specifically for wildlife habitat would be included in the re-seeding efforts and availability of suitable native seed could be limited.

Effects under Alternative D

Alternative D would focus on rehabilitation of urban interface areas using fire resistant species. Use of native seed would be emphasized however; non-native seed would be used subject to where probability of success or availability of native seed is low. ESR short-term success would be lower compared to Alternative B as only fire resistive plant species would be seeded along with an emphasis on use of native species. Long-term objectives would take a greater period of time to achieve and may not address objectives related to rehabilitation of wildlife habitat.

Effects under Alternative E

Effects would be similar to Alternative D except that WUI and improving high value habitat objectives would be considered. Revegetation would include use of native and non-native species relative to the site potential increasing the likelihood of achieving seeding success. Short-term and long-term objectives are more likely to be achieved over time under this alternative.

Wildland Fire Ecology and Management: Effects from Vegetation Resources (Invasive, Nonnative Species, and Noxious Weeds)

Effects Common to All Alternatives

Implementing standard operating procedures and mitigation measures to wash the undercarriages of fire suppression equipment would limit the potential for spread of invasive, nonnative and noxious weeds during suppression operations. Implementing integrated weed control strategies would limit the spread of invasive, nonnative species, and noxious plants and would serve to improve the potential for ESR treatment success.

Effects under Alternative A

Effects would be similar to those described under common to all.

Effects under Alternative B

Alternative B provides for the use of appropriate control methods including; mechanical, biological, and chemical treatments to control invasive, nonnative species and noxious plants. Allowing the full spectrum of control methods would improve the potential for ESR treatment success.

Effects under Alternative C

Alternative C restricts the use of chemical control treatments. Control of invasive, nonnative and noxious plants within ESR treated areas would be more difficult and inefficient depending on site-specific conditions. The potential for ESR success would be lower compared to Alternative B.

Effects under Alternative D
Impacts would be the same as those described under Alternative B.

Effects under Alternative E
Impacts would be the same as those described under Alternative B.

Wildland Fire Ecology and Management: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
Applying disturbance buffers and seasonal restrictions to protect raptor and migratory nests and aquatic habitats, may limit location and timing of fuels and ESR treatments.

Effects under Alternative A
Impacts would be similar to those described under common to all.

Effects under Alternative B
Alternative B would limit the use of prescribed fire within PPMA to habitats having an annual precipitation above 12 inches and areas not vulnerable to establishment of invasive annual plants. Implementation of appropriate fuel treatments within PPMA areas would require other treatment methods without prescribed fire. Fuel treatments may be less effective in PPMA areas if the preferred treatment is prescribed fire. Alternative B would also prioritize fuel treatments in PPMA habitats that are being invaded by pinyon and/or juniper.

Effects under Alternative C
Alternative C prohibits use of prescribed fire within any PPMA and PGMA. Fuel treatment options would be restricted, thereby increasing the potential for wildland fire ignition and spread in PPMA and PGMA areas, especially if prescribed fire is the most effective fuels treatment option. PPMAs and PGMAs would also be prioritized for fuel treatments utilizing other treatment methods excluding prescribed fire to create movement corridors, connect habitats, or reduce the potential for catastrophic fire. More treatment objectives would be considered, excluding prescribed fire when planning projects.

Effects under Alternative D
Effects would be the same as Alternative B. However, areas prioritized for fuel treatments would be within sagebrush areas invaded by pinyon or juniper and would include both PPMA and PGMAs in order to create movement corridors, connect habitats, or reduce the potential for catastrophic fire.

Effects under Alternative E
Impacts from implementing Alternative E would be similar to impacts resulting from Alternative B. However, Alternative E does not provide prescribed fire in PPMAs with less than 12 inches of precipitation. Other fuel treatment methods

would be employed in those areas. Fuel treatments would be prioritized within areas invaded by pinyon or juniper with impacts similar to Alternatives C and D.

Wildland Fire Ecology and Management: Effects from Special Status Species Management

Effects Common to All Alternatives
Effects from special status species management are similar to those described under the wildlife section, which includes special status species management. Designations of ACECs to protect special status plant and wildlife species would increase suppression and fuel treatment priorities to protect these areas from wildfire. Management of special status species ACECs may include restrictions limiting some suppression actions (e.g., use of dozers) in order to protect resource values from suppression damage.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Management of wild horses and burros includes removal or exclusion of wild horses and burros from fire rehabilitated areas. Removal of animals would reduce the potential for grazing and trampling of newly established vegetation and would promote potential for short-term and long-term success of ESR treatments.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Fire management is guided by the 1995 Federal Wildland Fire Management Policy and 2001 Fire Policy Update. Utilizing a wildfire decision support system for suppression operations prioritizes suppression response providing resources where they are needed most. Fire management response are also specifically pre-defined as outlined in District fire management plans or other operating plans and are subject to fire management and constraints identified in specific Fire Management Units within the Fire Management Plan. Employing minimum impacts suppression tactics would help reduce impacts on other resources during suppression operations. Suppression operations include assignment of one or more resource advisors as a standard practice to reduce the potential for adversely impacting high value resources. Implementing fire danger restrictions (e.g., campfire restrictions, smoking, and target shooting) would reduce the potential for human-caused fire.

Implementing fuel treatments would reduce fire intensity and spread providing public safety and protecting property and resource values.

ESR treatments would provide stabilization and rehabilitation of burned areas. Planting and seeding areas would reduce the potential for establishment and spread of cheatgrass and other invasive plant species and re-establish wildlife habitat.

Stressing public outreach and education through fire prevention activities would serve to reduce the potential of human-caused fire.

Effects under Alternative A
Effects would be similar to those described under common to all.

Effects under Alternative B
Alternative B affords the full range of fire management to suppress fires. Suppression efforts would be the most efficient providing priority for firefighter and public safety, protection of property, and protection of high value resources. The potential for fire spread would be the lowest under this alternative. Fuel treatments under Alternative B would prioritize treatments to

protect property and infrastructure, resulting in a higher level of protection from wildfire. ESR objectives under Alternative A (See Row #73 on Page 2-42, Vegetation – Restoration and Rehabilitation) would focus on deterring the establishment and spread of invasive species from burned areas. Treatments would be designed to address short-term re-vegetation using seeded species based on seed availability suitable for the site potential and probability of success. The potential for short-term seeding success would be higher based on short-term objectives. The potential for long-term establishment success of diverse, sustainable, and resilient vegetation would be lower.

Effects under Alternative C

ESR priorities would center on treatments in high value wildlife habitat areas. The potential for recovery under this alternative would be slow as native vegetation would take a longer time to establish. Re-establishment of habitat would slowly occur over time.

Effects under Alternative D

Effects would be the same as Alternative B. Fuel treatments would be prioritized to protect fire safe communities. ESR objectives would prioritize WUI areas using fire resistant plant seed. Areas outside of WUI areas would have a lower priority, and the potential for successful rehabilitation of non-WUI areas would be lower. This alternative stresses seeding with native plant seeds; however, nonnative seed would be used if availability of native seed is limited.

Effects under Alternative E

Impacts would be similar to Alternative B. However, fire protection priorities would be dictated by local agency administrators and resource advisors. Alternative E emphasizes fuel treatment priorities to protect fire safe communities, modify vegetative communities, achieve condition class objectives and protect habitat, watersheds, and riparian areas. Fuel treatment priorities would protect both the public and resource values under this alternative. ESR treatment objective priorities include both WUI and high-valued wildlife habitat areas. The potential for successful long-term rehabilitation treatments would be highest depending on site-specific conditions. This alternative stresses seeding with native plant seeds; however nonnative seed would be used if availability of native seed is limited.

Wildland Fire Ecology and Management: Effects from Cultural Resources Management

Effects Common to All Alternatives

Heavy equipment use would be limited in culturally sensitive areas which could reduce suppression efficiency. Suppression tactics include objectives to protect sensitive cultural resources from wildfire including; use of retardant drops, wrapping historic buildings with flame retardant material, installing sprinklers, strategic placement of fire engines, or installing fuelbreaks. Fuel treatments

causing surface disturbance or visual intrusions affecting the physical integrity of Native American sacred sites would be prohibited. These would be more vulnerable to wildfire.

Effects under Alternative A
Similar to those described under *Effects Common to All Alternatives*.

Effects under Alternative B
In order to protect cultural and historic rock art sites, a 0.125-mile buffer would be applied prohibiting surface disturbing activities and visual intrusions to these sites. Fuels and ESR treatments would be limited to areas outside of the buffer. Treatments may not occur if they cause visual intrusions that adversely affect values through the evaluation of eligibility for the NRHP within these areas. Some cultural and historic rock art sites may be more vulnerable to wildfire.

Effects under Alternative C
Impacts would be similar to those described under Alternative B except that a 1.0 mile buffer would be applied to protect cultural and historic rock art sites.

Effects under Alternative D
Impacts would be the same as Alternative B.

Effects under Alternative E
Impacts would be similar to Alternative B except that the buffer implemented would be 0.5 miles or visual horizon whichever is less. Within the Pistone rock art site prescribed fire or the use of retardant chemicals would be prohibited making this site vulnerable to wildfire.

Wildland Fire Ecology and Management: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Management of paleontological resources would result in negligible or no impacts on fire management. Use of heavy equipment in areas containing high paleontological resource values may be limited during site-specific suppression activities.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Visual Resources Management

Effects Common to All Alternatives
Management of visual resources to meet objectives would limit; the number, size, and location of fuel treatments and ESR treatments.

Effects under Alternative A
Fuels and ESR treatments would be restricted within 564,100 acres of VRM Class I and 38,300 acres of VRM Class II. Resulting impacts include restrictions on treatment methods in order to achieve VRM objectives; these could include reducing the size or changing the location of fuel treatment projects making them less effective to support suppression operations.

Effects under Alternative B
Impacts would be similar to those to Alternative A except VRM class II acres would be increased to 56,800. More areas would be subject to fuel treatment restrictions

Effects under Alternative C
Impacts would be similar to Alternative A except VRM Class I acres would increase to 981,900 and class II would increase to 733,900 acres resulting in larger areas applicable to fuels and ESR treatment restrictions. Fire suppression may not be as effective in areas that limit or restrict fuel treatments.

Effects under Alternative D
Impacts would be similar to Alternative A except VRM Class II acres would be 66,400 acres.

Effects under Alternative E
Impacts would be similar to Alternative A, with the same number of acres managed as VRM Class I, but with more acres (513,600 acres) managed as VRM Class II.

Wildland Fire Ecology and Management: Effects from Caves and Cave Resource Management

Effects Common to All Alternatives
Management of cave resources would cause minimal effects on fire management. Some infrastructure, such as interpretive signage or kiosks may elevate suppression priorities to protect these structures.

Effects under Alternative A
Impacts would be similar to those described under common to all alternatives

Effects under Alternative B
Effects would be similar to Alternative A.

Effects under Alternative C
Alternative C prioritizes fuel treatments to protect significant caves. Fuel treatment priorities would increase and treatment priorities to protect other areas such as WUI and high value resources may be deferred or reprioritized in order to protect significant caves.

Effects under Alternative D
Effects would be similar to Alternative C.

Effects under Alternative E
Effects would be similar to Alternative C.

Wildland Fire Ecology and Management: Effects from Forestry and Woodland Product Management
See **Vegetation: Forest and Woodlands** section for impact analysis.

Wildland Fire Ecology and Management: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Utilizing appropriately managed prescribed grazing treatments would reduce fuels and the potential for fire spread in areas where infrastructure such as fencing is in place. Making burned areas unavailable to livestock grazing would protect re-seeded areas as newly established seedlings would not be grazed or trampled, improving the potential for ESR success. Discontinuing or reduced grazing strategies may increase fuel loadings in the short term. Impacts would vary based on the number of AUMs discontinued or reduced. Grazing restrictions would also reduce the potential for establishment and spread of invasive, nonnative, or noxious plants by livestock.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Geology and Mineral Management

Effects Common to All Alternatives
Construction of mineral development infrastructure would increase suppression priorities to provide public safety and protect property. Mines transport flammable liquids which would increase the potential for human-caused fire. Mineral development infrastructure includes construction of roads that would improve access for fire suppression equipment. Delineating or designated areas as open, closed, or withdrawn to mineral development or managing these lands with NSO stipulations would reduce mineral-related property infrastructure that would require fire suppression protection. These actions would also reduce public visitation and the potential for human-caused fires. Reclaimed exploration or mining areas would serve as fuel breaks to support suppression operations depending on the location of wildfires.

Effects under Alternative A
Alternative A would close 194,900 acres and proposes to withdraw 3,700 acres to locatable minerals development. Management of fluid minerals would close 839,100 acres, apply NSO stipulations to 700 acres, and no acres would be subject to CSU stipulations. Salable minerals management actions would close 564,200 acres to development, and nonenergy leasable minerals management actions would close 738,800 acres. This alternative affords the fewest acres closed to development and the fewest surface restrictions, resulting in the potential for more mineral operations. Compared to other alternatives, Alternative A minerals management would result in more development infrastructure, requiring more fire-suppression in developed areas.

Effects under Alternative B
Compared to Alternative A, Alternative B would close 194,900 acres to locatable minerals and proposes withdrawal of 439,600 acres. Management of fluid minerals would close 768,500 acres, apply NSO stipulations to 404,600 acres, and 2,120,200 acres would be subject to CSU stipulations. Salable minerals management actions would close 807,200 acres to development, and nonenergy leasable minerals management actions would close 981,900 acres. This alternative reduces the number of acres closed to fluid minerals but increases the number of NSO acres applicable to fluids. A greater number of acres would be managed as closed to nonenergy leasing compared to Alternative A. Alternative B would provide more restrictions to mineral development than Alternative A as more areas would be managed as closed to mineral development. Consequently development of mineral related infrastructure would be lower reducing the fire suppression priorities.

Effects under Alternative C

Alternative C would close 194,900 acres to locatable minerals development and proposes to withdraw 117,500 acres. Management of fluid minerals would close 2,081,700 acres, apply NSO stipulations to development on 1,039,200 acres, and 1,242,800 acres would be subject to CSU stipulations. Salable minerals management actions would close 3,004,800 acres to development, and nonenergy leasable minerals management actions would close 2,960,800. This alternative would close the most acres to mineral development and would manage the most acres with surface restrictions, restricting the potential for mineral development and associated infrastructure. Suppression priorities to protect mining related infrastructure would be the lowest under this alternative.

Effects under Alternative D

Alternative D would close 194,900 acres to locatable minerals development and proposes to withdraw 440,800 acres. Management of fluid minerals would close 737,000 acres, apply NSO stipulations to development on 864,800 acres, and 2,071,400 acres would be subject to CSU stipulations. Salable minerals management actions would close 564,600 acres to development, and nonenergy leasable minerals management actions would close 4,064,500 acres. A greater number of acres will be subject to CSU stipulations, which would provide fewer infrastructure areas requiring fire suppression prioritization, otherwise impacts on fire management would be similar to Alternative A.

Effects under Alternative E

Alternative E would close 194,900 acres and proposes to withdraw 80,800 acres to locatable minerals development. Management of fluid minerals would close 1,007,200 acres, apply NSO stipulations to development on 935,900 acres, and 1,844,900 would be subject to CSU stipulations. Salable minerals management actions would close 1,662,400 acres and nonenergy leasable minerals management actions would close 1,435,700 acres to development. This alternative affords a higher level of infrastructure protection from locatable minerals and a higher level of infrastructure protection from leasable minerals compared to the other alternatives with the exception of Alternative C.

Wildland Fire Ecology and Management: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Providing for dispersed recreation, extensive recreation management areas (ERMAs), and special recreation management areas (SRMAs) would increase public visitation and the potential for human-caused fire ignition. Management of areas as SRMAs would increase fire suppression priorities to provide public safety and protect recreation values and associated infrastructure. These areas would also require additional fuel treatments to protect areas from wildfire. ESR treatments would be prioritized to restore areas burned within and next to SRMAs.

Effects under Alternative A

Developing the Lemmon Valley Motocross Area would increase the potential for human-caused fire due to increased visitation and motorcycle use. Protecting existing recreation areas and associated infrastructure would elevate fire suppression priorities and demand for fire resources. Alternative A would manage two locations as SRMAs; therefore, suppression priorities would focus on two SRMAs.

Effects under Alternative B

Managing the Lemmon Valley Motocross Area would cause the same impacts as described under Alternative A. Permitting commercial activities, competitive events, and organized groups may increase the potential for human-caused fire. Development of permit stipulations and mitigation measures would help reduce the potential for human-caused fire. Alternative B would manage 6 SRMAs. Suppression priorities would focus on 6 SRMAs. A higher number of fuel treatments would also be required to protect recreation values and infrastructure.

Effects under Alternative C

Eliminating opportunities for Motocross would serve to reduce the potential for human-caused fire ignition in the area. Permitting commercial activities would be similar to Alternative B. Alternative C would manage 3 locations as SRMAs. Suppression priorities would focus on 3 SRMAs. The potential for human-caused fire would be the lowest of any alternative.

Effects under Alternative D

Pursuing Recreation and Public Purposes Act leasing for management and operation of the Lemmon Valley Motocross facility would not create additional impacts on fire resources. The BLM would manage four areas and management would be similar to Alternative B. Pursuing partnerships to manage use and maintenance of the facilities may serve to reduce the potential for human-caused fire based on public education and sharing of resources.

Effects under Alternative E

Management of the Lemmon Valley Motocross facility would generate fire impacts the same as Alternative D.

Wildland Fire Ecology and Management: Effects from Comprehensive Travel and Transportation Management

Effects under Alternative A

Alternative A would manage 3,840,300 acres as open to cross-country travel. The potential for human-caused fire due to OHV travel in open areas would be the highest of the alternatives. Alternative A proposes to manage 6,900 acres as closed to OHV use. The potential for human-caused fire within closed areas would be reduced.

Effects under Alternative B

Alternative B would manage 95,300 acres as open to cross-country OHV travel. The potential for human-caused fire would be lower compared to Alternative A. However, Alternative B proposes to close 4,300 acres to OHV use, which is fewer than Alternative A. The potential for human-caused fire within closed areas would be similar to Alternative A.

Effects under Alternative C

Alternative C would manage 1,300 acres as open to cross-country OHV travel. The potential for human-caused fire would be lowest of the alternatives as this alternative has the lowest number of acres open to cross-country travel. Alternative C would close 598,000 acres to OHV use, the most of any alternative.

Effects under Alternative D

Alternative D would manage 22,700 acres as open to unrestricted motorized vehicle travel and 1,600 acres as closed. The potential for human-caused fire would be lower than Alternative A.

Effects under Alternative E

Alternative E would manage 55,700 acres as open to cross-country travel. The potential for human-caused fire would be similar to Alternative B differing by 24,100 fewer acres. Alternative E would manage 6,200 acres as closed to OHV use. The potential for human-caused fire within closed areas would be similar to Alternative A.

Wildland Fire Ecology and Management: Effects from Lands and Realty

Effects Common to All Alternatives

Granting rights-of-ways would improve access for suppression operations. Installation of infrastructure as a result of granting ROW would increase suppression priorities to provide for public safety and protect property. Land tenure adjustments to dispose BLM-administered lands would potentially increase the size of WUI areas and demands for fire suppression to protect life and property. Disposals would also create more WUI areas requiring more fuel treatments to protect areas. Acquisitions would increase the amount of BLM-administered lands that require fire suppression response and fuel treatments to protect human and resource values. Suppression priorities would be determined based on fire fighter and public safety, property, and resource values at risk.

Effects under Alternative A

Alternative A would dispose 179,700 acres, changing BLM-administered lands into private lands and expanding WUI areas. Demands for fire suppression protection and fuel treatments in WUI areas would be the lowest of the alternatives.

Effects under Alternative B
Alternative B would dispose 273,500 acres, changing BLM-administered lands into private lands and expanding WUI areas. Demands for fire suppression protection and fuel treatments in WUI areas would be higher than under Alternative A.

Effects under Alternative C
No similar action

Effects under Alternative D
Alternative D would dispose 332,500 acres, changing BLM-administered lands into private lands and expanding WUI areas. Demands for fire suppression protection and fuel treatments within WUI areas would be higher compared to Alternatives A.

Effects under Alternative E
Alternative E would dispose 267,200 acres, changing BLM-administered lands into private lands and expanding WUI areas. Demands for fire suppression protection and fuel treatments would be similar to Alternative D.

Wildland Fire Ecology and Management: Effects from Renewable Energy

Effects Common to All Alternatives
Granting ROW authorizations to renewable energy companies would result in similar impacts described under Lands and Realty.

Geothermal plants that transport flammables would increase the potential for human-caused fire.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
Management of ACECs would cause few if any impacts on fire management and ecology. ACECs may be areas that require a higher suppression priority depending on the values at risk.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Back Country Byways

Management of Back Country Byways would cause no impacts on fire management and ecology.

Wildland Fire Ecology and Management: Effects from National Trails

Effects Common to All Alternatives
Impacts from management of national historic trails would be similar to those described in the cultural resources section. Fire suppression operations may be restricted in areas near national trails in order to protect trail segments. Restrictions include limiting the use of dozers or other equipment. Protection of national historic trails and their setting may limit the number, size, and location of fuel treatments.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There would be no impacts on fire management resulting from WSR management. Fuel breaks may be required in order to protect WSR outstanding remarkable values (ORVs) near eligible streams or stream segments.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Wilderness Study Areas

Effects Common to All Alternatives
Subject to BLM WSA policy, fire suppression activities would be restricted within WSAs. Limited access and prohibition of heavy equipment use would make fire suppression more difficult.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There would be no impacts on wildfire management and ecology from delineation of BCWCAs.

Wildland Fire Ecology and Management: Effects from Tribal Interests

Effects Common to All Alternatives
Fuelbreak locations and designs would be subject to input received through the Native American Consultation process.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
Implementing public environmental education relating to fire prevention would help support fire management and reduce the potential for human-caused fires.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Wildland Fire Ecology and Management: Cumulative Impacts
Past, present, and Reasonably Foreseeable Future Actions identified are; climate change, invasive, non-native species management, lands and realty (land tenure adjustments and rights-of-ways), livestock grazing, minerals exploration and development, renewable energy development, recreation including travel management, vegetation management, wildlife and special status species management, wild horse and burro management and wild fire and ecology management.

Past and Present Actions
Few past and present management actions relating to climate change have occurred resulting in no impacts on wildland fire ecology and management. Management of invasive, non-native species and noxious weed management centers on integrated weed management approaches and includes working with other federal, state, local agencies and other partners to prioritize and develop treatment control strategies. Control strategies have improved the potential for ESR success following wildfire as controlling noxious plants and weeds has promoted re-vegetation success. Past and present land tenure adjustments have increased the suppression resource demands as some 29,300 acres of previously owned private lands has been acquired. Increasing the BLM-administered land base increases fire suppression and fuel treatment demands. Past and present livestock grazing has had few, if any impacts on fire and ecology management. Past and present minerals development have increased public visitation and developed infrastructure that have increased suppression and fuel treatment priorities in order to protect human life and property. Past and present impacts from renewable energy would be similar to past and present minerals impacts. Recreation management from past and present actions includes managing two recreation areas as special recreation management areas. Fire suppression and fuel treatments would be priorities to protect these areas. Past and present travel management provides the highest number of acres "open' to unrestricted travel. The potential for human-caused fire has been high due to open areas. Past and present vegetation management included treatments to maintain and improve vegetative health, achieve land health standards, and reduce fuel loadings. These strategies would reduce the potential for fire spread reducing the demands for fire resources. Wildlife and special status species management has had minimal impacts on fire resources. There are minimal impacts on fire resources based on wild horse and burro management. Past and present impacts from fire management has gradually increased over time due to increasing number of wildfires or increasing size of wildfire. Many of these have

threatened WUI areas. Increasing demands to suppression, install fuelbreaks and stabilize areas that have burned have occurred over time.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions to address threats due to longer fire seasons would increase the number of fuel treatments necessary to protect human life and values at risk. Future impacts from invasive, non-native species and noxious weed management would be similar to those identified under past and present actions. As the number of fire increase along with potentially larger fires, weed management demands would increase stretching ESR priorities. Reasonably foreseeable future actions would anticipate continued acquisition of private lands especially inholdings within designated areas such as WSAs and ACECs. The potential for land disposal would increase due to public private land interface areas. More BLM-administered lands could be converted to private lands in those areas. However, increasing the private land base may also increase the size of WUI areas requiring additional suppression resources and fuel treatments to protect the public. Reasonably foreseeable future actions relating from livestock grazing would be similar to past and present actions. Based on projected growth of mineral projects, development would continue to increase fire management priorities. Anticipated growth in renewable energy would increase public visitation and infrastructure increasing fire suppression and fuel treatment demands. Increasing the number of SRMAs would further increase suppression and fuel treatment priorities. Reasonably foreseeable future actions include more travel management restrictions reducing the potential for human-caused fire. Impacts from vegetation management would be similar to those described under past and present actions. Managing for special status species and priority wildlife areas would increase fire priorities to suppress fire and develop fuel treatments to protect these areas. There would be minimal impacts from wild horse and burro management. It is anticipated that fire management demands would continue to increase but at a higher rate due to increased population growth and changes in climate.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Incremental impacts would be similar between all alternatives based on climate change. Impacts would be variable based on drought conditions. Longer drought conditions would increase the number, intensity and spread of wildfire. Impacts from invasive, non-native and noxious weed management would improve re-vegetation success in treated areas however more areas may not receive treatment depending on climate conditions and the number of fire acres burned. Incremental impacts on fire management from realty would increase fire suppression and fuel treatment demands requiring more suppression resources and budgets. There would be no incremental impacts from livestock grazing to fire management. Incremental impacts from minerals would stretch fire suppression and fuel treatment resources making lower priority areas more vulnerable to fire spread. Renewable energy would create increases in fire

suppression demands and treatments. Incremental impacts would from recreation management would increase suppression and fuels priorities from 2 to as many as 6 SRMAs. Travel management incremental impacts would lower the potential for human-caused fire. Impacts would be dependent on the number of acres managed as open or closed to travel. Incremental impacts from vegetation management would continue to improve vegetation health and reduce fire potential. Incremental impacts from wildlife and special status species management would increase suppression and fuel treatment demands and priorities to protect these areas. There would be no incremental impacts on fire resources from wild horse and burro management. Fire suppression and fuel treatment demands and priorities would continue resulting in increased cost to suppress fire and provide protection for the public, property, and high value resources.

4.3.9 Cultural Resources

This section discusses effects on cultural resources from proposed management actions of other resources and resource uses. Existing conditions concerning cultural resources are described in **Section 3.2.9,** Cultural Resources.

Cultural resources are contemporarily considered evidence of past and present expressions of human culture and history in the physical environment. The term "cultural resource" can refer to archaeological and architectural sites, structures, or places with important public and scientific uses, and may include locations (e.g., sites, natural features, resource gathering areas or places) of traditional cultural or religious importance to specified social and/or cultural groups. Potential impacts on National Historic Trails are discussed in **Section 4.5.3**, National Trails. Native American religious concerns are addressed in **Section 4.6.1**, Tribal Interests. Finally, caves and cave resources, which may contain cultural resources, are discussed in **Section 4.3.13**, Caves and Cave Resources.

Summary

The planning area contains archaeological evidence of habitation and use for at least the past 13,000 years. Evidence of prehistoric human activity within the boundary of the planning area varies in complexity, type, environmental setting, and location. In addition to the vast depth of time represented by these resources, a wide range of behaviors are also indicated, including hunting, gathering, tool manufacture, trade and exchange, and expression of spirituality. Historic period cultural resource sites contain evidence of the common activities and resource uses that attracted people to the region, such as mining; transportation trails and roads; ranches and ranching-related facilities; and towns within the planning area.

The primary goals of cultural resource management are to identify and evaluate these resources, determine their appropriate management, and to administer them accordingly, both on public lands and on other lands where BLM decisions

could affect cultural resources. The objective of cultural resource management has several parts: preserving sites and landscapes, promoting public outreach and education, encouraging professional and academic research, and facilitating Native American traditional uses and consultation with interested groups.

Overall, objectives and actions associated with other resources that result in closure to surface disturbance activities would result in beneficial impacts (less chance of disturbance) to any cultural resources that might be present. Management for the following resources would not result in an effect on cultural resources: air quality, climate, wild horses and burros, forestry and woodland management, and WSRs.

Methods of Analysis

Methods and Assumptions

Cultural resource baseline information in **Section 3.2.9,** Cultural Resources, was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws pertinent to determining effects on cultural resources (e.g., National Historic Preservation Act [NHPA]) were considered and included in criteria for determining impacts. This known information was overlain with the actions found under each alternative in Chapter 2, and conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

The analysis includes the following assumptions:

- Impacts on cultural resources are assessed by applying the criteria of adverse effect, as defined in 36 CFR Part 800.5a: "An adverse effect is found when an action may alter the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the action that may occur later in time, be farther removed in distance, or be cumulative."
- The BLM will follow 36 CFR 800, Section 106 and the Nevada State Protocol when addressing federal undertakings; therefore, adverse effects (as defined in the NHPA) on cultural resources would be appropriately mitigated.
- The information on cultural resources in the planning area is based on the results of industry and BLM inventory. However, as these data are geographically biased toward past project-oriented undertakings and cannot accurately predict where and how many resources may exist in unsurveyed areas, this analysis does not attempt to quantify affected resources.

- Cultural resource protection and mitigation measures apply to all proposed federal or federally assisted undertakings, and will be applied at project design and implementation phases.
- Cultural resource inventories will continue into the foreseeable future and would result in the continued identification of cultural resources. The cultural resource data acquired through these inventories and evaluations will increase overall knowledge and understanding of the distribution of cultural resources in the region.
- Impacts on known cultural resource sites from authorized uses will be mitigated after appropriate Section 106 and Nevada State Protocol consultation requirements are met. Mitigation can include project redesign, avoidance, or data recovery.
- Degradation of known and undiscovered cultural resources from natural processes (e.g., erosion) will continue regardless of avoidance of human caused impacts.
- Potential impacts on cultural resources and their settings from subsequent undertakings (implementation of the planning decisions or site-specific project proposals) require separate compliance with the NEPA and Section 106, and result in the continued identification, evaluation, and mitigation of cultural resources to the NRHP. Per the Nevada State Protocol and standard BLM operating procedures, effects on cultural resources eligible for listing in the NRHP and potentially eligible cultural resources will be avoided or mitigated. If previously undiscovered resources are identified during an undertaking, work will be suspended while the resource is evaluated and mitigated to avoid any initial or further impact.

Indicators

The use of indicators in NEPA analysis should provide information on determining the extent or degree to which cultural resources may be damaged, their physical integrity is impacted, or the setting of the resource is damaged (36 CFR 800), and whether future opportunities for scientific research, preservation, or public appreciation are foreclosed or otherwise adversely affected by a proposed action. When assessing whether the action would cause significant impact, the following level-of-effect indicators will be carefully considered:

- Magnitude: The amount of physical alteration or destruction which can be expected. The resultant loss of archaeological value is measured either in amount or degree of disturbance.
- Severity: The irreversibility of an impact. Adverse impacts which result in a totally irreversible and irretrievable loss of archaeological value are of the highest severity.

- Duration: The length of time an adverse impact persists. Impacts may have short-term or temporary effects, or conversely, more persistent, long-term effects on archaeological sites.
- Range: The spatial distribution, whether widespread or site-specific, of an adverse impact.
- Frequency: The number of times an impact can be expected. For example, an adverse impact of variable magnitude and severity may occur only once. An impact such as that resulting from cultivation may be recurring or ongoing.

Nature and Type of Effects

Direct impacts on cultural resources could result from any proposed management action that would involve surface-disturbing activities which may result in damaging, destroying, or displacing artifacts and features, and constructing modern features out of character with a historic setting. Many cultural resources that occur on or just below the ground are susceptible to surface disturbance and erosion damage. Damaging, displacing, or destroying cultural resources could include removing artifacts from their situational context, breaking artifacts, or shifting, obliterating, or excavating features without appropriate scientific recording or religious/sacred assessment. The information loss is relevant to the site function, dates of occupation, subsistence, and past environments; all of these are important to understanding past cultures. Depending on the extent and type of activity, the amount of physical disturbance could be from slight artifact shifts out of context in a small portion of the site to wholesale destruction of an entire site. Should a portion of a site be affected, it is possible that some of the information available from a site could be retrieved and added to the prehistoric record of the region, thereby reducing the severity of the impacts. However, adverse impacts which result in a totally irreversible and irretrievable loss of archaeological value are of the highest severity.

Indirect impacts on cultural resources include changing the character of the property's use or physical features within the property's setting that contribute to its significance (e.g., isolating the property from its setting) and introducing visual, atmospheric, or audible elements that diminish the integrity of the property's features. Construction activities resulting from implementing the planning decisions, such as facilities associated with energy development, could result in placing modern features onto a landscape that did not have them previously, thereby juxtaposing "modern" industrial features onto a historic landscape. Additionally, any action that would result in increased human and worker presence (e.g., more people visiting a recreation area or workers brought in for construction operations) would risk illicit collecting of surface artifacts, resulting in a loss of scientific information and cultural heritage values for the public.

The potential for undiscovered buried cultural resources and/or human remains exists despite previous archaeological surveys and investigations. Surface disturbing activities would directly impact undiscovered cultural resources and human remains by exposing buried material, resulting in inadvertent artifact destruction or loss of scientific context. Indirect impacts could result from the increased human presence, leading to possible illicit collecting of newly exposed materials.

Any actions that would result in reclaiming landscapes to predisturbance conditions would eliminate the indirect viewshed or setting impacts for cultural resources. Reclamation would likely restore the natural landscape setting but may not result in restoring the historic setting. However, the direct impacts on cultural resources or any unanticipated discoveries made would remain as they were, permanently destroyed or damaged by surface-disturbing actions. Potential reclamation impacts on undiscovered buried cultural materials or human remains would be similar to those noted above, namely that activities could expose buried materials, resulting in inadvertent artifact destruction or loss of scientific context. Additionally, the increased presence of site employees could lead to illicit collection of exposed materials.

Effects on cultural resources would primarily result from unmitigated surface disturbance, such as cross-country travel, wildfires, wildfire suppression activities, erosion, unauthorized collection, vandalism, and trampling. Direct and indirect effects on cultural resources result from any surface-disturbing activity or alteration to the integrity of the resource, including setting. Federal actions defined as federal undertakings under Section 106 of the NHPA require the identification, evaluation, and consideration of adverse effects and the appropriate mitigation of those effects. Nearly all implementation actions would be subject to further cultural resource review before site-specific projects are authorized or implemented. If adverse effects are identified, mitigation measures, including avoidance, would have to be considered to minimize or eliminate the effects.

Soil Resource Management

Because many cultural resource sites are situated on or just below the ground surface, they are susceptible to damage and destruction from ground disturbance and erosion. Damage can include modification of site spatial relationships and displacement and damage of artifacts, features, and midden deposits. This can result in the loss of information relevant to the site function, dates of use, past environments, and other important research questions. Measures under all of the alternatives limiting soil erosion and managing ground-disturbing activities would indirectly protect these cultural resources. Reclamation measures may also preserve or restore the setting of cultural resources.

Vegetation Management

Vegetation: Forest and Woodlands

Managing for forest health would improve woodland habitats and would help protect forest from wildland fire. Forested areas containing traditional pine nut gather areas and culturally modified trees would be protected. Implementing forest health treatments by removing low density pinyon-juniper trees could result in surface disturbing activities, thereby potentially damaging or destroying cultural resources. Impacts would vary based on which treatment method is used. These impacts would be mitigated based on requirements to culturally inventory proposed disturbed areas prior to implementation. Based on inventory results, defined mitigation measures would be implemented including avoidance of sensitive areas.

Vegetation: Rangelands

Maintaining and restoring vegetation cover on rangelands would protect cultural resource sites that are situated on or just below the ground surface and are susceptible to damage and destruction from ground disturbance, erosion, and increased wildland fire. Measures to rest land, restrict grazing, fence sensitive areas, and disperse impacts from riparian areas would also protect cultural sites from ground disturbance. Restoring desired native species may include plants used or valued by tribal users and help maintain the historic setting of an area; however, revegetation efforts could damage cultural resources if surface disturbing application methods were used. Encouraging fire rehabilitation use or introducing/restoring nonnative plants can increase the potential for impacts on historic settings by creating different mosaics of vegetation that would not have been found in the past.

Vegetation: Riparian Areas

Improving or restoring riparian and wetland areas may affect the cultural resources and cultural uses that are often associated with these areas. Restrictive buffers around streams and water bodies and closures to prevent actions and projects that would degrade riparian conditions would indirectly protect cultural resources within these areas.

Vegetation: Noxious Weeds

Implementing weed control measures could result in surface disturbing activities, thereby potentially damaging or destroying cultural resources. While conducting the weed control measures may take only a short period of time (e.g., one application every few years), if they resulted in cultural resource damage, those resources would be permanently damaged. However, over a longer time period, treating weeds would indirectly reduce the risk on cultural resources from wildland fire and suppression, would reduce the potential for erosion of archaeological sites, and would help restore the setting of cultural landscapes.

Vegetation: Restoration and Rehabilitation

Rehabilitation projects conducted to stabilize soils, promote plant resiliency, limit expansion or dominance of invasive species, reestablish native species, and implement ESR, could impact and permanently destroy cultural resources through ground-disturbing activities that could displace, damage, or permanently alter a cultural site if the site was not discovered until after disturbance has occurred.

Effects from Fire and Fire Management

Fire can result in direct disturbance or loss of cultural resources through the destruction or modification of structures, features, artifacts, cultural use areas, and culturally modified trees. Organic materials, and the information that can be obtained from their study are especially vulnerable to heat damage, but intense fire can damage stone as well. Fire control and suppression can involve ground-disturbing activities that can also directly impact cultural resources by altering the spatial relationships of archaeological sites. Fire can also result in impacts through erosion and the increased visibility of cultural resources. Fire can remove vegetation and expose previously undiscovered resources, allowing their study and protection; however, sites exposed by fire or flagged for fire avoidance in prescribed burns can be susceptible to unauthorized collection and vandalism. There could also be impacts on cultural resources from ground disturbance associated with fuel treatments and rehabilitation, the effects of chemicals and fire, and the introduction of seeds and pollens, which could affect the accuracy of paleobotanical data on archaeological sites.

The risk of impacts on cultural resources is greatest from unplanned wildland fire since the locations of cultural resources are less likely to be known and avoided during the fire and fire suppression. Restrictions under the Wildland Fire Decision Support System (WFDSS) and minimum impact suppression tactics are designed to avoid or minimize impacts on sensitive cultural resources. Avoiding the use of retardant to protect open water sources could also protect culturally important water features. Fire breaks are planned and placed to avoid and protect known cultural resources. Cultural resources would be considered before any planned fuel reduction and restoration of native vegetation.

Effects from Livestock Grazing

Livestock grazing is associated with ongoing impacts on cultural resources that are located on or just beneath the ground's surface. Improper grazing and trampling reduces vegetative cover and disturbs the soil, which accelerates erosion and weathering, and can directly impact cultural resources by the modification, displacement and loss of artifacts, features, and middens, which results in loss of valuable cultural resource information regarding site function, date of use, subsistence, past environments, and other research questions. Since cultural resources are often associated with permanent and intermittent water sources, and these areas are attractive to livestock, impacts on cultural

resources are most likely to occur in these areas. Animals also seek shade in rock shelters and can damage cultural resource sites that are often present at those locations. Actions under all alternatives that would aim to protect springs and wetland riparian areas from livestock grazing would reduce the risk of direct disturbance and erosion of any cultural resources present. Actions that improve rangeland health could reduce the potential for impacts on cultural resources from direct disturbance, erosion, and wildland fire.

Effects from Mineral Development

Discretionary mineral exploration and development activities are subject to further cultural resource review at each stage of development through the Section 106 process, mining regulations, or permitting stipulations. Nondiscretionary mining notices are not federal undertakings, but 43 CFR Subpart 3809 specifically provides for the protection of cultural properties by prohibiting operators on claims of any size from knowingly disturbing or damaging cultural resources without mitigation. However, mine notices must be reviewed within 15 days, and it may be difficult to determine the presence of resources in areas that have not been inventoried. Potential impacts that would be addressed include ground disturbance, erosion, intrusions to the setting of the resource, and access leading to unauthorized collection or vandalism.

Restricting mineral activities that would affect NRHP-listed or NRHP-eligible cultural sites, or requiring additional mitigations, would maintain protection for these resources as well as resources not yet inventoried. Provisions for concurrent and interim reclamation would reduce the amount of land disturbed at any one time, which reduces the duration of alterations to setting and the potential for impacts due to erosion of cultural sites. Ongoing impacts on cultural resources in the vicinity of existing mines and drilling locations would continue.

Effects of Recreation and Comprehensive Travel and Transportation Management

Open OHV use can impact cultural resources, through direct disturbance of site structure, artifact breakage and displacement, vandalism, soil compaction, altered surface water drainage, erosion, creation of new routes and visual and aural intrusions to setting. Motorized access could also increase the risk of impacts on resources from unauthorized collection or vandalism. Restricting vehicle use to existing routes would reduce the risk of disturbing cultural resources located off travel routes and would reduce some impacts on setting, but impacts from access could still occur. Enforcing travel routes is difficult, and unauthorized user-created trails would continue to occur, potentially impacting cultural resources. Closure of areas to OHV use provides the most protection for cultural resources, if access for cultural purposes can be maintained.

Avoiding duplication of roads that have common destinations can reduce risks of impacts on cultural resources from ground disturbance and access leading to unauthorized collection or vandalism. Road maintenance such as blading can

disturb the physical integrity of cultural resources in road corridors where inventories are incomplete. However, maintenance can also prevent erosion and braiding and other processes that may threaten the integrity of cultural resources on or near roads.

Effects on cultural resources from SRMA and ERMA and their associated motorized and mechanized management decisions are discussed under Recreation and Visitor Services.

Effects from Back Country Byways
Continuing to manage and enhance the byways would continue to improve the visitor experience and would enhance public appreciation and protection of cultural resources. Developing additional Back Country Byways could lead to more public interpretation of cultural resources, but it could also increase the risk of impacts on resources from unauthorized collection or vandalism.

Cultural Resources: Effects from Soil Resources

Effects Common to All Alternatives
Soil protection measures would seek to limit erosion resulting from ground-disturbing activities and actions on steep slopes. Many cultural resources are susceptible to erosion damage, including modifying spatial relationships of artifacts and destroying features and stratified deposits. The information loss is relevant to the site function, dates of occupation, subsistence, and past environments; all of these are important to understanding past cultures. These measures to protect soils could preserve the integrity of cultural deposits and prevent damage from natural processes.

Effects under Alternative A
In general, indirect protection of cultural resources from soil erosion, compaction, and ground disturbing activities or reclamation requirements would be less under Alternative A because current management requires fewer specific actions than the other alternatives do.

Effects under Alternatives B, C, D, and E
Alternatives B through E would apply CSU stipulations for fluid mineral leasing on lands with slopes greater than 15 percent and less than 50 percent, and on lands with on lands with severe wind or water erosion hazard ratings. Additionally, Alternatives B through E would apply NSO stipulations on slopes greater than 50 percent. Due to these land use restrictions, these alternatives would provide more indirect protection for cultural resources from surface disturbing activities and soil erosion than Alternative A. Impacts on cultural resources in the areas could still occur from other resources management and uses.

Cultural Resources: Effects from Water Resources

Effects Common to All Alternatives
Actions to protect watersheds and municipal source waters through surface use restrictions and erosion controls would provide incidental protections from effects due to surface disturbance and erosion. Actions to modify or remove water control structures, develop wells, and modify water features include risks of disturbance of cultural resources through ground-disturbing activities, livestock trampling, changes in access, visibility, and setting of water features and changes to the water features themselves.

Under all alternatives water quality and availability would be maintained or enhanced which could potentially impact cultural resources near these features.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Cultural Resources: Effects from Vegetation Resources

Effects under Alternative A
Current management specifies fewer actions under Alternative A than the other alternatives for vegetation management. This indicates that while potential impacts from weed, riparian area, and rangeland treatments would be less than the other alternatives, the potential for damage of cultural resources from wildland fire and suppression, and associated increased erosion would be greater than the other alternatives. Alternative A would only protect a 5-acre stand of western white pine from destruction. Impacts on cultural resources from implementation of protective measures would be minimal due to the size of the forest stand and requirements to culturally inventory and mitigate impacts.

Effects under Alternative B

Vegetation: Forest and Woodlands

Alternative B would improve woodland habitats and would help protect forests from wildland fire by implementing the most aggressive strategies to treat low density pinyon-juniper areas. Forested areas containing traditional pine nut gather areas and culturally modified trees would be protected from wildfire through tree removal. Alternative B would convert up to 20,000 acres of low density pinyon-juniper areas to sagebrush dominated communities. Cultural resources could be damage from removal, ground disturbance, erosion, fire, and changes in setting. Requirements to inventory and mitigate potential impacts on cultural resources would reduce the potential for impacts. Alternative B also allows extraction of woodland products for personal and commercial uses. Areas containing cultural resource would be more vulnerable to illegal collection.

Vegetation: Restoration and Rehabilitation

Under Alternatives B through E, rehabilitation projects would be conducted to stabilize soils, promote plant resiliency, limit expansion or dominance of invasive species, reestablish native species, and implement ESR, which could inadvertently damage unknown cultural resources in the area as described under *Nature and Types of Effects*. Areas where implementation of ESR would occur vary by alternative.

Vegetation: Riparian Areas

Alternative B would avoid or minimize disturbance, loss, or degradation of riparian and wetland areas. This would provide for more management and indirect protection of cultural resources from surface disturbing activities than Alternative A.

Effects under Alternative C

Vegetation: Forest and Woodlands

Alternative C would remove low density pinyon-juniper on 3,500 acres. Fewer tree stands would be protected and cultural resources outside of proposed treatment areas would remain vulnerable to wildfire. Alternative C allows only personal use for harvesting of woodland products. The potential for damage to cultural resources and culturally modified trees through woodland harvest would be lower than current management as no commercial harvesting would be allowed. Overall the potential for direct impacts on cultural resources from implementation of forest treatments and harvesting would be lower compared to Alternative A.

Vegetation: Restoration and Rehabilitation

Effects on cultural resources from Vegetation: Restoration and Rehabilitation under Alternative C would be the same as those described under Alternative B except only native plant would be used for restoration work. Use of native seed

mixes would maintain vegetation communities that provide the context for cultural resources found in the area.

Vegetation: Riparian Areas

Riparian management would preclude surface disturbing activities within 100-year floodplains, within 200 feet of riparian areas, and within 500 feet of springs. In addition, riparian and wetland areas would be managed as closed to mineral material disposal with a 200-foot buffer. NSO stipulations would be applied to fluid mineral leasing within 500 feet of riparian and wetland areas, 100-year floodplains, and within 500 feet of playas. The land within 200 feet of riparian and wetland areas would be managed as ROW exclusion areas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the scope of surface disturbing activities. These additional land use restrictions would indirectly protect any cultural resources within these areas from surface disturbing activities. Alternative C would manage riparian areas with the most land use restrictions.

Effects under Alternative D

Vegetation: Forest and Woodlands

Alternative D would engage interested parties to develop restoration and woodland harvesting strategies of pinyon-juniper woodlands. Impacts on cultural resources would depend on the type of treatment strategies implemented and the number of acres treated.

Vegetation: Restoration and Rehabilitation

Effects on cultural resources from Vegetation: Restoration and Rehabilitation under Alternative D would be the same as those described under Alternative B.

Vegetation: Riparian Areas

Alternative D would prohibit surface disturbing activities within 200 feet of riparian areas and within 500 feet of springs. The BLM would manage these areas as ROW avoidance. In addition, riparian and wetland areas would be managed with CSU stipulations for fluid mineral leasing within 200 feet of riparian and wetland areas, 100-year floodplains, and within 500 feet of playas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the scope of surface disturbing activities. These additional land use restrictions would indirectly protect any cultural resources within these areas. Alternative D would provide for more restrictions than Alternative A.

Effects under Alternative E

Vegetation: Restoration and Rehabilitation

Alternative E would remove trees within 8,500 acres low density pinyon-juniper areas. Direct impacts to cultural resources would be greater than Alternative A. The type of impacts would be similar to those as described in effects common

to all and include damage from removal, ground disturbance, erosion, fire, and changes in setting. Requirements to inventory and mitigate potential impacts on cultural resources would reduce the potential for impacts.

Vegetation: Riparian Areas

Alternative E would prohibit surface disturbing activities within 200 feet of riparian areas and within 500 feet of springs. The BLM would manage these areas as ROW avoidance. In addition, riparian and wetland areas would be managed with NSO stipulations for fluid mineral leasing within 500 feet of riparian and wetland areas, 100 year floodplains, and within 500 feet of playas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the scope of surface disturbing activities. These additional land use restrictions would inadvertently protect any cultural resources within these areas. Alternative E would provide for more restrictions than Alternative A.

Cultural Resources: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Management of fish and wildlife under Alternative A would not provide for any additional land use restrictions that would reduce the possibility of impacts on cultural resources. Current restrictions and protections for habitat and species that indirectly protect cultural resources would continue, but there would be fewer specific measures and objectives than the other alternatives.

Effects under Alternative B

Wildlife Habitat

Alternative B includes implementing CSU stipulations for fluid mineral leasing within 500 feet of lentic and lotic habitats and 100-foot buffers around fish and wildlife priority habitat. These surface use restrictions, especially around lentic and lotic habitats, would protect any potential archaeological sites in these areas.

Bat Habitat

Bat habitat may also contain archaeological features which could be impacted or protected by bat habitat management. Other than closing access to caves in the event of a white-nose syndrome outbreak or other transmittable disease, Alternative B would not implement management actions to prevent disturbance of bat habitat. Previous access to the caves could result in damage to archaeological resources or their settings.

Effects under Alternative C

Wildlife Habitat

Under Alternative C, wildlife habitat management would implement NSO stipulations for fluid mineral leasing within 500 feet of lentic and lotic habitats. Additionally, Alternative C would manage fish and wildlife habitat as ROW exclusion areas with a 500-foot buffer and would close these areas to mineral material disposal and nonenergy mineral leasing. These restrictions to surface disturbance within these areas are greater than those under Alternative A and would provide the most indirect protection of any potential archaeological sites within these areas.

Bat Habitat

Alternative C would prohibit large-scale surface-disturbing discretionary actions within 500 feet of bat occupied caves. This would reduce the possibility of impacts on surface cultural features that may be around and in these caves more than Alternative A.

Effects under Alternative D

Wildlife Habitat

Under Alternative D, wildlife habitat management would be the same as described under Alternative B.

Bat Habitat

Alternative D would prohibit large-scale surface-disturbing discretionary actions within 200 feet of bat occupied caves. This would reduce the possibility of damage or destruction of surface cultural features that may be in and around the caves. This buffer of surface use restriction is stricter than Alternative, which would not implement a buffer.

Effects under Alternative E

Wildlife Habitat

Wildlife habitat management under Alternative E would apply NSO stipulations within 500 feet of lentic and lotic habitat, and would manage fish and wildlife priority habitat in ROW avoidance areas with a 100-foot buffer. Alternative E would better protect cultural resources than Alternative A.

Bat Habitat

Alternative E would prohibit large-scale surface-disturbing discretionary actions within 0.5 mile of bat occupied caves and within 0.25 mile of caves not known to be occupied by bats. This would protect the greatest amount of caves with the greatest distance of buffer of surface use restrictions. This would indirectly protect the greatest amount of potential archaeological sites that are associated with caves and cave resources.

Cultural Resources: Effects from Special Status Species Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A provides management of one ACEC to protect sensitive plants. Cultural resources located within this ACEC would also be protected from impacts related to disturbance based on applicable use restrictions.

Effects under Alternative B
Greater Sage-Grouse habitat management would manage PPMA (275,600 acres) with CSU stipulations for fluid mineral leasing and as ROW avoidance areas. These additional surface use restrictions could provide indirect protection of cultural resources within PPMA. However, these potential sites could still be impacted by other mineral development and other resource uses. Alternative B proposes three ACECs to protect sensitive plants and one ACEC to protect special status wildlife. Cultural resources located within these ACECs would be protected from impacts related to disturbance as use restrictions would be implemented. More protection of cultural resources would occur compared to alternative A.

Effects under Alternative C
Alternative C would close PPMA and PGMA (414,200 acres) to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. In addition, the BLM would manage these areas as ROW exclusion. Alternative C would apply land use restriction on more surface areas with more land use restrictions to protect Greater Sage-Grouse habitat than other alternatives. This would result in the greatest potential for indirect protection of cultural resources within Greater Sage-Grouse habitat.

Alternative C proposes five ACECs to protect sensitive plants and seven ACECs to protect special status wildlife. This alternative would also protect cultural resources located within these ACECs. Alternative C affords the greatest protection for cultural resources based on sensitive species management.

Effects under Alternative D
Under Alternative D, Greater Sage-Grouse habitat management would apply NSO stipulations for fluid mineral leasing within PPMA (275,600 acres) with no exceptions, modifications, or waivers. Alternative D would apply NSO stipulations for fluid mineral leasing within PGMA (138,600 acres) with exceptions, modifications, and waivers as outlined in **Appendix C**, and would manage PPMA and PGMA as ROW avoidance areas (414,200 acres). Alternative D would provide for less surface use restrictions than Alternative C and E, but more than A and B, and would therefore provide more protection of potential cultural resources within PPMA and PGMA than Alternative A. Alternative D

proposes three ACECs to protect sensitive plants. Cultural resources would be protected within these ACECs. Impacts to cultural resources would be lower compared to Alternative A.

Effects under Alternative E
Greater Sage-Grouse habitat management under Alternative E would be similar to those described under Alternative D. In addition to the management actions under Alternative D, Alternative E would close PPMA and PGMA to nonenergy mineral leasing and mineral material disposal. Alternative E would therefore be more protective of potential cultural resources within PPMA and PGMA than Alternative A. Management of the two proposed ACECs to protect sensitive plants would also protect cultural resources located within the proposed ACECs.

Cultural Resources: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Effects from fire management under Alternative A would be the same as those described under *Nature and Types of Effects*.

Effects under Alternative B
Under Alternative B, a full range of fire management activities and options would be utilized to protect all identified values at risk, as identified in the regularly updated fire management plan for the district. Implementing fire management activities and options, including suppression, would cause the same effects as those described in *Effects Common to All Alternatives*.

However, Alternatives B through E would implement ESR projects to stabilize soils, re-establish hydrologic function, maintain and enhance biological integrity, promote plant resiliency, limit expansion or dominance of invasive species, and reestablish native species. Many of the possible activities noted in for burned area rehabilitation, however, would likely result in short duration surface disturbing activities and could result in damage to cultural resources. Requirements to survey for cultural resources prior to any rehabilitation work would reduce this potential risk to cultural resources. In the longer term, once areas have been successfully rehabilitated, cultural resources would be less susceptible to erosion effects and less visible with healthy vegetation coverage.

Effects under Alternative C
Under Alternative C, minimum impact suppression would be applied so that emergency fire management methods would be no greater than necessary to meet fire management objectives. Alternative C would allow the use of dozers for fire management only when there is a threat to public safety or property damage, and chemical agents would not be allowed for suppression activities.

These limits to suppression activities could put cultural resources at greater risk of impact from wildland fire, but at less of a risk for impact from fire suppression activities. Overall, Alternative C would protect sensitive cultural resources from catastrophic impacts of wildfire and wildfire suppression activities.

Under Alternative C, hazardous fuels reduction projects would be implemented where negative impacts of wildland fire are greatest on sensitive cultural resources, as well as sensitive biological and other natural resources. This would reduce the overall possibility of impact cultural resources from wildland fire.

Effects under Alternative D

Under Alternative D a full range of fire management activities and options would be utilized to protect all identified values at risk, as identified in the regularly updated fire management plan for the district. Fire suppression activities would reduce the potential impact cultural resources from wildland fires, but may increase their risk of impact from fire suppression tools and equipment, as described under *Nature and Types of Effects*.

Effects under Alternative E

Alternative E would implement a full range of fire management activities and options to protect all values at risk and to sustain healthy ecosystems within acceptable risk levels. This includes protecting WUI, cultural, paleontological, biological, and other natural resources from catastrophic impacts of wildfire and wildfire suppression activities.

Alternative E would implement hazardous fuels reduction projects where impacts of wildland fire are greatest to public health and safety, sensitive biological, cultural, and other natural resources are greatest.

Cultural Resources: Effects from Cultural Resources Management

Effects Common to All Alternatives

Impacts on cultural resources from proposed land use authorizations would be minimized or avoided by complying with laws and executive orders designed to preserve and protect cultural resources. Complying with management measures for authorized actions requires consulting with federally recognized tribes and other interested parties, identifying and evaluating cultural resources, and adhering to procedures for resolving any adverse effects and mitigating impacts. Completion of the Section 106 process is required for all federal undertakings implementing resource management plan decisions. There is a greater risk of impacts resulting from unauthorized activities, natural processes, dispersed activities, and incremental or inadvertent human actions, especially where inventories are incomplete.

Cultural resource management measures would help identify, preserve, protect, and reduce impacts on cultural resources. Ongoing and planned management measures include the following:

- Conducting inventories, managing NRHP-eligible resources for conservation and protection
- Avoiding adverse effects as the preferred mitigation
- Consulting with federally recognized tribes
- Patrolling and monitoring vulnerable cultural resource areas
- Partnering with academic, educational, and tribal groups for research projects
- Thinning, prescribed fire, and other tools would be used to control fuel load, and outbreak of wildland fires.

Effects under Alternative A

Under Alternative A, the BLM would manage the Pah Rah High Basin (Dry Lakes) Petroglyph District ACEC (3,881 acres) to protect cultural resources. This ACEC is discussed in detail in **Section 4.5.1**, Areas of Critical Environmental Concern.

Additionally, BLM would pursue the withdrawal of locatable minerals from the Grimes Point Archaeological District, the Sand Mountain Recreation Area, and the Cold Springs Historical Site. Alternative A would promote visitation and interpretation of cultural resources at Grimes Point Archaeological District, Hidden Cave, the Pony Express Stations at Sand Springs and Cold Springs, the Cold Springs Telegraph and Stage Stations, and the New Pass Overland Stage Station. Increased visitation could foster a respect for cultural resources in these areas, but may also increase the risk for vandalism and theft.

Effects under Alternative B

Cultural and historic rock art sites would be managed with a 0.125-mile buffer in which surface disturbing activities and visual intrusions that adversely affect these features would be prohibited. Rock sites would be outfitted with interpretive signing, fencing, barriers, and other activities for management of visitor use. The buffer of disturbance prohibition under Alternative B is greater than Alternative A.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural Properties that are currently listed, eligible, or known but not yet formally designated for the NRHP as ROW-avoidance areas and would apply CSU stipulations for fluid mineral leasing.

Alternative B would designate 8 additional ACECs to protect cultural resources. These ACECs are discussed in detail in **Section 4.5.1**, Areas of Critical Environmental Concern.

All of the alternatives would implement the Native American Graves Protection and Repatriation Act. Alternative B would close areas known to contain human

burials to surface disturbing activities when feasible, and appropriate federal, state, and/or local laws would be followed when disturbance is necessary. The preferred management option of known or discovered human remains under Alternative B would be avoidance.

Effects under Alternative C

Cultural and historic rock art sites would be managed with a 1-mile buffer in which surface disturbing activities and visual intrusions that adversely affect these features would be prohibited. Rock sites would be outfitted with interpretive signing, fencing, barriers, and other activities for management of visitor use. This is the greatest buffer of surface use prohibition.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural Properties that are currently listed, eligible, or known but not yet formally designated for the NRHP as ROW-avoidance areas, would apply CSU stipulations for fluid mineral leasing, and would close these areas to mineral material disposal.

Alternative C would establish 9 additional ACECs to protect cultural resources. These ACECs are discussed in detail in **Section 4.5.1**, Areas of Critical Environmental Concern.

Alternatives C, D, and E would manage areas with high cultural site densities, such as playa lake areas and valleys, on a landscape level. These Alternatives would promote educational, research, and interpretation opportunities for the cultural resources, as well as pursue funding for data synthesis, and pursue archaeological district National Register and traditional cultural property nominations. These additional and landscape approach to managing cultural resources would be more protective than Alternative A.

All of the alternatives would implement the Native American Graves Protection and Repatriation Act. Alternative C would close areas known to contain human burials to surface disturbing activities when feasible, and appropriate federal, state, and/or local laws would be followed when disturbance is necessary. The preferred management option of known or discovered human remains under Alternative C would be in-place preservation, but archaeological excavation may be allowed.

Effects under Alternative D

Cultural and historic rock art sites would be managed with a 0.125-mile buffer in which surface disturbing activities and visual intrusions that adversely affect these features would be prohibited. Rock sites would be outfitted with interpretive signing, fencing, barriers, and other activities for management of visitor use. The buffer of disturbance prohibition under Alternative D is greater than Alternative A.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural that are currently listed, eligible, or known and not yet formally designated for the NRHP the same as under Alternative B.

Alternative D would establish 6 additional ACECs to protect cultural resources. These ACECs are discussed in detail in **Section 4.5.1**, Areas of Critical Environmental Concern.

Alternative D would manage areas with high cultural site density as Alternative C would.

The protection of human burials would be similar as those described under Alternative B. The preferred management option for known or discovered human remains would be avoidance.

Effects under Alternative E

Cultural and historic rock art sites would be managed with a 0.5-mile buffer or the visual horizon in which surface disturbing activities and visual intrusions that adversely affect these features would be prohibited. Rock sites would be outfitted with interpretive signing, fencing, barriers, and other activities for management of visitor use.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural Properties currently listed, eligible, or known and not yet formally designated for the NRHP as ROW-avoidance areas and would apply NSO stipulations for fluid mineral leasing.

Alternative E would establish three additional ACECs to protect cultural resources. These ACECs are discussed in detail in **Section 4.5.1**, Areas of Critical Environmental Concern.

Alternative E would prohibit BLM-authorized activities within the Virginia City National Historic Landmark District, would close the area to nonenergy mineral leasing, would require NSO stipulations for fluid mineral leasing, and would be managed as a ROW avoidance area, an exclusion area for wind development, and as a VRM Class III. This is the only alternative that would apply these land use restriction to the Virginia City National Historic Landmark under cultural resources management. Alternatives B, C, and D would manage this area as an ACEC, and Alternative A would not implement additional management actions.

Alternative E would also designate 15,900 acres as the Wyemaha Archaeological District to protect cultural resources. This would encompass the Grimes Point Archaeological District ACEC. This designation would provide for staff monitoring, law enforcement patrols, and the development of an interpretive center. Associated land use restrictions that would apply include recommendation for withdrawal from locatable mineral entry, closure to fluid

mineral leasing, and management as an ROW avoidance area. Alternative E would be the only Alternative that would designate the Wyemaha Archaeological District.

Alternative E would prohibit BLM-authorized activities within the Pistone site (3,100 acres) if they adversely affect local rock art resources. Additionally, the Pistone site management would include management as a ROW avoidance area, closure to mineral material disposal and fluid mineral entry, recommendation for withdrawal from locatable mineral entry, and prohibition of fire retardant chemicals.

Alternative E would manage areas with high cultural site density in the same manner as Alternative C.

Under Alternative E, protection of human burials would the same as those described under Alternative B.

Cultural Resources: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Identification and protection measures for paleontological resources may also lead to the identification and protection of cultural resources. Scientific study of these resources may provide additional information on paleo-environments and other research questions relevant to the cultural resources of the CCD.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Cultural Resources: Effects from Visual Resources Management

Effects Common to All Alternatives
VRM Class I and II designations provide protection of cultural resources where visual setting is a contributor to the significance of the property or the traditional use. Visual intrusion on the setting of cultural resources must be

considered in the Section 106 process and tribal consultation, regardless of VRM designation.

Class I. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes with very limited management activity. The level of change by the activity to the characteristic landscape should be very low and must not attract attention.

Class II. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Therefore, the risk of impacts on cultural resources in VRM Class I and II areas would be indirectly reduced due to the class areas limiting surface-disturbing activities or reducing their visual intrusions on the landscape.

Effects under Alternative A

Alternative A would manage visual resources within the planning area according to the following VRM class objectives:

- Class I: 564,100 acres
- Class II: 38,300 acres
- Class III: 320, 600 acres
- Class IV: 385,700 acres

Alternative A does not provide a VRM classification for the entire planning area. In total, 602,400 acres are classified as Class I or Class II. This would protect cultural resources found in these acres. Due to the Class I rating, 564,100 acres may be indirectly protected from surface-disturbing activities which would protect surface or just below surface cultural resources.

Effects under Alternative B

Alternative B would manage visual resources within the planning area according to the following VRM class objectives:

- Class I: 564,100 acres
- Class II: 56,800 acres
- Class III: 1,379,400 acres
- Class IV: 2,803,000 acres

Alternative B would classify 620,900 acres as Class I or Class II VRM classification. This would protect cultural resources found in these acres. This total is more than Alternative A.

Effects under Alternative C
Alternative C would manage visual resources within the planning area according to the following VRM class objectives:

- Class I: 981,900 acres
- Class II: 733,900 acres
- Class III: 213,400 acres
- Class IV: 2,874,100 acres

Alternative C would classify 1,715,800 acres as Class I or Class II VRM designations. This would better protect cultural resources than Alternative A.

Effects under Alternative D
Alternative D would manage visual resources within the planning area according to the following VRM class objectives:

- Class I: 564,100 acres
- Class II: 66,400 acres
- Class III: 185,900 acres
- Class IV: 3,986,900 acres

Alternative D would designate 630,500 acres as Class I or Class II designations which would provide for less protections of cultural resources than Alternative C, but more than Alternatives A and B. In addition, Alternative B would provide for the same amount of Class I designations as Alternative A.

Effects under Alternative E
Alternative E would manage visual resources within the planning area according to the following VRM class objectives:

- Class I: 564,100 acres
- Class II: 513,600 acres
- Class III: 1,383,900 acres
- Class IV: 2,341,700 acres

Alternative E would provide for 1,077,700 acres of Class I and Class II designations which is more than Alternative A. Alternative E would manage the same number of acres classified as VRM Class I as Alternative A.

Cultural Resources: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives

Identification and protection measures for caves and cave resources may also lead to the identification and protection of cultural resources. Scientific study of these resources may provide additional information on prehistoric and historic environments and other research questions relevant to the cultural resources of the CCD.

Effects under Alternative A

Alternative A would continue to manage caves and their cultural features based on current land use plan decisions, policy, and regulations which are complementary to other cultural resource management goals.

Effects under Alternative B

The BLM would develop a public outreach program to foster an appreciation for caves and their cultural resources, and would provide staff to monitor caves identified as culturally significant and heavily used by the public. This includes the Grimes Point Archaeological District, Hidden Cave, and Dynamite Cave. Implementation of public awareness of significant caves and their resources and added security would reduce the likelihood of theft and vandalism of the cultural resources associated with the caves.

Alternative B would reduce the potential for impacts on cultural resources associated with development around Dynamite Cave by implementing a 0.25-mile ROW avoidance area around the cave, closing the area to mineral material disposal, and applying for a 500-foot CSU stipulation for fluid mineral leasing. This would reduce the potential for disturbance to the cultural resources associated with Dynamite cave from ROW, mineral material, and fluid mineral development.

Alternative B would reduce the potential for impacts on cultural resources within Hidden Cave by implementing a ROW avoidance area within 500 feet of the cave, closing the area to mineral material disposal, and applying CSU stipulations within 500 feet of the cave for fluid mineral leasing. This would reduce the potential for disturbance to cultural resources associated with Hidden Cave from ROW, mineral material, and fluid mineral development.

Due to these additional measures, management of caves and cave resources under Alternative B would be more protective of cultural resources than Alternative A.

Effects under Alternative C

The BLM would develop public an outreach program to foster an appreciation for caves and their cultural resources, and would provide staff to monitor caves identified as culturally significant and heavily used by the public. This includes the Grimes Point Archaeological District, Hidden Cave, and Dynamite Cave.

Implementation of public awareness of significant caves and added security around significant caves would reduce the likelihood of theft vandalism of the cultural resources associated with the caves.

The BLM would also include significant caves on the fuels-treatment program to reduce risk of fire and increase protections of sensitive cultural resources that may be impacted by a high-fuels load.

Management under Alternative C would reduce the potential for impacts on cultural resources associated with Dynamite Cave by implementing a 0.5-mile ROW exclusion area around the cave, closing the area to mineral material disposal and fluid mineral leasing, recommending the area for withdrawal from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Alternative C would prevent impacts on cultural resources associated with Hidden Cave by implementing a ROW exclusion area within 500 feet of the cave, closing the area to fluid mineral leasing and mineral material disposal, recommending the area for withdraw from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Alternative C is similar to Alternatives B and D, but with greater restrictions in respect to ROW exclusion, mineral closures, travel management designations, and fuels-treatments. Alternative C would be more protective of the cultural resources associated with caves and cave resources than the other Alternatives.

Effects under Alternative D

Alternative D would protect cultural resources associated with caves from vandalism or theft by installing gates, security fencing and signs. Like Alternative C, Alternative D includes culturally significant caves in the fuels-treatment program to protect sensitive attributes that may be impacted by a high-fuels load. Alternative D would also develop public outreach programs to foster an appreciation for caves and their cultural resources, and provide staff to monitor caves identified as culturally significant and heavily used by the public.

Specific management of Hidden Cave and Dynamite Cave under Alternative D would cause the same effects on cultural resources as Alternative B. These measures would be more protective of cultural resources associated with caves than Alternative A.

Effects under Alternative E

The BLM would develop public outreach programs to foster an appreciation for caves and their cultural resources, and provide staff to monitor caves identified as culturally significant and heavily used by the public. This includes the Grimes Point Archaeological District, Hidden Cave, and Dynamite Cave. Implementation of public awareness of significant caves and added security

around significant caves would reduce the likelihood of theft and vandalism of cultural resources associated with the caves.

The BLM would also include significant caves on the fuels-treatment program to reduce risk of fire and increase protections on sensitive cultural resources that may be impacted by a high-fuels load.

Alternative E would reduce the potential for impacts on cultural resources associated with Dynamite Cave by implementing a 0.25-mile buffer of ROW avoidance area around the cave, closing the area to mineral materials disposal, and applying a 500-foot CSU stipulation for fluid mineral leasing. This would reduce the potential for disturbance to cultural resources associated with development around Dynamite Cave.

Management of Hidden Cave under Alternative E would be the same as management of the Cave under Alternative B.

Alternative E would prevent impacts on cultural resources associated with Hidden Cave by implementing a ROW exclusion area within 500 feet of the cave, closing the area to fluid mineral leasing and mineral material disposal, recommending the area for withdraw from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave. Management of Dynamite Cave under Alternative E would be the same as management of the cave under Alternative C.

Management of caves and cave resources would be more protective of associated cultural resources under Alternative E than Alternative A.

Cultural Resources: Effects from Livestock Grazing Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, 6,700 acres would be made unavailable for livestock grazing. This is the fewest acres unavailable for livestock grazing among the alternatives and effects from livestock grazing as described under *Nature and Types of Effects* could occur over the largest area.

Effects under Alternative B
Under Alternative B, the BLM would manage 6,100 acres as not available for livestock grazing. As described under *Nature and Types of Effects*, reducing acres available for grazing would reduce the potential for grazing related impacts. As Alternative B makes more acreage unavailable to grazing than Alternative A, it is possible that more cultural resources would be protected. However, even an estimate of the number or type of sites that could benefit from the protections is unknown at this time as the precise areas of closure are unknown.

Effects under Alternative C

Under Alternative C, 2,702,000 acres would not be available for livestock grazing, which is the largest acreage compared to the other alternatives As was noted under Alternative B, this larger area could protect more sites or a wider variety of site types compared to Alternative A, but how many sites or specifically which types are unknown at this time.

Alternatives C, D, and E would include an emergency shut-down option to make all allotments unavailable for livestock grazing during emergency situations such as drought, fire, or a plague of insects. This would reduce the overall effect of these emergency situations on vegetation and soil resources, limiting impacts of erosion, run off, and fire to any cultural resources within an allotment.

Effects under Alternative D

Alternative D would manage 10,700 acres as not available for livestock grazing, which is greater than Alternative A and could therefore protect more potential cultural resource sites than Alternatives A.

Effects under Alternative E

Alternative E would manage the same amount of acres available and not available to livestock grazing as Alternative B. This would provide greater protection of cultural resources than Alternative A.

Cultural Resources: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Under all alternatives, 194,900 acres would be managed as closed to locatable mineral entry. This would prevent potential impacts on cultural resources from ground-disturbing activities and increased visitor use related to locatable mineral exploration and development in the closed areas.

Effects under Alternative A

Under Alternative A, 56,900 acres would be managed as closed to all mineral entry, exploration, and development, and energy development under the Classification and Multiple Use Act, the Walker Planning Area, the Carson City Urban Interface Plan, and under existing withdrawals and segregation from mineral entry that would be maintained. Alternative A would open 4,064,500 acres to nonenergy mineral leasing, 3,964,200 acres to fluid mineral leasing, and would close 839,100 acres to fluid mineral leasing, and 564,200 acres to mineral material disposal. Due the amount of acreage open to mineral material development, management under Alternative A would have the greatest likelihood of impacts on cultural resources from mineral development as described under *Nature and Types of Effects*.

Effects under Alternative B

Alternative B would manage a similar acreage as open to fluid mineral leasing, but would manage 2,120,200 acres as open with CSU stipulations and 404,600

acres as open with NSO stipulations compared to negligible levels under current management. Alternative B would manage similar amounts of acres as open and closed to nonenergy mineral leasing, mineral material disposal, and locatable minerals as Alternative A. Due to the additional stipulations for fluid mineral leasing, Alternative B would have a lower likelihood of impacts on cultural resources than Alternative A.

Effects under Alternative C

Alternative C would open the fewest acres (**Table 2-1**) to mineral development. The BLM would manage 1,798,400 acres as open to mineral materials, 1,842,400 acres as open to nonenergy leasable minerals, and 2,721,500 acres as to fluid mineral leasing. The BLM would also petition the withdrawal of 117,500 acres from locatable mineral entry. Alternative C would have the lowest likelihood of impacts on cultural resources from mineral development, as described under *Nature and Types of Effects*.

Effects under Alternative D

Effects under Alternative D would be similar to those discussed under Alternative B.

Effects under Alternative E

Effects under Alternative E would be similar to those discussed under Alternative B. However, the BLM would close 1,785,900 acres to nonenergy leasables and 1,778,700 acres to mineral material disposal, nearly twice as much as Alternative B.

Cultural Resources: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Recreational use and access can impact cultural resources through direct disturbance, soil compaction, altered surface water drainage, erosion, intrusions to setting, and access leading to unauthorized collection or vandalism. The potential for impacts on cultural resources from recreation would increase as population and recreational use increases or is concentrated. The effect of repeated uses or visits over time could also increase the intensity of impacts due to natural processes. Monitoring and active management of SRMAs and provisions for recreational permitting can reduce the potential for impacts from overuse. Recreational opportunities deemed primitive or taking place in an overall natural environment may be less disturbing to known and unknown cultural resources due to less intensive surface disturbing activities. Recreation using motorized vehicles or large groups would generally be considered to have more potential effects on cultural resources due to the larger quantities of surface disturbance expected. Continuing and enhancing interpretation and public education can vest the public in resource protection and respect for Native Americans and cultural values

All alternatives include the following measures designed to avoid impacting cultural resources and Native American values:

- Maintaining and enhancing interpretive programs for cultural sites;
- Pursuing partnerships and agency coordination for interpretive sites;
- Ensuring that construction is compatible with landscape settings; and
- Minimizing adverse effects on cultural resources through use restrictions, permit stipulations, and mitigation measures.

Effects under Alternative A

SRMAs

Alternative A would continue to manage 2 SRMAs. These are the Alpine Indian Creek /East Fork Carson River SRMA (7,600 acres), and the Walker Lake SRMA (60,100 acres). Alternative A would not specify the type of recreation that would take place at the Alpine or Walker Lake SRMAs. In total, Alternative A would manage 67,700 acres as SRMAs.

Alternative A would not manage the Hungry Valley area as an SRMA but would continue to manage the area as open to cross-country motorized travel (27,402 acres).

ERMAs

Alternative A would not designate any ERMAs, which would not funnel OHV use and other recreational activities towards managed recreation areas, and would result in more dispersed use of the land. This would put the most cultural resources at risk for potential impact from recreation.

Effects under Alternative B

SRMAs

Alternative B would designate 6 areas as SRMAs, including Alpine (5,800 acres), Dead Camel Mountain (16,800 acres), Hungry Valley (21,600 acres), Sand Mountain (7,400 acres), Walker Lake (24,000 acres), and Wilson Canyon (500 acres). This is a total of 76,100 acres of SRMA designations.

Alternative B would designate more SRMAs than Alternative A.

Alternative B through E would manage the Alpine SRMA with emphasis on nonmotorized recreation including camping, environmental education and interpretation, reservoir access, fishing, and hiking.

Dead Camel Mountain would be designated for motorized use and a multi-use recreation area with a primary objective of providing a location for casual and permitted events that would facilitate regional tourism and activities. The BLM would manage the area as open to cross-country travel and designated staging

and camping areas would be developed and would promote OHV-based tourism.

Hungry Valley would be designated under Alternative B as an OHV based tourism area that would be open to cross-country motorized travel, would allow for organized events, and would establish designated staging and camping areas with information kiosks.

Sand Mountain would be designated for motorized and nonmotorized recreational activities while protecting sensitive resources. Alternative B would divide the Sand Mountain SRMA into three areas: the Dune Recreation Management Zone (RMZ; managed as open to motorized travel), the Desert Habitat RMZ (managed as closed to motorized travel), and the Mining District RMZ (managed as limited to existing trails). Alternative B would eliminate fee use designation, which could increase visitor use.

Walker Lake would be designated for developed and dispersed camping and recreational activities such as hiking, and equestrian and motorized trails. Walker Lake would be divided into two RMZs: Sportsman's beach (managed as limited to existing routes) and Wassuk (managed as open to motorized travel).

Wilson Canyon would be designated for recreational opportunities such as OHV touring and trail riding, developed site camping, and river access and fishing. Alternative B would develop visitor services such as trail identification and route signage, information kiosks, and visitor use maps.

ERMAs

Alternative B would designate 8 ERMAs totaling 1,678,320 acres that would provide for recreational activities and opportunities while promoting regional economic development. These ERMAs include Middlegate (268,700 acres), Mina (824,700 acres), Mustang (400 acres), Pah Rah (20,000 acres), Pine Nut (201,100 acres), Reno Urban Interface (70,600 acres), Salt Wells (292,700 acres), and 102 Ranch (120 acres).

Alternative B would designate more ERMAs than Alternative A.

102 Ranch and Mustang would be designated for casual use and dispersed recreation that emphasizes dog walking, photography, hiking, river access, and environmental education and interpretation.

The BLM would manage Middlegate for recreational activities that emphasizes long distance trail riding for ATVs, UTVs, and motorcycles. OHV recreation and tourism would be promoted, and education and interpretive sings for trail systems would be developed.

The BLM would manage Mina for recreational activities that emphasizes long distance trail riding for ATVs and UTVs. OHV recreation and tourism would be

promoted, and education and interpretive sings for trail systems would be developed.

The BLM would manage Pah Rah for mountain biking, hiking, and environmental education opportunities. Overnight camping associated with SRP activities would be prohibited, and visitor services such as trail identification and route signage would be provided.

The BLM would manage Pine Nut to provide recreational opportunities that emphasize motorized and mechanized recreation opportunities. Staging areas for recreational activities, developed camp areas, visitor services such as trail identification and route signage would be provided.

The BLM would manage the Reno Urban Interface ERMA for activities that emphasize BLM-administered land access and recreation opportunities. The Lemmon Valley Motocross area would be open and visitor services would be provided and a designated staging and camping areas would be established.

Salt Wells would be designated for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for motorized and nonmotorized uses. OHV recreation and tourism would be promoted, and education and interpretive sings for trail systems would be developed.

Effects under Alternative C

<u>SRMAs</u>
Alternative A would designate 3 SRMAs, including Alpine (10,700 acres), Sand Mountain (3,900 acres), and Walker Lake (60,100 acres) totaling 74,700 acres. Alternative C would designate the same number of SRMAs as Alternative A.

In respect to cultural resources, Alternative C would manage the Alpine SRMA the same as Alternative B would.

Alternative C would designate the Sand Mountain SRMA to protect sensitive species habitat and Native American values as the primary resource management objectives. Alternative C would manage two RMZs within the Sand Mountain SRMA. The Dune RMZ would be open to motorized travel. The Desert Habitat RMZ would be managed as closed to motorized travel in order to protect cultural resources.

Alternative C would manage the Walker Lake SRMA for recreational activities while limiting further development of facilities or expansion of developed and primitive camping areas. Alternative C would manage 4 RMZs within the SRMA. These are Sportsman's Beach, Shoreline, Wassuk, and Gillis Range where motorized travel would be limited to existing routes. Alternative C would also prohibit the development of motorized and nonmotorized trails and would not authorize the area for commercial and competitive based recreational activities.

Alternative C would decommission the Dead Camel Mountain and would rehabilitate the hillside. After reclamation is complete, cultural resources would no longer be as risk for impacts from visitor use and motorized travel.

ERMAs

Alternative C would designate 15 ERMAs totaling 1,528,760 acres that would provide for recreational activities and opportunities with an emphasis on protecting cultural, historical, and natural resources. These ERMAs include Bagley Valley (2,600 acres), Dry Valley (84,100 Acres), Faye-Luther (40 acres), Middlegate (195,300 acres), Mina (486,400 acres), Mustang (400 acres), Pah Rah (20,000 acres), Peterson (42,200 acres) Pine Nut (201,100 acres), Reno Urban Interface (91,000 acres), Salt Wells (113,700 acres), Singatse (174,900 acres), Virginia Mountains (68,100 acres), Virginia Range (48,800 acres) and 102 Ranch (120 acres).

In respect to cultural resources, Alternative C would manage Mina, Pah Rah, and Pine Nut ERMAs the same as Alternative B would.

The BLM would manage 102 Ranch and Mustang for casual use and dispersed recreation opportunities that emphasized dog walking, photography, nature observation, hiking, river access and environmental education and interpretation.

The BLM would manage Bagley Valley for passive recreation opportunities including backpacking, dispersed camping, fishing, mountain biking, motorized and nonmotorized recreation. Bagley Valley would be managed as closed to motorized travel with mechanized travel limited to existing routes.

The BLM would manage Dry Valley for dispersed recreation opportunities including hiking, mountain biking, OHV and equestrian use, and dispersed camping. Mechanized travel would be limited to trails, and trail identification and route sings would be provided.

The BLM would manage Faye-Luther for day use recreation opportunities, emphasizing nonmotorized activities including hiking, biking, dog walking, nature observation, photography and interpretation. Alternative C would prohibit motorized and mechanized SRP based activities, overnight camping, and would be managed as closed to motorized use.

Middlegate ERMA would be designated for recreational activities that emphasizes long distance trail riding for ATVs, UTVs, and motorcycles. Activities that adversely impact cultural resources would not be authorized.

The BLM would manage Petersen for dispersed recreation opportunities emphasizing equestrian based activities, hiking, mountain biking and backpacking. Petersen would be managed as closed to motorized and mechanized travel, and no SRPs would be authorized.

The Reno Urban Interface ERMA would be designated for recreational activities that emphasize BLM-administered land access and recreation opportunities. The Lemmon Valley Motocross area would be eliminated, and competitive and commercial motorized-events and activities would be prohibited.

The Salt Wells ERMA would be designated for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for motorized and nonmotorized uses. SRPs for commercial, competitive, organized events, or activities that would adversely impact cultural resources would not be authorized.

The Singatse ERMA would be designated for dispersed motorized opportunities. SRP events allowing for commercial motorized activities and organized groups would be prohibited.

The Virginia Mountains would be designated for recreational activities while providing emphasis on protection for cultural, historical, and natural resources. Motorized SRP events, activities, and organized groups would be prohibited.

The Virginia Range ERMAs would be designated for recreational activities while providing emphasis on protection for cultural, historical, and natural resources. Visitor services such as route designation would be provided. Competitive SRPs would be prohibited, and the ERMA would be managed as closed to mineral material disposal.

Effects under Alternative D

<u>SRMAs</u>

Alternative D would designate 4 SRMAs totaling 67,100 acres, including Alpine (7,400 acres), Dead Camel Mountain (37,400 acres), Hungry Valley (21,800 acres), and Wilson Canyon (500 acres).

Alternative D would designate more SRMAs than Alternative A.

In respect to cultural resources, Alternative D would manage the Alpine and Wilson Canyon SRMAs the same as Alternative B would.

Alternative D would manage the Dead Camel SRMA similar to Alternative B. In addition Alternative B would manage the motorized route-system for 4-wheel drive vehicles, motorcycles, ATVs, and UTVs, as well as an nonmotorized route system for mountain bikes and equestrian uses.

Alternative D would manage the Hungry Valley SRMA as limited to motorized travel, with the Moonrocks area open to motorized travel, and would develop up to three separate camp areas.

ERMAs

Alternative D would designate 6 ERMAs totaling 292,620 acres that would address recreational issues specific to BLM-administered lands and the urban interface. These ERMAs include Faye-Luther (600 acres), Mustang (400 acres), Pah Rah (20,000 acres), Pine Nut (201,100 acres), Reno Urban Interface (70,400 acres), and 102 Ranch (120 acres).

Alternative D would designate more ERMAs than Alternative A.

In respect to cultural resources, the BLM would manage Mustang, 102 Ranch, Pine Nut, Pah Rah, and the Reno Urban Interface ERMAs the same as they would under Alternative B.

The BLM would manage cultural resources within Faye-Luther ERMA the same as it would under Alternative C.

Effects under Alternative E

SRMAs

Alternative E would designate 6 SRMAs totaling 106,100 acres including Alpine (7,700 acres), Dead Camel Mountain (37,400 acres), Hungry Valley (16,200 acres), Sand Mountain (19,700 acres), Walker Lake (24,600 acres), and Wilson Canyon (500 acres).

Alternative E would designate more SRMAs than Alternative A.

In respect to cultural resources, Alternative E would manage the Alpine and Wilson Canyon SRMAs the same as Alternative B would.

Alternative E would manage the Dead Camel Mountain SRMA as an off-road motorcycling area as well as a casual area for motorized use and permitted OHV events. Alternative E would manage the north half of the SRMA as an area open to motorized travel, and the southern half of the SRMA as limited to existing routes. Alternative E would not promote tourism, but would allow for competitive recreation and OHV race corridors.

Alternative E would manage the Hungry Valley SRMA the same as Alternative D would, except that competitive rock-crawling SRPs within the Moonrocks RMZ and at Warm Springs Mountain would be prohibited.

Alternative E would designate the Sand Mountain SRMA for motorized recreational opportunities as the primary resource management objectives while protecting sensitive species habitat, Native American values, and unique geologic values, while providing opportunities for nonmotorized recreation activities. Alternative E would continue fee collections as necessary for adequate management and law enforcement staffing. Alternative E would manage the Sand

Springs Pony Express Station and NHT for historical interpretation. This would protect associated cultural resources.

Alternative E would designate 4 RMZs within the Sand Mountain SRMA: the Dune RMZ would open to motorized travel, the Desert Habitat RMZ would be managed as closed to motorized and mechanized travel, the Trail Rides RMZ would be limited to designated trails, and the Mining District RMZ as limited to existing trails.

Alternative E would designate the Walker Lake SRMA for developed and dispersed camping opportunities with an emphasis on water based and nonmotorized land based related activities, and would develop hiking and equestrian trails. Alternative E would facilitate community based recreation and tourism events and would prohibit the collection of non-renewable resources, such as rocks, mineral specimen, fossils, and semi-precious stones.

ERMAs

Alternative E would designate 15 ERMAs totaling 2,085,730 acres that would meet the demand for recreational opportunities, resource protection, and multiple use management. These ERMAs include Bagley Valley (2,600 acres), Dry Valley (83,000 Acres), Faye-Luther (110 acres), Middlegate (268,700 acres), Mina (824,700 acres), Mustang (400 acres), Pah Rah (20,000 acres), Petersen (42,000 acres) Pine Nut (201,000 acres), Reno Urban Interface (70,600 acres), Salt Wells (280,400 acres), Singatse (174,900 acres), Virginia Mountains (68,100 acres), Virginia Range (48,800 acres) and 102 Ranch (120 acres).

Alternative E would designate more ERMAs than Alternative A.

In respect to cultural resources, Alternative E would manage the 102 Ranch, Mustang, Mina, Pah Rah, Pine Nut, the Reno Urban Interface, and Salt Wells, ERMAs as Alternative B would.

In respect to cultural resources, Alternative E would manage Bagley Valley, Dry Valley, Faye-Luther, and Virginia Mountains as Alternative C would.

Middlegate ERMA would be designated for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for ATVs, UTVs, and motorcycles. Visitor services such as trail identification and route signage and information would be provided.

The BLM would manage Mina for casual use and dispersed recreation opportunities that emphasizes long distance trail riding for ATVs and UTVs. Visitor services such as trail identification and route signage and information would be provided.

The BLM would manage Petersen for dispersed recreation opportunities emphasizing equestrian based activities, hiking, mountain biking and backpacking.

The BLM would manage Petersen as closed to motorized travel with mechanized travel limited to existing routes, and competitive motorized events would be prohibited.

The Singatse ERMA would be designated for dispersed motorized opportunities with an emphasis on OHV touring, trail riding, and dispersed camping. OHV staging areas and trailheads would be established.

The Virginia Range ERMA would be designated for recreation opportunities that emphasize both motorized and nonmotorized recreation uses. Equestrian use east of Washoe Lake, mountain biking north of Centennial Park, and OHV touring and trail riding east of the Jumbo staging area would be emphasized. Visitor services such as trail identification and kiosks would be provided, and SRPs that do not involve mass starting would be authorized.

Cultural Resources: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage 3,840,300 acres as open to cross-country travel, 31,800 acres as closed to motorized and mechanized travel, 6,900 acres as closed to motorized travel with mechanized travel limited to existing routes, and 924,300 acres as limited to existing roads for motorized travel.

Overall, Alternative A would place the fewest restrictions on travel management by acre of the alternatives, and would result in the greatest potential for impacts on cultural resources as described under *Nature and Types of Effects*.

Effects under Alternative B
Alternative B would manage 95,300 acres as open to cross-country travel, 26,700 acres as closed to motorized and mechanized travel, and 4,300 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,677,000 acres as limited to existing roads for motorized travel.

Effects under Alternative C
Alternative C would manage 1,300 acres as open to cross-country travel, 598,000 acres as closed to motorized and mechanized travel, 1,190,500 acres as closed to motorized travel with mechanized travel limited to existing routes, and 3,013,500 acres as limited to existing roads for motorized travel.

Effects under Alternative D
Alternative D would manage 22,700 acres as open to cross-country travel, 30,600 acres as closed to motorized and mechanized travel, 1,600 acres as

closed to motorized travel with mechanized travel limited to existing routes, and 4,748,400 acres as limited to existing roads for motorized travel.

Effects under Alternative E

Alternative E would manage 55,700 acres as open to cross-country travel, 24,100 acres as closed to motorized and mechanized travel, 6,200 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,717,300 acres as limited to existing roads for motorized travel.

Cultural Resources: Effects from Lands and Realty

Effects Common to All Alternatives

All alternatives include provisions to retain and acquire lands that contain significant cultural resources, to maintain access to resources, and to reduce unauthorized uses allowing for federal protection of resources.

Construction of ROWs, leases and permits for development projects could expose unidentified cultural resources to erosion and affect the visual settings of historic sites. Areas identified as ROW exclusion would prohibit the construction of new ROWs, and areas identified as ROW avoidance would provide more protections from ROW construction than areas identified as open to ROW placement. This would provide some protections to potential cultural resources. Impacts on cultural resources from all lands and realty actions would be subject to further review. All ROWs would be subject to BMPs, standard operating procedures, stipulations, restrictions, and mitigation measures, would be implemented to reduce potential impacts.

Prior to disposal, the considered area would need to be surveyed for cultural resources and a determination made whether protective covenants would be needed for cultural resources. However, there could still be a slight risk of moving cultural resources out of federal ownership into private ownership if public lands are disposed of.

Effects under Alternative A

Alternative A would manage 564,100 acres as ROW exclusion, and would not manage any acres as ROW avoidance, and 179,700 acres of BLM-administered lands would be identified for disposal. Land Use Authorizations and management under Alternative A would provide the least protection for cultural resources from the potential effects described under *Nature and Types of Effects*.

Effects under Alternative B

Alternative B would manage 580,000 acres as ROW exclusion (which is similar to Alternative A) and 1,195,800 acres as ROW avoidance, totaling 1,775,800 acres of land restriction that would provide protection of cultural resources from ROW construction. This is more than Alternative A. Under this Alternative, 273,500 acres of BLM-administered lands would be identified for disposal, which is greater than Alternative A. Overall, management under

Alternative B would be more protective of cultural resources than Alternative A.

Effects under Alternative C

Alternative C would manage 2,675,800 acres as ROW exclusion and 369,300 acres as ROW avoidance totaling 3,045,100 acres of land restriction. This would provide the most protections of cultural resources from potential impacts of ROW construction as described under *Nature and Types of Effects* for lands and realty development. Additionally, Alternative C would not propose any BLM-administered land for disposal. This would eliminate the potential for transfer of cultural resources out of federal ownership.

Effects under Alternative D

Alternative D would manage 564,100 acres as ROW exclusion and 1,226,100 acres as ROW avoidance, totaling 1,790,200 acres of land use restriction that would protect cultural resources. This is more than Alternative A. The acres identified for disposal under Alternative D would be 332,500.

Effects under Alternative E

Alternative E would manage 605,900 acres as ROW exclusion and 1,448,200 acres as ROW avoidance totaling 2,054,100 acres of land restrictions that would prevent impacts on cultural resources. This is more than Alternative A. The acres identified for disposal under Alternative E would be 267,200, which is similar to Alternative B.

Cultural Resources: Effects from Renewable Energy

Effects Common to All Alternatives

Potential impacts from renewable energy projects (solar, wind, and biomass) and associated ROWs include those direct impacts from ground-disturbing activities and erosion, and indirect impacts from intrusions to setting, and access, leading to unauthorized collection or vandalism as described in the *Nature and Type of Effects* section. The siting of wind energy facilities could affect the visual setting of historic trails and other cultural resources. All permits and ROWs would be subject to stipulations, restrictions, and mitigation measures. This would reduce the potential for impacts on cultural resources. Under all alternatives the development of renewable energy in a timely manner to meet national, regional, and local needs would be encouraged.

Effects under Alternative A

Under current management, no avoidance areas for wind energy have been designated, and approximately 900,000 acres (**Table 2-1**) are variance areas for solar projects. Variance areas allow development, but require provisions to protect resources in the area. Outside variance areas, utility-scale solar energy development is not permitted. Alternative A would provide little protection to cultural resources from the effects of ROW development as described under *Nature and Types of Effects*.

Effects under Alternative B

Alternative B would manage 773,400 acres as variance areas for utility-scale solar development, and would manage 1,220,200 acres as ROW avoidance for wind energy projects, including lands within VRM Class 1 or Class 2. Alternative B would grant land use authorizations for wind and solar energy, and biomass monitoring and development. Under Alternative B, the BLM would implement more restrictions on renewable energy development than under Alternative A. This would better protect potential cultural resources than Alternative A.

Effects under Alternative C

In general, Alternatives C, D, and E would grant land use authorizations for wind and solar energy, and biomass monitoring while protecting resources. Alternative C would manage 578,400 acres as variance areas for utility-scale solar development, and 2,073,200 acres as ROW exclusion areas for wind energy projects, including lands managed as VRM Class 1 and Class 2. Alternative C would also manage 14,700 acres in the Virginia City National Landmark Historic District ACEC as ROW exclusion. Under Alternative C, the BLM would implement more restrictions on renewable energy development than under Alternative A. This would better protect potential cultural resources than Alternative A.

Effects under Alternative D

Alternative D would manage 672,100 acres as variance areas for utility-scale solar energy, and 1,228,100 acres as ROW avoidance areas for wind energy projects, including lands within VRM Class 1 and Class 2. Under Alternative D, the BLM would implement more restrictions on renewable energy development than under Alternative A. This would better protect potential cultural resources than Alternative A.

Effects under Alternative E

Alternative E would manage 629,900 acres as variance areas for utility-scale solar energy, and 629,900 acres as ROW avoidance areas for wind energy projects, including lands within VRM Class 1 and Class 2. Under Alternative E, the BLM would implement more restrictions on renewable energy development than under Alternative A. This would better protect potential cultural resources than Alternative A. Alternative E would also manage 14,700 acres in the Virginia City National Landmark Historic District ACEC as a ROW exclusion area.

Cultural Resources: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Managing lands as ACECs could directly or indirectly provide long-term protection of cultural resources by restricting incompatible uses. Protecting cultural and natural resource values in ACECs would also decrease the risk of impacts on identified or unidentified cultural resources present. Under all alternatives, the risk of impacts on cultural resources from ground-disturbing

activities, erosion, intrusions to setting, and access leading to unauthorized collection or vandalism would be reduced in these areas by restricting other actions.

Effects under Alternative A

Under Alternative A, 6 ACECs would continue to be managed, totaling 21,800 acres. Of these ACECs the Pah Rah Basin Petroglyph would be specifically designated to protect cultural resources. The other ACECs would indirectly protect cultural resources as described under effects common to all. Alternative A would manage the fewest acres as ACECs.

Effects under Alternative B

Under Alternative B, 4 ACECs would continue to be managed and 9 ACECs would be proposed for designation, totaling 371,170 acres. Of the ACECs and proposed ACECs, the Pah Rah High Basin Petroglyph, Black Mountain/Pistone Archaeological District, Fox Peak Cultural, Grimes Point Archaeological District, Namazii Wunu Cultural, Tagim aša Cultural, and the Virginia City National Landmark Historic District would be designated to protect cultural resources. The other ACECs would indirectly protect cultural resources as described under effects common to all. Alternative B would manage more acres as ACECs than Alternative A.

Effects under Alternative C

Alternative C would continue to manage 5 ACECs and would propose the designation of an additional 18 ACECs, totaling 786,270 acres. Of these, the Pah Rah High Basin Petroglyph, and the proposed Black Mountain/Pistone Archaeological District, the Fox Peak Cultural ACEC, Grimes Point Archaeological ACEC, Namazii Wunu Cultural ACEC, Tagim aša Cultural, and the Virginia City National Landmark Historic District ACEC would be designated specifically to protect cultural resources. Restrictions on other ACECs designated to protect other resources would also inadvertently protect any potential cultural resources within them as described under effects common to all. Alternative C would manage more acres as ACECs than any of the other Alternatives.

Effects under Alternative D

Alternative D would continue to manage 3 ACECs and would propose the designation of an additional 8 ACECs totaling 180,000 acres. Of these, the existing Pah Rah High Basin Petroglyph ACEC and the proposed Black Mountain/Pistone Archaeological ACEC, the Fox Peak Cultural ACEC, the Grimes Point Archaeological District ACEC, the Tagim aša Cultural ACEC, and the Virginia City Landmark Historic District ACEC would be designated to protect cultural resources. The designation and management of the other ACECs would indirectly protect cultural resources as described under effects common to all. Alternative D would manage more acres as ACECs than Alternative A.

Effects under Alternative E
Alternative E would continue to manage 4 ACECs and would propose the designation of an additional 4 ACECs for a total of 82,770 acres. Of these, the BLM would manage the existing Pah Rah High Basing Petroglyph ACEC, the proposed Fox Peak Cultural ACEC, and the Grimes Point Archaeological ACEC to protect cultural resources. The other ACECs would indirectly protect cultural resources as described under effects common to all. Alternative E would manage more acres as ACECs than Alternative A.

Cultural Resources: Effects from Back Country Byways

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, the Fort Churchill Back Country Byway would continue to be managed. This is a 67 mile Type 1 and Type 2 byway going from Fort Churchill to Wellington. Fort Churchill is an historic town and a frontier fort. Effects from these allocations and management actions would be the same as those described above in *Nature and Types of Effects.*

Effects under Alternative B
Alternative B would extend the Fort Churchill Back Country Byway to Dayton. It would also review and update the classification of the byway type and the existing sings while emphasizing the Carson River and Nevada history.

Alternative B would also designate the Marietta Back Country Byway route emphasizing the Candelaria mining district, Teals Marsh, and the Marietta Wild Burro Range to provide for exploration of Nevada history and culture. The completed route would be added to the BLM maintained route system.

Finally, Alternative B would designate the New Pass Hawthorne Back Country Byway which would promote and highlight the values of Nevada's western heritage, including mining and livestock ranching.

The added areas of allocated Byways and additional management may provide for added appreciation and understanding of the cultural resources along these routes, but could also open these cultural resources up to more visitors and an increased risk for theft, damage, or vandalism.

Effects under Alternative C
Alternative C would rescind the Fort Churchill Back Country Byway and would remove the trails signs. This would protect the cultural resources along this byway by limiting visitor use, but would also restrict the public's opportunities to learn about the history of Nevada. Alternative C would designate the Marietta Back Country byway, but would exclude the historic mining districts in order to protect historical resources. Alternative C would designate the New

Pass to Hawthorne Back Country Byway to promote mining and livestock ranching with an auto tour route that provide protection of historical or cultural resources through selective information. Adding these segments of allocated Byways and additional management may provide for added appreciation and understanding of cultural resources along these routes, but my also open these areas up to negative impacts of increased visitor use as described under *Nature and Types of Effects*.

Effects under Alternative D

Alternative D would not manage the Fort Churchill Back Country Byway, or designate the Marietta Back Country Byway or the New Pass to Hawthorne Back Country byway. This would result in protection of cultural resources along these routes from increased visitor use, but could also impact these resources through lack of management and maintenance.

Effects under Alternative E

Management of Back Country Byways under Alternative E would be the same as those described under Alternative B. Alternative E would additionally manage the Fort Churchill Back Country Byway to emphasize multiple use management and provide for mitigation of user conflicts and resource damage.

Cultural Resources: Effects from National Trails

Effects Common to All Alternatives

National Historic Trails (NHTs) are cultural resources. Management of NHTs includes consideration of cultural, recreation, visual and natural landscape elements, values, qualities and settings. Under all alternatives the historical trails and associated historic sites and setting would be preserved and protected for public use and enjoyment. Potential effects resulting from the proposed management measures are described in both the cultural resources and NHT sections.

Effects under Alternative A

Alternative A would manage NHTs to ensure the protection of trail resources and preserve their interpretation and other public use. These sites would be maintained in public ownership. Segments of the NHTs would be evaluated for inclusion in the NRHP based on integrity decided by a mixture of location, design, setting, materials, workmanship, feeling, and association. All of these actions would protect the trail remnants, associates sites, and landscape setting.

<u>California National Historic Trail</u>

The California NHT has one high potential historic site, and 2 high potential route segments. The BLM would manage the Fernley Ruts high potential historic site under a historic preservation and access easement under all the alternatives. Alternative A would not provide for specific management of the high potential route segments; therefore, there would be a lesser likelihood for disturbance to

these trail segments from theft of vandalism, and a greater likelihood of degradation of these trail segments from lack of maintenance management.

Pony Express National Historic Trail

Under all alternatives the Pony Express NHT has 2 high potential historic sites: the Cold Springs Station/East Gate Station and the Sand Springs Station.

Alternative A would designate appropriate sites for public use, provide access and information, and promote visitation and interpretation of the Stations. Alternative A would maintain the self-guided interpretation and informational signs at the Stations and would scientifically excavate, stabilize, and develop the stations as public interpretive sites. This would improve the public interpretation of the sites, and may improve appreciate and value of the sites. Additional signs and management to promote these locations could also result in theft or vandalism of these cultural resources.

Grimes Point National Recreation Trail

Under Alternative A, the Grimes Point Recreation trail was not designated with specific management identified, and therefore would not provide additional protections of the cultural resources here, nor promote public visitation.

Effects under Alternative B

Alternatives B through E would manage NHTs to preserve the historic and scenic values and the cultural landscapes and viewsheds associated with them.

Alternative B and E would evaluate high-potential sites and high-potential segments of the NHTs for inclusion into the NRHP based on resources, qualities, values, and associated settings along with the primary uses identified.

Alternative B would manage NHTs as VRM Class II (0.25-mile buffer on either side of the centerline) and as a ROW avoidance area (0.25-mile buffer around the center line), and would mitigate for direct and indirect adverse effects on eligible, unevaluated, or high-potential segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. These land use restrictions would prevent impacts from lands and realty as described under Lands and Realty. Additionally, new audible and atmospheric effects will not exceed current levels where feasible, which could result in more accurate historic interpretation of the cultural resources in these areas.

Alternative B would open the NHT corridors to mineral material sales and disposals as long as the actions are compatible with VRM classification and the historic values. This may result in impacts from minerals development as described under *Nature and Types of Effects*.

NHTs would be improved by developing and enhancing significant segments and sites by installing directional signs to the trail on main roads, trail markers at

trail traces, and interpretive signs. Recreational opportunities consistent with the historic value of the NHTs would be provided, and facilities would be developed outside the trail corridor where feasible to protect resource values, provide for visitor safety, and support selected use opportunities. These added maintenance management would protect cultural resources from natural degradation, but would increase visitor use, which may result in damage to the cultural resources from theft or vandalism.

California National Historic Trail

Under Alternative B, management of the Fernley Ruts would be the same as Alternative A.

Alternative B would manage the Mickey Canyon and the Humboldt Sink to Dayton high potential route segments to protect their historic values and to mitigate actions that would adversely affect the NHT through avoidance, project redesign, data collection, interpretation, public education, or other means. This would result in greater protection of the cultural resources associated with these sites.

Pony Express National Historic Trail

Under Alternative B, the BLM would manage the designated Pony Express NHT as a Cultural Resource, which would result in more protective management actions (See Cultural Resources).

Grimes Point National Recreation Trail

Alternatives C, D, and E would manage the Grimes Point as a 0.74-mile trail consistently with secretarial designation. The following management actions would be implemented: a management plan would be developed to include maintenance, interpretation, and monitoring of petroglyphs, at minimum, an annual inspection would occur to document the integrity of the petroglyph art, interpretive trail markers would be maintained and brochures would be provided, site steward monitoring with the Nevada Rock Art Foundation or other similar group would continue, and the Fallon Paiute Shoshone Tribe and Reclamation would be coordinated with for management of the trail. Increased management and maintenance of the trail would reduce the potential for natural decline and degradation of these resources, but increase in visitor use may increase the risk of vandalism or theft from these sites.

Effects under Alternative C

Alternative C and D would evaluate trail-related sites and segments of the NHTs for inclusion into the NRHP based on resources, qualities, values, and associated settings along with the primary uses identified.

Alternative C would manage NHTs as VRM Class II (2.5-mile buffer on either side of the centerline) and as a ROW avoidance area (2.5-mile buffer around the center line). This would reduce the potential for impacts on these areas from ROW construction as described under Lands and Realty. Alternative C would

also mitigate for direct and indirect adverse effects on eligible, unevaluated, or high-potential segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. This would indirectly protect the cultural resources in these areas. As under Alternative B, new audible and atmospheric effects will not exceed current levels along NHTs, and additionally the BLM would seek opportunities to reduce noise levels.

Alternative C would also close the NHT corridor to nonenergy mineral leasing, mineral materials, and fluid mineral leasing within a 2.5-mile buffer which would prevent impacts on cultural resources in the corridor from mineral development as described under *Nature and Types of Effects*.

Alternative C, D, and E would provide recreation opportunities consistent with the historic values of the NHTs, develop facilities outside the trail corridor when feasible to protect resource values, provide for visitor safety, and support selected use opportunities. Facility development within the trail corridor would only occur when needed to protect trail integrity or resources, or to establish an NHT recreation retracement routes.

<u>California National Historic Trail</u>
Alternative C would manage the Fernley Ruts as Alternative A would with the addition of enhanced protection measures such as signs and fencing where appropriate. Alternative C would manage the Mickey Canyon and Humboldt Sink to Dayton historical NHT segments to protect their historic values and would not allow actions that would adversely affect the NHT.

<u>Pony Express National Historic Trail</u>
Under Alternative B, the BLM would manage the designated Pony Express NHT as an ACEC, which would result in more protective management actions (See Sand Springs Desert Study ACEC).

<u>Grimes Point National Recreation Trail</u>
The BLM would manage the Grimes Point NRT as discussed under Alternative B.

Effects under Alternative D
Alternative D would designate new segments of NHTs into the NRHP and manage NHTs as Alternative C would.

Alternative D would manage NHTs as Alternative B would.

Alternative D and E would develop and enhance significant segments by installing directional signs to trails segments from main roads, trail markers at trail traces, and interpretive signs. Alternatives D and E would also pursue legal access for public visitation to trail segments and would continue to support

stewardship programs and partnerships to lead trail tours, monitor sites, and generally assist with management.

California National Historic Trail
Alternative D would manage the Fernley Ruts the same as Alternative A and would manage the Mickey Canyon and Humboldt Sink to Dayton high potential historic sites the same as Alternative B would.

Pony Express National Historic Trail
Under Alternative D, the Pony Express NHT would not be managed under any directives other than those prescribed generally for national trails, as described under General Management.

Grimes Point National Recreation Trail
The BLM would manage the Grimes Point NRT as discussed under Alternative B.

Effects under Alternative E
Alternative E would designate new segments of the NHTs into the NRHP as Alternative B would.

Alternative E would manage NHTs as VRM Class II (l-mile buffer on either side of the centerline) and as a ROW avoidance area (1-mile buffer around the center line), and would mitigate for direct and indirect adverse effects on eligible, unevaluated, or high-potential segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. Additionally, new audible and atmospheric effects will not exceed current levels where feasible.

Alternative E would close high potential historic sites and high potential route segments along the NHT corridor to nonenergy and fluid mineral leasing and mineral material disposal within a 1-mile buffer on either side of the centerline. The remainder of the NHT corridor would remain open to leasing and development as long as the actions were compatible with the historic values.

Alternative E would manage NHT for public use the same as Alternative D would.

California National Historic Trail
Alternative E would manage the Fernley Ruts the same as Alternative C and would manage the Mickey Canyon and Humboldt Sink to Dayton high potential historic sites the same as Alternative B would.

Pony Express National Historic Trail
Under Alternative B, the BLM would manage the designated Pony Express NHT as an SRMA, which would result in more protective management actions (See SRMAs and Cultural Resources).

Grimes Point National Recreation Trail

The BLM would manage the Grimes Point NRT as discussed under Alternative B.

Cultural Resources: Effects from Wilderness Study Areas

Effects Common to All Alternatives

Managing acres as WSAs to maintain wilderness characteristics would restrict surface-disturbing activities and would indirectly reduce the potential for direct disturbance of cultural resources, alterations to visual and aural setting, and access leading to vandalism and unauthorized collecting. If Congress releases the WSAs and they are not located within a designated ACEC, the risk of impacts on cultural resources from future surface-disturbing activities and other incompatible uses would increase.

Effects under Alternative A

Effects would be the same as those described under *Effects Common to All Alternatives*.

Effects under Alternative B

If WSAs are released by Congress, the BLM would manage the areas as VRM Class II. This would result in effects on cultural resources as described in the VRM section above. While this VRM classification would provide some protection of the lands once a part of the WSAs, Wilderness Area designation by Congress would be more protective.

Effects under Alternative C

If WSAs are released by Congress, the BLM would manage most of the areas as VRM Class II. All of the areas would not be authorized for motorized SRPs, would be managed as closed to nonenergy mineral leasing, mineral material disposal, and fluid mineral leasing, would be recommended for withdrawal from locatable mineral entry, and would be managed as a ROW exclusion area. This would result in protection of any potential cultural resources within these areas from mineral develop, and ROW construction, as described under *Nature and Types of Effects*.

These management actions should a WSA be released by congress would be more protective of potential cultural resources than Alternatives A and B, but retaining Wilderness Area designation would be more protective of any potential cultural resources within these areas.

Effects under Alternative D

If WSAs are released by Congress, the BLM would manage the areas as VRM Class II. The BLM would manage the Carson Iceberg area as closed to fluid mineral leasing and as a ROW avoidance area.

Management actions are similar to Alternative B in that the VRM classification would retain some protection of cultural resources should WSA designation be released by Congress, as described under the Visual Resources section, above. Alternative D would be more protective of potential cultural resources in the Carson Iceberg area than Alternative B due to the additional land use restrictions.

Effects under Alternative E
If WSAs are released by Congress, the BLM would manage most of the areas as VRM Class II, and all of the areas would be managed as closed to fluid mineral leasing and as ROW avoidance areas.

The BLM would manage the Carson Iceberg as VRM Class I. The BLM would manage the portion of Job Peak that overlaps with the Fox Peak Cultural ACEC (43,300 acres) as part of that ACEC.

Due to these land use restrictions and the conversion of the Carson Iceberg to an ACEC if it were released from WSA designation by Congress, Alternative D would be more protective of potential cultural resources than Alternative A.

Cultural Resources: Effects from Back Country Wildlife Conservation Areas

Effects under Alternative A
BCWCAs would not be designated under Alternative A, so impacts or protection of cultural resources from Back country Wildlife Conservation Area designation would not occur.

Effects under Alternative B
Effects would be the same as those described in Alternative A.

Effects under Alternative C
BCWCAs would be designated to safeguard fish and wildlife habitat, existing dispersed non-motorized recreation opportunities, and access to back country areas. Alternative C would manage 817,800 acres as BCWCAs and would manage the areas as ROW exclusion except within existing ROWs, as restricted for livestock grazing, as closed to mineral material disposal and nonenergy mineral leasing, and with an NSO stipulation for fluid mineral leasing. Additionally, the BLM would manage BCWCAs to protect PPMA and PGMA. The BLM would conduct fire management within these areas to mimic natural fire regimes.

These land use restrictions would reduce the potential for disturbance to cultural resources in comparison to areas without these land restrictions in place. Therefore, management of Back Country Wildlife Conservations areas under Alternative C would be more protective of cultural resources than the other Alternatives.

Effects under Alternative D
Effects would be the same as those described in Alternative A.

Effects under Alternative E
Effects would be the same as those described in Alternative A.

Cultural Resources: Cumulative Effects
Table 4-1 lists the reasonably foreseeable cumulative actions for the CCD.

Invasive weeds are expected to continue to spread across the landscape, carried by wind, humans, machinery, and animals, and alter current vegetation communities which may reduce soil stability and increase fire regimes, which may result in increased threat to cultural resources. The BLM currently manages weed infestations through integrated weed management, including biological, chemical, mechanical, and educational methods. Vegetation treatments involving the use of mechanical, biological, and chemical treatments have been used in the past on both private and public rangelands, and would likely continue in the future. These treatments can impact unknown cultural resources through movement, damage, and destruction.

Wildfires have exposed large areas where vegetation has been consumed increasing erosion and illegal gathering potential for cultural resources. Trends indicate that the number of wildfires will continue to gradually increase based on climate, conversion of habitat to areas dominated by nonnative, invasive species, and increased potential for human-caused fires due to population growth and increases in recreation uses. The implementation of ESR on areas burned by wildfire would continue based on the number of acres burned. ESR treatments would continue to be prioritized to provide for human life and safety, soil/water stabilization, restoration of important habitat for special status species, and to deter establishment of invasive plants. Fire control and suppression involve ground-disturbing activities that have also directly impacted cultural resources by damaging or destroying features and altering the spatial relationships of archaeological sites. Impacts on cultural resources from fire and fire suppression have been reduced in recent years by BLM fire management personnel working closely with cultural resource specialist to avoid damage to cultural resource sites.

Construction of fuel breaks with emphasis at a landscape scale would reduce fire spread potential, thereby reducing the size of burned areas and potential damage to cultural resources. However, since more fires are anticipated in the future and the numbers of acres burned are anticipated to be similar to past and present, impacts on cultural resources from wildfire and wildfire suppression would be similar to past and present. Continued cooperation between fire management and cultural resource specialists and improvements in technology are anticipated to reduce these impacts.

Generally, management of priority wildlife habitat, priority watersheds, special status species management, and ACECs would protect and reduce the potential of damage to cultural resources by restricting certain uses depending on the number of acres identified or designated for management. Such management would continue under all alternatives.

In the past, livestock grazing has impacted cultural resources in areas where concentrated grazing has occurred. Concentrated grazing and trampling reduces vegetative cover and disturbs the soil, accelerating erosion and weathering. Cultural resources have been directly impacted by the modification, displacement and loss of artifacts, features, and middens, resulting in loss of valuable cultural resource information regarding site function, date of use, subsistence and past environments.

Grazing pressure on rangelands from livestock and wild horses and burros is anticipated to continue, if not increase. There is interest in acquiring grazing permits as they become available. In addition, due to proximity to expanding urban areas, some allotments may lose grazing acreage. This would ensure demand for areas that will remain available for grazing. Impacts on cultural resources from wild horse and burro grazing are similar to those that occur from livestock grazing, however all of the alternatives would work to manage wild horse and burro populations to stay within AMLs. Areas experiencing concentrated wild horse and burro grazing have been prioritized for gathering of wild horses and burros, if above the upper limit AML, in order to maintain a thriving natural ecological balance. However, due to various constraints, gathers are not conducted as frequently as needed to continue to maintain a thriving ecological balance. This trend is expected to continue, and be exacerbated by the current drought. Implementation of livestock grazing and wild horse and burro management in order to achieve land health standards would result in fewer areas of concentrated grazing and associated impacts on cultural resource sites.

Increasing mineral, lands and realty, and renewable energy actions would increase potential for indirect impacts on cultural resources from changes in setting, increased access to sites, and looting. Minerals, renewable energy and lands and realty activities may also result in direct disturbance and destruction of unknown cultural resources from the construction of roads, drill pads, power lines and facilities.

Mineral exploration and development is expected to continue to occur for locatable minerals, fluid mineral leasing, non-energy mineral leasing, and mineral material disposables. There are approximately 23 plans of operations for exploration (greater than 5 acres) or mining currently administered within the planning area, 260 contracts for free-use permits for salable mineral operations, and 148 geothermal leases currently leased (BLM 2013f). Additionally, the National Renewable Energy Laboratory data shows that portions of the planning

area have high potential for solar energy, and Luning Solar was issued a ROW grant for a 575-acre project in July, 2010.

Demands for land use authorizations in the planning area are anticipated to increase in correlation with future residential and commercial development in response to increasing population and energy demands. In response, the Designation of Energy Corridors on Federal Lands in the 11 Western States Programmatic EIS was published in 2007. Over the past 10 years the CCD has average issuance of approximately 28 ROW authorizations per year, with an average of 35 applied for annually.

Although, most impacts on cultural resources from minerals, lands and realty, and renewable energy have been avoided or mitigated through implementation of Section 106, indirect impacts from increased access to cultural sites, looting and changes in setting have sometimes occurred, and are expected to continue to occur. Recreational looting and excavation of cultural resource sites have damaged and destroyed cultural resources sites. Although these impacts continue, monitor and patrol by law enforcement and heritage education outreach efforts have helped to reduce these impacts.

Recreation activities have impacted cultural resources where concentrated recreational use has occurred or in areas popular for OHV uses. Unrestricted OHV travel has damaged cultural resources through cross-country travel and creating new roads or trails increasing access to cultural resource sites. Impacts are difficult to quantify due to dispersed use. Areas of higher OHV use experience increased vegetation community impacts, increasing potential for accelerated erosion of soils, which may result in damage or exposure of cultural resource sites. Population increases within the urban interface will escalate demands for access to public lands near residential developments, which will require increased management and protection of resources. The potential for impacts on cultural resources from direct disturbance, erosion, impacts on setting, increased access to sites and vandalism would increase as population and dispersed recreational use increase. Recreation management with respect to OHV travel includes limiting use. This would protect cultural resources depending on the number of acres designated as open, limited, or closed.

4.3.10 Paleontological Resources

This section presents potential impacts of the alternatives on paleontological resources. Existing conditions concerning paleontological resources are described in **Section 3.2.10**, Paleontological Resources. Paleontological resources are a fragile and nonrenewable scientific record that includes any fossilized remains, traces, or imprints of organisms preserved in or on the earth's crust that are of scientific interest and that provide information about the history of life on earth.

Summary

Paleontological resources are known to occur throughout the planning area as a result of a district-wide paleontological inventory that was completed in 1981 (Firby 1981). The planning area has not been systematically surveyed in accordance with the 2007 Instruction Manual 2008-009 that would classify the planning area based on the Potential Fossil Yield Classification (PFYC) system. Based upon the 1981 inventory, 331 locations were identified comprising 225 vertebrates, 73 invertebrates, and 33 paleoflora fossils ranging from the Triassic (approximately 230 million years before present) to the Quaternary (1.5 million years before present) (Firby 1981). Currently there are 3 paleontological areas identified for management. These include the Stewart Valley Fossil Site, the Pine Nut Range Hemphillian/Early Blancan interface, and the Ruhenstroth Paleontological Area.

The BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect or mitigate these resources from adverse impacts. The BLM's four objectives for the management of fossil resources on BLM-administered lands are: 1) locating, evaluating, managing, and protecting fossil resources; 2) facilitating appropriate scientific, educational, and recreational uses of fossils; 3) ensuring that proposed land uses do not inadvertently damage or destroy important fossil resources; and 4) fostering public awareness of the Nation's rich paleontological heritage (BLM 1998a; BLM 1998b).

Overall, objectives and actions associated with other resources that result in closure to surface disturbance activities would result in beneficial impacts (less chance of disturbance) to any paleontological resources that might be present. Management for the following resources would not result in an effect on paleontological resources: air quality, climate, soil and water resources, vegetation, fish and wildlife, special status species, wild horses and burros, cultural resources, visual resources management, forestry and woodland product management, recreation and visitor management, renewable energy management, ACECs, Back Country Byways, National Trails, WSRs, BCWCAs, and WSAs.

Methods of Analysis

Methods and Assumptions

Paleontological resources baseline information in **Section 3.2.10**, Paleontological Resources, was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws and BLM policy pertinent to determining effects on paleontological resources (e.g., BLM Manual Section 8270 and Handbook H-8270-1, General Procedural Guidance for Paleontological Resource Management) were considered and included in criteria for determining impacts. This known information was overlain with the actions found under each alternative in Chapter 2, and

conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

This analysis assumes the following:

- Potential for impacts on both surface and subsurface paleontological resources is directly proportional to the amount of surface disturbance associated with the proposed action.

At the programmatic level of analysis, it is not possible to identify and evaluate areas of higher paleontological sensitivity (outside of the 3 identified management areas for paleontological resources) with respect to locations of proposed surface disturbance. Therefore, potential impacts on paleontological resources under each alternative can only be generally estimated, and they correlate directly to the amount of anticipated surface disturbance proposed under each alternative.

Indicators

Paleontological resource impacts primarily concern the potential destruction of nonrenewable fossil resources and the loss of scientific information associated with these resources, and includes destruction as the result of surface disturbance and the unlawful or unauthorized collection of fossil remains. Criteria for determining significant impacts on paleontological resources include:

- Loss of any fossil that could yield important scientific information or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region.

More generally, potential impacts on paleontological resources could occur if reasonable foreseeable future actions were to:

- Conflict with paleontological resource management objectives and guidelines established by the BLM; or
- Disturb paleontologically sensitive geologic formations.

Nature and Type of Effects

Paleontological resources can be impacted through natural weathering, erosion, ground disturbing activates, improper or over-collection, and vandalism, which can remove or damage those characteristics that make a paleontological resource scientifically important. Specific indicators used to assess the condition of *in situ* paleontological resources are the extent of erosion, rock fall, other natural processes, and human-caused disturbances. Exposed fossils can be damaged by wind and water erosion, and this damage can be exacerbated by concentration of human use and activity.

Types of impacts include permanent loss of paleontological resources and the scientific data it could provide through damage or destruction caused by surface

disturbing activities. The potential for undiscovered paleontological resources exists despite previous paleontological surveys and investigations. Without removing some rock surrounding fossils, they would remain largely undetected. Surface disturbing activities could directly negatively impact undiscovered paleontological resources by exposing the resources, which may result in inadvertent fossil damage or destruction. Conversely, ground disturbances monitored by qualified paleontologists could cause positive direct impacts on the paleontological resource database by discovering and recovering scientifically significant fossils. Indirect impacts could result from the increased human presence, leading to possible illicit collecting of newly exposed materials.

Effects on paleontological resources can typically be mitigated to below a level of significance by implementing paleontological mitigation identified in the BMPs or stipulations, such as monitoring during construction, excavating materials, or avoiding surface exposures. If data recovery were the prescribed mitigation, this could also result in fossils being salvaged that may never have been unearthed as the result of natural processes. These newly exposed fossils would become available for scientific research, education, display, and preservation into perpetuity at a public museum. Unmitigated surface-disturbing activities could dislodge, damage, or destroy paleontological resources and features that were not visible before surface disturbance.

An increase in visitors to, workers in, or access to paleontological localities or sensitive areas could result in an increased potential for loss of paleontological resources by vandalism and poaching. These impacts are difficult to mitigate to below the level of significance, but they can be greatly reduced by increasing public awareness about the scientific importance of paleontological resources through education, community partnerships, and interpretive displays, and by informing the public about penalties for unlawfully destroying or poaching these resources from BLM-administered lands.

Paleontology: Effects from Special Status Species Management

Effects Common to All Alternatives

If unknown paleontological resources were present within the boundaries of areas protected from surface disturbances due to special status species management, resources would also be protected. If not, there likely would be no impacts on paleontological resources resulting from special status species management objectives or actions under any of the alternatives. With respect to effects on paleontological resources, all of the alternatives are essentially equivalent.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Paleontology: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Allowing conditional fire suppression management for a benefit and fire suppression can involve ground-disturbing activities at depths that can directly affect any undiscovered paleontological resources, if present. These actions include constructing fire lines, bulldozing access roads, and using heavy equipment. High severity fire can also burn packrat middens, damage surface fossils, including cracking, spalling, and oxidizing. Fire can result in impacts through erosion and the increased visibility of paleontological resources. Fire can also remove vegetation and expose previously undiscovered resources, allowing for their discovery, study and protection; however, locations exposed by fire can be susceptible to damage by subsequent erosion, vandalism, and unauthorized collecting.

Impacts on undiscovered paleontological resources cannot be assessed because the type, quality, and location of the resources are unknown. Given that the location of any surface-disturbing activities cannot be predicted, the intersection of the undiscovered resources and the potential future activities also cannot be predicted. There likely would be no impacts on known paleontological resources locations resulting from wildland fire management objectives or actions under any of the alternatives. With respect to effects on known paleontological resources, all of the alternatives are essentially equivalent.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Paleontology: Effects from Paleontological Resources Management

Effects Common to All Alternatives

Permits would be required to remove fossils for scientific purposes. As appropriate, physical conservation measures, such as signing, fencing, erosion control, and administrative conservation would be implemented to reduce impacts on the resources. In addition, law enforcement would patrol selected areas to help prevent damage to or theft of paleontological resources.

Education opportunities would be promoted and partnerships with academic and scientific organizations would be pursued. Materials would be published to promote public awareness and appreciation of the CCD paleontological resources. Scientific research information concerning the locations of specific resources would be published only if increased visitation would not harm the resource.

Under all alternatives, the BLM would manage paleontological resources for preservation, protection, and scientific, educational, and recreational use, such as public hobby collection of paleontological resources without reducing the significance or interest of the resource. Additionally the BLM would ensure that authorized land uses do not inadvertently damage or destroy important paleontological resources on BLM-administered land.

Effects under Alternative A

Management of paleontological resources under Alternative A would be the same as described under effects common to all. Additionally, Alternative A would continue to manage the 15,900 acre Stewart Valley Paleontological ACEC for paleontological resources.

Effects under Alternative B

Alternative B would classify the CCD landscape by potential fossil yield classification (PFYC) Class: very low, low, moderate, high, and very high potential to contain vertebrate fossils or noteworthy invertebrate or plant fossils. An on-the-ground survey prior to approval of surface-disturbing activities and/or monitoring by a qualified paleontologist during surface-disturbing activities would be required for all activities authorized within PFYC Class 4 and 5 formations.

Alternative B would establish 2 ACECs for the management of paleontological resources. These are the Stewart Valley Paleontological ACEC (15,900 acres) and the Ruhenstroth Paleontological ACEC (2,300 acres).

Due to inventorying for paleontological resources and designated an additional ACEC to protect paleontological resources, Alternative B would be more protective of paleontological resources than Alternative A.

Effects under Alternative C

Alternative C would classify the CCD landscape by PFYC. An on-the-ground survey prior to approval of surface-disturbing activities and/or monitoring by a qualified paleontologist during surface-disturbing activities would be required for all activities authorized within PFYC Class 4 and 5 formations. Additionally, under Alternative C, if paleontological resources are identified, surface disturbing activities would be avoided.

Like Alternative B, Alternative C would establish 2 ACECs for the management of paleontological resources. These are the Stewart Valley Paleontological ACEC (15,900 acres) and the Ruhenstroth Paleontological ACEC (2,300).

Effects under Alternative D

Alternative D would classify the CCD landscape PFYC. Inventorying and /or monitoring for paleontological resources under Alternative D would be the same as under Alternative B.

Alternative D would establish the Ruhenstroth Paleontological ACEC for the management of paleontological resources. Unlike the other Alternatives, Alternative D would not manage the Stewart Valley Paleontological area as an ACEC.

Effects under Alternative E

Alternative E would classify the CCD landscape by PFYC. An on-the-ground survey prior to approval of surface-disturbing activities and/or monitoring by a qualified paleontologist during surface-disturbing activities would be required for all activities authorized within PFYC Class 4 and 5 formations.

Like Alternative B and C, Alternative E would establish the Stewart Valley Paleontological ACEC and the Ruhenstroth Paleontological ACEC to protect paleontological resources.

Alternative E would include protective measures similar to Alternative C. However, if paleontological resources were discovered during site inventory before the implementation of a project, Alternative C would recommend avoidance of paleontological resources whereas Alternative E would recommend mitigation measures, which may be slightly less protective.

Paleontology: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives

Caves frequently contain pack rat middens, which are an important source of paleoenvironmental information. Identification and protection measures for caves and cave resources may also lead to the identification and protection of paleontological resources. Scientific study of these resources may provide additional information on pre-historic environments and other research questions relevant to the paleontological resources of the CCD

Effects under Alternative A

Alternative A would continue to manage caves and their associated cultural and paleontological features based on current land use plan decisions, policy, and regulations which are complementary to paleontological resource management goals.

Effects under Alternative B

The BLM would develop a public outreach program to foster an appreciation for caves and their resources, and would provide staff to monitor caves identified as culturally significant and heavily used by the public. This includes the Grimes Point Archaeological District, Hidden Cave, and Dynamite Cave. Implementation of public awareness of significant caves and their resources and added security could reduce the likelihood of theft and vandalism of the resources associated with well-known caves, but could encourage visitation to lesser known caves and resultant theft or vandalism of paleontological resources associated with them.

Alternative B would reduce the potential for impacts on paleontological resources associated with development around Dynamite Cave by implementing a 0.25-mile ROW avoidance area around the cave, closing the area to mineral material disposal, and applying for a 500-foot CSU stipulation for fluid mineral leasing. This would reduce the potential for disturbance to the paleontological resources associated with Dynamite cave from ROW, mineral material, and fluid mineral development.

Alternative B would reduce the potential for impacts on paleontological resources within Hidden Cave by implementing a ROW avoidance area within 500 feet of the cave, closing the area to mineral material disposal, and applying CSU stipulations within 500 feet of the cave for fluid mineral leasing. This would reduce the potential for disturbance to paleontological resources associated with Hidden Cave from ROW, mineral material, and fluid mineral development.

Due to these additional measures, management of caves and cave resources under Alternative B would be more protective of paleontological resources than Alternative A.

Effects under Alternative C

The BLM would develop public an outreach program to foster an appreciation for caves and their paleontological resources, and would provide staff to monitor caves identified as culturally significant and heavily used by the public. This includes the Grimes Point Archaeological District, Hidden Cave, and Dynamite Cave. Implementation of public awareness of significant caves and added security around significant caves would reduce the likelihood of theft vandalism of the paleontological resources associated with the caves. However, education on cave resources could encourage visitation to lesser known caves with resultant theft or vandalism of paleontological resources associated with them.

The BLM would also include significant caves on the fuels-treatment program to reduce risk of fire and increase protections of paleontological resources that may be impacted by a high-fuels load.

Management under Alternative C would reduce the potential for impacts on paleontological resources associated with Dynamite Cave by implementing a 0.5-mile ROW exclusion area around the cave, closing the area to mineral material disposal and fluid mineral leasing, recommending the area for withdrawal from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Alternative C would prevent impacts on paleontological resources associated with Hidden Cave by implementing a ROW exclusion area within 500 feet of the cave, closing the area to fluid mineral leasing and mineral material disposal, recommending the area for withdraw from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Alternative C is similar to Alternatives B and D, but with greater restrictions in respect to ROW exclusion, mineral closures, travel management designations, and fuels-treatments. Alternative C would be more protective of the paleontological resources associated with caves and cave resources than the other Alternatives.

Effects under Alternative D

Alternative D would protect paleontological resources associated with caves from vandalism or theft by installing gates, security fencing and signs. Like Alternative C, Alternative D includes culturally significant caves in the fuels-treatment program to protect sensitive attributes that may be impacted by a high-fuels load. Alternative D would also develop public outreach programs to foster an appreciation for caves and their paleontological resources, and provide staff to monitor caves identified as culturally significant and heavily used by the public.

Specific management of Hidden Cave and Dynamite Cave under Alternative D would have the same effects on paleontological resources as Alternative B. These measures would be more protective of paleontological resources associated with caves than Alternative A.

Effects under Alternative E

The BLM would develop public outreach programs to foster an appreciation for caves and their paleontological resources, and provide staff to monitor caves identified as culturally significant and heavily used by the public. This includes the Grimes Point Archaeological District, Hidden Cave, and Dynamite Cave. Implementation of public awareness of significant caves and added security around significant caves would reduce the likelihood of theft and vandalism of paleontological resources associated with the caves, but could encourage

visitation to lesser known caves and resultant theft or vandalism of paleontological resources associated with them.

The BLM would also include significant caves on the fuels-treatment program to reduce risk of fire and increase protections on sensitive paleontological resources that may be impacted by a high-fuels load.

Alternative E would reduce the potential for impacts on paleontological resources associated with Dynamite Cave by implementing a 0.25-mile buffer of ROW avoidance area around the cave, closing the area to mineral materials disposal, and applying a 500-foot CSU stipulation for fluid mineral leasing. This would reduce the potential for disturbance to paleontological resources associated with development around Dynamite Cave.

Management of Hidden Cave under Alternative E would be the same as management of the Cave under Alternative B.

Alternative E would prevent impacts on paleontological resources associated with Hidden Cave by implementing a ROW exclusion area within 500 feet of the cave, closing the area to fluid mineral leasing and mineral material disposal, recommending the area for withdraw from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Management of Dynamite Cave under Alternative E would be the same as management of the cave under Alternative C.

Management of caves and cave resources would be more protective of associated paleontological resources under Alternative E than Alternative A.

Paleontology: Effects from Livestock Grazing Management

Effects Common to All Alternatives

The areas around springs can be either erosional or depositional. Where there are seasonal deposits of sediments around springs, these deposits can contain pollen or other paleoenvironmental materials. Disruption of these seasonal depositions impacts the scientific value of these materials.

Grazing animals tend to congregate in riparian areas including springs. Potential impacts of grazing include increased sediment loading from soil eroded by wind and water due to vegetation loss, direct soil disturbance, and runoff concentrated into animal trails, with consequent enhanced erosion. Spring developments and livestock and wild horse and burro concentrations in the vicinity of springs could affect any deposition in the area of springs, so potential deposition of paleoenvironmental materials could also be affected reducing the scientific value of these materials.

Livestock and wild horse and burro grazing under all of the alternatives is expected to continue to have impacts on springs and associated paleoenvironmental deposits.

Effects under Alternative A
Under Alternative A, 6,700 acres would not be available for livestock grazing. This is the least amount among the alternatives and effects from livestock grazing could occur over the largest area.

Effects under Alternative B
Under Alternative B, the BLM would manage 6,100 acres as not available for livestock grazing. This would decrease grazing associated impacts compared to Alternative A.

Effects under Alternative C
Under Alternative C, 2,702,000 acres would not be available for livestock grazing. This is alternative would substantially reduce impacts from grazing compared to Alternative A.

Effects under Alternative D
Alternative D would manage 10,700 acres as not available for livestock grazing, which would reduce impacts from grazing compared to Alternative A.

Effects under Alternative E
Alternative E would cause the same impacts as Alternative B.

Paleontology: Effects from Geology and Mineral Management

Effects Common to All Alternatives
If present, paleontological resources could be impacted by the extent and depths of ground disturbance associated with salable and locatable mineral development. However, the potential for paleontological resources would be assessed before these activities were authorized, and avoidance or mitigations would be required.

Under All Alternatives 194,900 acres would be managed as closed to locatable mineral entry. This would prevent potential impacts on paleontological resources from ground disturbing activities related to locatable mineral exploration and development in the closed areas.

Effects under Alternative A
Under Alternative A, 56,900 acres would be managed as closed to all mineral entry, exploration, and development, and energy development under the Classification and Multiple Use Act, the Walker Planning Area, the Carson City Urban Interface Plan, and under existing withdrawals and segregation from mineral entry that would be maintained.

Locatable Minerals

Alternative A would recommend an additional 3,700 acres for withdrawal from locatable mineral entry. This would indirectly protect paleontological resources from impacts of locatable mineral exploration and development in these areas. Acres withdrawn from locatable mineral entry under Alternative A would be greater than Alternative D, but less than Alternatives B, C, or E.

Fluid Minerals

Alternative A would continue to manage 839,100 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations for oil and gas leasing to 700 additional acres, including areas within 300 to 500 feet of water resources.

This is a total of 839,800 acres of restrictions for fluid mineral leasing that would inadvertently protect potential paleontological resources within these areas, which is the fewest acres with fluid mineral leasing restrictions of all the alternatives.

Mineral Materials (Salable)

Alternative A would manage 564,200 acres as closed to mineral material disposal. Closures to mineral material disposal under Alternative A would be greater than Alternative B, but less than Alternatives C, D, and E.

Nonenergy Leasable Minerals:

Alternative A would close 738,800 acres to nonenergy leasable minerals, which is less than Alternatives C, D, and E, and the same as B.

Effects under Alternative B

Locatable Minerals

Alternative B would recommend 439,600 acres for withdrawal from locatable mineral entry. This is substantially greater than Alternative A.

Fluid Minerals

Alternative B would manage 786,500 acres as closed to oil and gas and geothermal leasing. An additional 404,600 acres would be managed with NSO stipulations for fluid mineral leasing. The BLM would apply CSU stipulations on 2,120,200 acres, including within 500 feet of lentic and lotic habitats.

This is a total of 3,311,300 acres of restrictions for fluid mineral leasing that would inadvertently protect potential paleontological resources within these areas, which is more than Alternative A.

Mineral Materials (Salable)

Alternative B would manage 807,200 acres as closed to mineral material disposal. Alternative B would restrict mineral material disposal within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse

or their habitat. This could result in restrictions for mineral material development on 414,200 acres.

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative B would manage the fewest acres with restriction on mineral material development of the alternatives.

Nonenergy Leasable Minerals

Alternative B would manage 981,900 acres would be managed as closed to nonenergy leasable minerals. Alternative B would restrict nonenergy leasable mineral development within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat.

Assuming that PPMA and PGMA remain open or that nonenergy leasable mineral development could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative B provides for the same amount of acres of closure to nonenergy leasable minerals than Alternative A.

Effects under Alternative C

Locatable Minerals

Under Alternative C, 117,500 acres would be recommended for withdrawal from locatable mineral entry, which is greater than Alternative A.

Fluid Minerals

Alternative C would manage 2,081,700 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations for fluid mineral leasing on an additional 1,039,200 acres and CSU stipulations on an additional 1,242,800 acres.

This is a total of 4,363,700 acres of restrictions for fluid mineral leasing that would inadvertently protect potential paleontological resources within these areas, which is the most amount of closure of all the alternatives.

Mineral Materials (Salable)

Under Alternative C, the BLM would manage 3,004,800 acres as closed to mineral material disposal. This includes caves and cave resources and areas within 200 feet of riparian/wetland areas.

Alternative C would close more acres to mineral materials than any of the other Alternatives.

Nonenergy Leasable Minerals:

Alternative C would close 2,960,800 acres to nonenergy mineral leasing. Alternative C would manage more acres as closed to nonenergy leasable minerals than any of the other alternatives.

Effects under Alternative D

Locatable Minerals

Under Alternative D 440,800 acres would be recommended for withdrawal from locatable mineral entry, which is substantially greater than Alternative A.

Fluid Minerals

Alternative D would manage 737,000 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations for fluid mineral leasing an additional 864,800 acres. The BLM would also apply CSU stipulations to 2,071,400 acres including areas within 200 feet of riparian/wetland areas and within 500 feet of lentic and lotic habitat.

This is a total of 3,673,200 acres of restrictions for fluid mineral leasing that would inadvertently protect potential paleontological resources within these areas, which is more than Alternative A.

Mineral Materials (Salable)

Alternative D would manage 807,700 acres as closed to mineral material sales. Alternative D would restrict nonenergy mineral material disposal within Grater Sage-Grouse PPMA and PGMA if it is determined that there would be adverse impacts on Greater-Sage Grouse or their habitat. This could result in restrictions for mineral material development on 414,200 acres.

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative D would manage more acres as closed to mineral material sales than Alternative A.

Nonenergy Leasable Minerals:

Alternative D would close 981,900 acres to nonenergy leasable minerals. Alternative D would restrict nonenergy leasable mineral development within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat.

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative D would manage more acres as closed to mineral material sales than Alternative A.

Effects under Alternative E

Locatable Minerals

Under Alternative E, 470,600 acres would be recommended for withdrawal from locatable mineral entry. This would be the largest amount of acres recommended for withdrawal under any of the alternatives.

Fluid Minerals

Alternative E would manage 1,007,200 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations on an additional 1,151,600 acres with, including lands within 500 feet of riparian/wetland areas and lentic and lotic habitats, Alternative E would also manage an additional 1,844,900 acres with CSU stipulations.

This is a total of 4,003,700 acres of restrictions for fluid mineral leasing that would inadvertently protect potential paleontological resources within these areas, which is more than Alternative A.

Mineral Materials (Salable)

Alternative E would manage 1,778,700 acres as closed to mineral material disposal.Alternative E would close more acreage to mineral materials than Alternative A.

Nonenergy Leasable Minerals:

Alternative E would manage 1,785,900 acres as closed to nonenergy leasable minerals.Alternative E would close more acres to nonenergy leasable minerals than Alternative A.

Paleontology: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Increased transportation or access to any area would increase the level of visitation, resulting in greater potential for impact on any paleontological resources that might be present. Open OHV use can impact paleontological resources, through direct disturbance, breakage and displacement, vandalism, soil compaction, altered surface water drainage, and erosion. Motorized access could also increase the risk of impacts on resources from unauthorized collection or vandalism. Restricting vehicle use to existing routes would reduce the risk of disturbing paleontological resources located off travel routes, but impacts from access could still occur. Enforcing travel routes is difficult, and unauthorized user-created trails would continue to occur, potentially impacting paleontological resources. Closure of areas to OHV use provides the most protection for paleontological resources, if access for cultural purposes can be maintained.

There likely would be no specific impacts on known paleontological resources resulting from transportation and access management objectives or actions under any of the alternatives. With respect to effects on known paleontological resources, all of the alternatives are essentially equivalent.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Paleontology: Effects from Lands and Realty

Effects Common to All Alternatives
Paleontological resources would be one of the public resources evaluated when acquisition actions are considered. The acquisition of new land would provide long-term federal protection of any paleontological resources contained therein.

Exchange or disposal of lands to nonfederal entities would permanently remove federal protections for paleontological resources. The reduced level of protection would result in greater potential for vandalism, theft, and destruction of any paleontological resources present. The potential for paleontological resources would be assessed before these activities were authorized.

No specific lands with known paleontological resources have been identified for acquisition or disposition, or so there likely would be no impacts on paleontological resources resulting from lands and realty management objectives or actions under any of the alternatives. With respect to effects on paleontological resources, all of the alternatives are essentially equivalent.

Construction of ROWs, leases, and permits for development projects could expose unidentified paleontological resources to erosion and affect the visual settings of historic sites.

Impacts on cultural resource from all lands and realty actions would be subject to further review. All ROWs would be subject to BMPs, standard operating procedures, IOPs, stipulations, restrictions, and mitigation measures, would be implemented to reduce potential impacts.

Effects under Alternative A
Alternative A would manage 564,100 acres as ROW exclusion, and would not manage any acres as ROW avoidance. Land Use Authorizations and management under Alternative A would provide the least protection for paleontological resources.

Effects under Alternative B

Alternative B would manage 580,000 acres as ROW exclusion and 1,195,800 acres as ROW avoidance, totaling 1,775,800 acres of land restriction that would provide protection of paleontological resources. This is more than Alternative A.

Effects under Alternative C

Alternative C would manage 2,675,800 acres as ROW exclusion and 369,300 acres as ROW avoidance totaling 3,045,100 acres of land restriction. This would best protect paleontological resources from potential impacts for lands and realty development.

Effects under Alternative D

Alternative D would manage 564,100 acres as ROW exclusion and 1,226,100 acres as ROW avoidance, totaling 1,790,200 acres of land use restriction that would protect paleontological resources. This is more than Alternative A.

Effects under Alternative E

Alternative E would manage 605,900 acres as ROW exclusion and 1,448,200 acres as ROW avoidance totaling 2,054,100 acres of land restrictions that would prevent impacts on paleontological resources. This is more than Alternative A.

Paleontology: Cumulative Effects

In the past there have been direct impacts on paleoenvironmental deposits at springs and in other riparian zones from range improvements as well as indirect impacts from concentrated grazing leading to erosion and disturbance of the paleoenvironmental record in these areas. Grazing pressure on rangelands from livestock is anticipated to continue, if not increase. There is interest in acquiring grazing permits as they become available. In addition, due to proximity to expanding urban areas, some allotments may lose grazing acreage. This would ensure demand for areas available for grazing. Current land use plans have employed management actions to reduce concentrated grazing and have improved conditions based on the standards for rangeland health. These actions have reduced impacts on paleoenvironmental resources from livestock grazing.

Minerals, lands and realty, renewable energy, and recreation activities have disturbed soils which may have damaged unknown resources. Increasing mineral, lands and realty, and renewable energy actions would increase potential for disturbing soils and consequently increasing the potential to damage, destroy, remove, or bury paleontological resources. Management actions to re-inventory the planning area for paleontological resource potential to assess possible resource impacts and mitigation needs for actions involving surface disturbance will reduced impacts on paleontological resources. Measures to avoid and reduce impacts on paleontological resources currently include consultation of the 1981 inventory data base, literature searches, inventory, and implementation of mitigation measures to avoid or reduce impacts.

Unrestricted OHV travel may have damaged surface paleontological resources through cross-country travel and through the creation of new roads or trails. Impacts are difficult to quantify due to dispersed use. Recreational looting and excavation of paleontological sites have removed vertebrate fossils. Although these impacts continue, monitor and patrol by law enforcement and heritage education outreach efforts have helped to reduce these impacts. Recreation management of OHV travel includes limiting use. This would protect paleontological resources depending on the number of acres designated as open, limited, or closed by alternative.

4.3.11 Visual Resources

This section discusses impacts on visual resources from proposed management actions for resources and resource uses. Existing conditions are described in **Section 3.2.11**, Visual Resources.

Summary

Impacts on visual resources would result from management actions associated with the following: climate management, vegetation resources, wildland fire ecology and management, visual resources management, livestock grazing management, geology and mineral management, recreation and visitor services, Comprehensive Travel and Transportation Management, lands and realty, renewable energy (wind and solar), areas of critical environmental concern, and WSRs. The management actions typically involve changes to activities (such as vegetation treatments) and surface disturbances (such as wildfire suppression, recreation, and livestock grazing). They also involve changes in land use designations (such as ROW avoidance and exclusion areas).

Alternative A would continue to rely on dated plans and documents to manage visual resources. This threatens visual resources, because 3,494,900 acres lacks VRM Class objectives for managing visual resources. Ongoing impacts on visual resources would be the greatest under this alternative due to a lack VRM Class objectives, the number of acres open to motorized and mechanized travel, the lack of fluid mineral stipulations, the lack of ROW avoidance areas, the lack of avoidance areas for wind energy development, the number of acres of ACECs, and the lack of ERMA to manage recreation in appropriate locations.

Alternative C provides the most management actions for protecting visual resources, such as through VRM Class I and II designations, ROW exclusion areas, ACECs, and WSRs. Overall, Alternatives B and D contain the fewest management actions for protecting visual resources due to, for example, the amount of land that is open to mineral development. Depending on the resource, Alternative E is typically more or less protective of visual resources than Alternatives B and D.

Methods of Analysis

The visual resource inventory (VRI) classes form the basis for analysis in this section. Although VRI classes use the same numerical scale (i.e., Class I through

IV) as VRM classes, they are defined differently. Visual resource inventory classes are the categories the BLM uses to classify the current and combined visual factors (scenic quality, sensitivity, and distance zone) of the landscape and is how the BLM communicates the degree of visual value in the area. Generally, VRI Class II indicates high visual value; VRI Class IV indicates lower visual value based on the inventory factors, while VRI Class I represent high visual value based on previous Congressional and administrative decisions to manage the landscape character for preservation that will not be revisited under the RMP revision. For more information on the VRI process, refer to BLM Handbook H-8410-1, Visual Resource Inventory (BLM 1986a). The VRI is on file at the CCD.

Impacts on visual resources are assessed by comparing the VRI class of an area to the VRM class for the same area and assessing the potential for change in the three components of VRI classification (scenic quality, sensitivity level, and distance zones). The management of resources and resource uses and how those actions might impact scenic resources is also examined. Applying VRM Class I objectives to any VRI classification would preserve the existing character of the landscape. In other words, the VRI classification would be expected to remain the same, so impacts would be negligible. Therefore, applying anything but VRM Class I objectives could result in some level of change if activities that would contrast with the landscape are permitted in the area. Any landscape managed as VRM Class IV would be subject to significant visual change regardless of VRI Class.

When assessing scenic quality, seven factors are considered: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. Of these factors, decisions in the RMP have the highest potential to change vegetation, color, or cultural modifications. Where cultural modifications would be allowed, there could be a change in the variety of vegetation forms, patterns, or texture from such activities as construction, vegetation removal, soil composition changes. Furthermore, where cultural modifications would be allowed to the extent that the basic components of the landscape (e.g., vegetation, soil, and rock) changed drastically, the variety, contrast, and harmony of color could change as well. Under no alternative would the scenic quality be anticipated to significantly improve.

When assessing sensitivity, six factors are considered: type of users, amount of use, public interest, adjacent land uses, special areas, and other factors. Of these factors, decisions in the RMP have the highest potential to change types of users, amount of use, and special areas. The designated use of BLM-administered lands can influence the types of users and the amount of use. Also, the designated use of BLM-administered lands can result in creating special areas to preserve the natural landscape setting.

When assessing distance zones, landscapes are subdivided into three distance zones based on relative visibility from travel routes or observation points. The

three zones are: foreground-middleground zone (areas seen from highways, rivers, or other viewing locations which are less than 3 to 5 miles away), background zone (seen areas beyond the foreground-middleground zone but usually less than 15 miles away), and seldom seen zone (areas not seen as foreground-middleground or background, i.e., hidden from view). Decisions in the RMP are not likely to change these distance zones, unless access to an area is increased or decreased. This could, for example, change a seldom seen zone to a foreground-middleground zone or background zone.

Assumptions

The following assumptions were used to assess the impacts on visual resources:

- The scenic vistas within the planning area will become more sensitive to visual change; in other words, they will increase in value over the next 20 years.
- Scenic resources will become increasingly important to residents of and visitors to the area.
- Visitors to BLM-administered lands or residents living near BLM-administered lands are sensitive to changes in visual quality.
- Activities that cause the most contrast and are the most noticeable to the viewer and the public will be considered to have the greatest effect on scenic quality.
- The severity of a visual effect depends on a variety of factors, including the size of a project (i.e., area disturbed and physical size of structures), the location and design of roads and trails, and the overall visibility of disturbed areas.
- The more protection that is associated with the management of other resources and special designations, the greater the benefit to visual resources of the surrounding viewsheds.
- VRM class objectives apply to all resources. Class objectives will be adhered to through project design, avoidance, or mitigation.
- Visual resource design techniques and BMPs will be implemented to mitigate potentially harmful impacts.
- WSAs are and will continue to be managed according to BLM Manual 6330, Management of Wilderness Study Areas (BLM 2012e), which includes management as VRM Class I. Because activities within WSAs must meet the nonimpairment criterion, which generally restricts new surface-disturbance, it is assumed that a WSA will generally protect visual resources in those areas.
- The BLM will continue to protect and preserve Native American cultural and sacred sites and Native American access to these sites whenever possible. The BLM will take no action that would

adversely affect these areas or locations without first consulting with the appropriate Native American tribes (Executive Orders 13007 and 13084).

- Visual contrast ratings will be required for all projects. The visual contrast rating system will be used as a guide to analyze site-specific impacts from projects as well as project design and placement. Projects will be designed to minimize their visual impacts in order to conform to the area's VRM class objective. This will allow the BLM to reduce impacts on a site-specific basis to ensure compliance with the assigned VRM class.
- Areas without either VRI or VRM classes cannot be effectively managed for visual resources. Classes are identified for BLM-administered lands requiring comprehensive management of visual resources.

Indicators

The scenic quality of the planning area is of national significance and an important part of the local and state economy. Many people live and recreate in the planning area because of its remoteness and visual qualities. The visual setting is an important part of local lifestyles and, for most travelers, the scenery or visual resource is an important part of their visit. Both tourists and residents drive across this landscape expecting to see open mountain vistas, deep canyons, dramatic cliffs and mesas, and vast rolling sagebrush-covered lands.

The VRI involves identifying the visual resources of an area and assigning them to inventory classes using the BLM's resource inventory process. The process involves 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. The results of the VRI become an important component of the area's RMP because they establish how BLM-administered lands will be used and allocated for different purposes. It is developed through public participation and collaboration. Visual values are considered throughout the RMP process, and the area's visual resources are then assigned to the management classes with established objectives. The VRI classes do not establish management direction and are not used as a basis for constraining or limiting surface-disturbing activities, but they are considered a baseline for existing conditions.

The assignment of VRM classes is ultimately based on management decisions made during the RMP process, which must take into consideration the value of visual resources. During the process, inventory class boundaries can be adjusted as necessary to reflect these resource allocation decisions. The goal of VRM is to minimize the visual impacts of all surface-disturbing activities, regardless of the class to which an area is assigned. Current VRM classes are summarized in **Table 3-22**, Visual Resource Management Classes, and are displayed in **Figure**

2-13, Alternative A: Visual Resource Management Classes. Objectives of the four VRM classes are included in **Section 3.2.11**.

The indicator of impacts on visual resources is the following: A proposed VRM class would allow changes to the landscape that could alter its character enough that future visual resource inventories would result in a reclassification. For example, if an area currently managed for VRM Class IV has VRI Class II lands, then the level of change allowed by VRM Class IV could alter the landscape to the point that future visual resource inventories could result in reclassifying the area to VRI Class III or IV.

Nature and Type of Effects

Management of the following resources would have negligible or no effects on visual resources: air quality, soils and water, fish and wildlife, special status species, wild horse and burros, cultural resources, paleontological resources, caves and cave resources, forestry and woodland products, Back Country Byways, national trails, BCWCAs, WSAs, tribal interests, public health and safety, and interpretation and environmental education.

While there may be restrictions on surface-disturbing activities proposed to protect some of these resources, that discussion is included in a general analysis under the applicable resource program (e.g., impacts from restrictions on ROW location for all resources are discussed under the effects from lands and realty).

Impacts on visual resources would result from management actions associated with the following: climate management, vegetation resources, wildland fire ecology and management, visual resources management, livestock grazing management, geology and mineral management, recreation and visitor services, Comprehensive Travel and Transportation Management, lands and realty, renewable energy (wind and solar), areas of critical environmental concern, and WSRs.

Climate Management

Among other factors, temperature and water affect vegetation distribution and composition. Activities that alter the climate can result in changes to temperatures and the availability of water. As a result, changes in the distribution and composition of vegetation would occur. This would result in indirect impacts on the scenic quality of the vegetation landscape.

Vegetation Resources

Forest and woodlands management actions involve thinning and removing trees in pinyon-juniper areas could cause visual intrusions creating linear features within viewsheds that would impact the integrity of visual resources. The degree of impacts is dependent on the location of disturbance and the VRM class. Restoration and rehabilitation management actions involve restoring burned or WUI areas using appropriate vegetation would improve viewsheds impacted by wildfire over time. Invasive species and noxious weeds management actions involve controlling the

distribution and spread of invasive species and noxious weeds. These vegetation management actions involve using physical, mechanical, educational, biological, chemical, and fire treatments that alter the composition and distribution of vegetation or create desired vegetation mosaics. In the short term, these treatment methods can leave the ground surface scarred and void of vegetation, thereby changing the form and texture of vegetation across the landscape. It can also introduce new colors to the treated area by killing vegetation or removing vegetation and leaving the soil surface exposed. In the long term, once desired vegetation becomes established and matures, it can create a landscape with vegetation forms, colors, and textures that are appropriate to the local visual landscape. Appropriate vegetation would also minimize the spread of wildfires capable of diminishing the quality of scenic resources.

Wildland Fire Ecology and Management

Wildfire ecology and management actions involve a variety of wildfire suppression tactics in order to protect specific values. They also involve fuels treatments in order to control the ignition and spread of wildfires and develop robust vegetation communities.

Similar to vegetation resources, wildland fire ecology and management involves tactics and treatments that alter the composition and distribution of vegetation. For example, wildland fire ecology and management contains the same actions as described above under vegetation resources.

In the short term, these tactics and treatments can leave the ground surface scarred and void of vegetation, thereby changing the form and texture of vegetation across the landscape, as well as the landform in some instances. They can also introduce new colors to the area by removing vegetation and leaving the soil surface exposed. In the long term, once desired vegetation becomes established and matures, it can create a landscape with vegetation forms, colors, and textures that are appropriate to the local visual landscape. Appropriate vegetation would also minimize the spread of wildfires capable of diminishing the quality of scenic resources.

Visual Resources Management

Visual resource values would receive higher levels protection than what is the norm when a VRM class objective is more restrictive to land use practices than what is commensurate with the VRI class values. For example, a VRM Class II designation of VRI Class III land would protect visual resources from changes that could occur under a VRM Class III designation. Although the VRI Class III land lacks the visual resource attributes of VRI Class II lands, designating the land as VRM Class II ensures future changes to visual resources are more restrictive than if the land were assigned a commensurate VRM Class III designation. This form of management acknowledges that the existing character of the landscape should receive fewer changes in the future than it did in the past in circumstances where the current land use plan designated a VRM Class

that is commensurate with the VRI Class values. Conversely, visual resources would receive less protection where VRM classes are less restrictive than VRI classes. **Table 4-7**, Summary of VRI Class by VRM Class, identifies how VRM class designations would be applied to lands with and without VRI classes for each alternative.

Livestock Grazing Management

Livestock grazing may cause secondary effects on visual resources through trampling and compaction of soils, grazing of vegetation, and channel incision. Watering areas are especially prone to disturbance, where concentrated vegetation and soil damage can occur. Structures associated with livestock grazing management (e.g., fences, stock ponds, guzzlers, cattle guards, feeding troughs) could create visual intrusions. It is unlikely that these activities or structures would degrade the scenic quality of an area so as to change the VRI class. Modifications to grazing practices to improve land health needed as a result of overgrazing would also help restore the visual quality of the area.

Geology and Mineral Management

Geology and mineral management actions identify areas open and closed to mineral development activities. Mineral development would not occur in areas that are closed, thereby preventing activities from occurring that degrade visual resources. In open areas, mineral development may be subject to BMPs or stipulations that restrict the location and types of mineral development activities.

Stipulations for fluid mineral leasing and surface-disturbing activities (i.e., NSO, CSU, and TL) would mitigate impacts on visual quality from mineral actions. Applying NSO stipulations would provide direct protection for visual resources by preventing surface occupancy and use that could alter viewsheds, vegetation, color, adjacent scenery, and cultural modifications associated with the scenic quality of an area. CSU stipulations would protect visual resources to a lesser extent because surface-disturbing activities would only have to be modified or moved to a different location. In high quality visual areas, these stipulations would provide some protection against the reclassification of areas to a lower VRI Class in the future. In general, alternatives with more acres protected by stipulations would provide more protection to high quality visual areas.

Stipulations in areas open to mineral development control activities that degrade visual resources. Mineral development involves roads, pipelines and electrical lines, and facilities. As a result, mineral development in areas managed as open to mineral development without stipulations would cause a greater impact on visual resources.

New roads would add artificial elements to undeveloped areas. Improving roads typically enhances the contrast of the road with the adjacent landscape. Roads lack vegetation and create an abrupt vegetation edge along the roadside.

Table 4-7
Summary of VRI Class by VRM Class

VRM Class by Alternative	Total Acres	VRI Class (Acreage and Percent)									
		VRI Class I		VRI Class II		VRI Class III		VRI Class IV		No VRI Class	
		0	%	**509,649**	%	**1,460,409**	%	**2,829,322**	%	**4,259**	%
Alternative A											
VRM Class I	564,100	0	0.0%	80,300	16%	299,400	21%	184,300	7%	0	0%
VRM Class II	38,300	0	0.0%	26,500	5%	11,500	1%	400	0%	0	0%
VRM Class III	320,600	0	0.0%	126,600	25%	147,500	10%	46,400	2%	232	5%
VRM Class IV	385,700	0	0.0%	56,700	11%	137,100	9%	192,000	7%	8	0%
Undesignated	3,494,900	0	0.0%	219,900	43%	864,600	59%	2,404,700	85%	3,700	94%
Alternative B											
VRM Class I	564,100	0	0.0%	80,300	16%	299,400	21%	184,300	7%	0	0%
VRM Class II	56,800	0	0.0%	7,500	1%	12,400	1%	36,800	1%	53	1%
VRM Class III	1,379,400	0	0.0%	112,800	22%	331,700	23%	934,600	33%	1	0%
VRM Class IV	2,803,000	0	0.0%	309,000	61%	816,400	56%	1,672,100	59%	3,900	99%
Alternative C											
VRM Class I	981,900	0	0.0%	81,800	16%	299,400	21%	184,300	7%	0	0%
VRM Class II	733,900	0	0.0%	158,100	31%	379,500	26%	338,200	12%	894	21%
VRM Class III	213,400	0	0.0%	49,200	10%	91,100	6%	278,700	10%	35	1%
VRM Class IV	2,874,100	0	0.0%	220,400	43%	690,000	47%	2,026,500	72%	3,000	78%
Alternative D											
VRM Class I	564,100	0	0.0%	80,300	16%	299,400	21%	184,300	7%	0	0%
VRM Class II	66,400	0	0.0%	16,000	3%	28,300	2%	21,900	1%	53	1%
VRM Class III	185,900	0	0.0%	44,900	9%	92,400	6%	48,400	2%	0	0%
VRM Class IV	3,986,900	0	0.0%	368,400	72%	1,039,900	71%	2,573,100	91%	3,900	99%
Alternative E											
VRM Class I	564,100	0	0.0%	80,300	16%	299,400	21%	184,300	7%	0	0%
VRM Class II	513,600	0	0.0%	25,300	5%	53,300	4%	109,000	4%	270	6%

Table 4-7
Summary of VRI Class by VRM Class

VRM Class by Alternative	Total Acres	VRI Class (Acreage and Percent)									
		VRI Class I		VRI Class II		VRI Class III		VRI Class IV		No VRI Class	
		0	%	**509,649**	%	**1,460,409**	%	**2,829,322**	%	**4,259**	%
VRM Class III	1,383,900	0	0.0%	133,200	26%	444,500	30%	1,016,200	36%	1	0%
VRM Class IV	2,341,700	0	0.0%	270,800	53%	662,700	45%	1,518,200	54%	3,700	93%

Source: BLM GIS 2014a, BLM GIS 2014b

Smooth roads would stand out against the moderately coarse texture of the terrain. This would affect visual resources by dividing the landscape with areas that lack vegetation, altering the natural topography, and altering the texture and color of the land surface. The visibility of the new and improved roads would vary, depending on viewer distance and location, topography, and screening vegetation.

New pipelines and electrical lines would add artificial elements to undeveloped areas. The form, line, and texture of these structures would not resemble nearby structures, unless they are co-located with similar existing structures. In particular, pipelines would divide the landscape with strips of land lacking vegetation and electrical lines would introduce prominent vertical elements. The visibility of the new pipelines and electrical lines would vary, depending on viewer distance and location, topography, color and composition of pipelines and electrical line poles, and screening vegetation.

Facilities, such as power plants, wells and pits, would add artificial elements to undeveloped areas. These areas would be cleared of vegetation, thereby leaving a clearing that contrasts with the surrounding landscape. The form, line, color, and texture of these facilities would not resemble nearby structures, unless they are co-located with similar existing industrial facilities. Also, the facilities would be sources of activity and commotion that are not typically found in undeveloped areas. The visibility of the facilities would vary, depending on viewer distance and location, topography, color and composition of facilities, and screening vegetation.

Lights would be installed for safety and to illuminate work areas at night. This would reduce nighttime darkness by adding light to areas lacking sources of artificial light. As a result, this would diminish opportunities for viewing visual resources between dusk and dawn. In particular, this would affect stargazing opportunities.

Table 4-8, Acres Open to Fluid Mineral Leasing by VRI Category, displays those lands that are open to fluid mineral leasing without year-round restrictions (i.e., not subject to NSO or CSU stipulations) by visual sensitivity, scenic quality, distance zone, and overall VRI class.

Table 4-9, Acres Open to Mineral Material Disposal by VRI Category, displays those lands that are open to mineral material disposal by visual sensitivity, scenic quality, distance zone, and overall VRI class.

Table 4-10, Acres Open to Nonenergy Mineral Leasing by VRI Category, displays those lands that are open to nonenergy mineral leasing by visual sensitivity, scenic quality, distance zone, and overall VRI class.

Table 4-8
Acres Open to Fluid Mineral Leasing by VRI Category

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VRI Class					
Class I	0	0	0	0	0
Class II	322,800	388,800	196,800	388,800	353,300
Class III	1,056,200	1,080,300	596,200	1,088,500	999,000
Class IV	2,580,600	2,560,909	1,925,700	2,584,200	2,440,000
Undesignated	2,900	2,900	2,000	2,900	2,600

Source: BLM GIS 2014a, BLM GIS 2014b

Table 4-9
Acres Open to Mineral Material Disposal by VRI Category

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VRI Class					
Class I	0	0	0	0	0
Class II	429,400	406,600	116,600	406,600	236,600
Class III	1,160,400	1,045,100	439,800	1,044,700	712,100
Class IV	2,643,400	2,538,400	1,243,900	2,538,300	2,070,514
Undesignated	3,900	3,900	2,000	3,900	3,600

Source: BLM GIS 2014a, BLM GIS 2014b

Table 4-10
Acres Open to Nonenergy Mineral Leasing by VRI Category

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VRI Class					
Class I	0	0	0	0	0
Class II	388,900	366,100	117,200	366,100	252,700
Class III	1,086,700	971,300	447,800	971,300	693,000
Class IV	2,584,200	2,479,100	1,273,900	2,479,100	2,067,500
Undesignated	2,900	2,900	2,000	2,900	2,600

Source: BLM GIS 2014a, BLM GIS 2014b

Recreation and Visitor Services

Casual recreation use generally would not impact visual resources or the visual character of the area.

Management objectives for SRMAs target the identified recreational activities which provide specific recreational outcomes (i.e., experiences and benefits). VRM classes are established to manage visual resources to achieve the targeted outcomes. VRM Classes I and II are established for SRMAs that require no or low levels of development to achieve the management objectives. VRM Classes III and IV are established for SRMAs that require more development to achieve the management objectives and, therefore, more associated alterations of the

landscape. Although the VRM classes are used to provide the appropriate setting for identified recreational activities, they also influence the management of visual resources by, for example, limiting additional landscape modifications that may diminish the appeal of recreation lands and associated recreational outcomes.

Comprehensive Travel and Transportation Management

All forms of travel (i.e., motorized, mechanized, and nonmotorized/nonmechanized) can impact visual resources. However, limiting use or travel to routes can provide a measure of assurance against trail proliferation and promote the recovery of natural processes in the area, thereby potentially maintaining scenic quality. These impacts are generally confined to the route itself. In contrast, areas open to cross-country use can affect visual resources by affecting the visual character of the entire area. Impacts on visual resources include scarring of the terrain, trampled vegetation, and fugitive dust. Impacts are most notable from motorized vehicles because routes can become noticeable after only a few passes.

Closing areas to travel (both cross-country and on designated routes) can help maintain scenic quality by preventing the types of impacts that occur from such use. Scenic quality could be improved over the long term as routes are rehabilitated. It is also possible that distance zones could change in some areas, although this is unlikely as distance zones were primarily determined based on viewsheds from major highways.

Lands and Realty

Land use authorizations such as pipelines, transmission lines, access roads, and communication sites can affect visual resources by adding cultural modifications to the landscape and creating disturbances that change the vegetation pattern in an area. Both of these can affect the color of the landscape and, in extreme cases, the landform. In addition, these types of developments have the potential to impact the viewshed of sensitive landscapes next to the area of development. The magnitude of these impacts would be the greatest where scenic quality or sensitivity is higher. Furthermore, the creation of new access roads, if needed, could affect the distance zone of the area. If development were to occur in a seldom seen area, new access roads could make the development more accessible and thus visible to the public, potentially changing the distance zone from seldom seen to background or foreground/middleground. **Table 4-11**, Acres Open to Land Use Authorizations by VRI Category, displays those lands that are open to land use authorizations without restrictions (i.e., not subject to ROW exclusion or avoidance restrictions) by visual sensitivity, scenic quality, distance zone, and overall VRI class.

Managing ROW exclusion areas would protect visual resources by prohibiting new roads, pipelines, transmission lines, communication sites, wind, solar, and

Table 4-11
Acres Open to Land Use Authorizations by VRI Category

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VRI Class					
Class I	0	0	0	0	0
Class II	429,400	243,700	108,400	250,100	215,600
Class III	1,160,600	708,900	415,400	687,200	651,742
Class IV	2,643,400	2,073,000	1,230,500	2,074,000	1,880,100
Undesignated	3,900	2,300	1,400	2,200	2,000

Source: BLM GIS 2014a, BLM GIS 2014b

geothermal development, and other land use authorizations. ROW avoidance areas would provide limited protection by requiring mitigation measures to minimize alteration of the physical setting. In other areas, utilities, such as new transmission lines, access roads, and related development, could permanently alter the visual quality of an area, especially if they do not repeat the basic elements of the landscape.

Communication facilities can impact visual resources by creating cultural modifications. In areas of low development, these types of structures often contrast with the form, line, color, or texture of the natural environment, making them more visible to the casual observer.

Renewable Energy

Solar development can impact visual resources by adding cultural modifications to the landscape (e.g., new structures, roads, and utility lines) and creating disturbances that change the vegetation pattern in an area. Both of these can affect the color of the landscape and, in extreme cases, the landform. The magnitude of these types of impacts would be the greatest where scenic quality or sensitivity is higher. In addition, these types of developments have the potential to impact the viewshed of sensitive landscapes next to the area of development. Furthermore, the creation of new access roads, are needed, could affect the distance zone of the area. If development were to occur in a seldom seen area, new access roads could make the development more accessible and thus visible to the public, potentially changing the distance zone from seldom seen to background or foreground/middleground.

Variance areas for utility-scale (greater than 20 megawatts) solar development are areas that have not been identified as exclusion areas for such development activities. Proposed utility-scale solar development in variance areas must go through a process to minimize impacts on resources, including visual resources. In the CCD, the fewer acres of variance areas mean more acres of exclusion areas for utility-scale solar. This would protect visual resources from such development. **Table 4-12**, Solar Variance Areas by VRI Category, displays those lands that could be available for utility-scale solar development subject to the

Table 4-12
Solar Variance Areas by VRI Category (acres)

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VRI Class					
Class I	0	0	0	0	0
Class II	46,100	39,300	19,000	25,600	24,000
Class III	141,700	112,500	65,900	84,500	82,600
Class IV	716,200	619,900	492,500	560,600	522,700
Undesignated	1,300	1,200	500	800	800

Source: BLM GIS 2014a, BLM GIS 2014b

variance process a by visual sensitivity, scenic quality, distance zone, and overall VRI class.

The types of effects from wind development are similar to those caused by solar development. Managing ROW exclusion areas for wind would protect visual resources by prohibiting such development, including ancillary facilities such as roads and transmission lines. Managing ROW avoidance areas for wind would provide limited protection to visual resources by requiring mitigation measures to minimize alteration of the physical setting. In areas outside of avoidance areas, wind energy development facilities could permanently alter the visual quality of an area, especially if they do not repeat the basic elements of the landscape. **Table 4-13**, Acres Open to Wind Energy Development by VRI Category, displays those lands that are open to wind energy development without restrictions (i.e., not subject to exclusion or avoidance restrictions) by visual sensitivity, scenic quality, distance zone, and overall VRI class.

Table 4-13
Acres Open to Wind Energy Development by VRI Category

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
VRI Class					
Class I	0	0	0	0	0
Class II	509,600	331,900	187,500	325,000	273,500
Class III	1,460,004	874,000	591,600	858,200	773,800
Class IV	2,827,715	2,373,600	2,004,200	2,388,500	2,166,000
Undesignated	3,900	3,900	3,000	3,900	3,600

Source: BLM GIS 2014a, BLM GIS 2014b

Areas of Critical Environmental Concern

In general, ACECs would provide incidental protection for visual resources through restrictions on surface-disturbing activities that would affect the relevant and important values for which the ACEC is designed to protect. In cases where the relevant and important values of a potential ACEC include a scenic value, visual resources would be directly protected in that area. In addition, the viewsheds of adjacent lands would be protected, helping to preserve the scenic quality in those areas.

Wild and Scenic Rivers

Pending congressional action, interim protective management is applied to stream segments as eligible or suitable for inclusion in the NWSRS to protect the streams' free-flowing nature, outstandingly remarkable values, and water quality. Development and activities along stream segments classified as wild or scenic are limited in order to maintain stream segment values and to minimize disturbances to the character of the landscape. Furthermore, the BLM would manage stream segments with an identified scenic outstandingly remarkable value to protect such value. Therefore, visual resources along eligible or suitable stream segments would be maintained and, possibly, enhanced.

Visual Resources: Effects from Climate Management

Effects Common to All Alternatives

All of the alternatives would comply with air quality standards and regulations. The intent of this is to preserve air quality and minimize changes to the climate, thereby preserving typical temperatures and water availability. Such impacts would be over the long term and would be similar across the alternatives.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Visual Resources: Effects from Vegetation Resources

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A does not contain actions for forest and woodlands management involving removal or thinning of trees within pinyon-juniper areas. Impacts on VRM from vegetation management would be identified based on site-specific proposals and NEPA analysis. Actions for restoration and rehabilitation of burned or WUI areas are driven by current BLM policy and the ESR handbook on a case-by-case bases. Alternative A contains minimal actions for controlling invasive species and noxious weeds. The BLM, however, would continue to

assign priority ranking of weed projects based on degree of infestation, location, resource availability, and resources at risk. Impacts on visual settings would slowly increase overtime and to varying degrees subject to management of existing VRI classes.

Effects under Alternative B

Under Alternative B, the BLM would thin and remove more acres of trees in pinyon-juniper areas than any other alternative. The BLM would prevent cheatgrass and other invasive species from dominating burned areas and altering the natural fire regime. The BLM would assign priority ranking of weed projects with a focus on areas with existing and new surface disturbance. Compared to Alternative A, Alternative B would allow for more harvesting of trees (20,000 acres), conduct more restoration of burned areas, and remove more invasive species and noxious weeds in the areas of resource uses. This alternative would cause the potential for the most impacts on visual settings as more acres would be treated. Impacts would dependent on location of treatments and VRM class management.

Effects under Alternative C

Under Alternative C, the BLM would thin and remove fewer acres of trees in pinyon-juniper areas than any other alternative (3,500 acres) and would design and implement ESR treatments for high value wildlife habitat. This alternative would assign priority ranking of weed projects with a focus on priority fish and wildlife habitats. Compared to Alternative A, Alternative C would allow for more harvesting of trees, conduct more restoration and rehabilitation of burned areas with high value wildlife habitat, and remove more invasive species and noxious weeds in the areas with priority fish and wildlife habitats. Potential impacts on the visual setting would be higher than under Alternative A.

Effects under Alternative D

Under Alternative D, the BLM would engage interested parties to develop a comprehensive restoration strategy prior to further treatment of pinyon-juniper woodlands. The BLM would design and implement ESR treatments to protect WUI areas from subsequent wildfires by using fire resistant species. The BLM would assign priority ranking of weed projects with a focus on the urban interface and recreation areas. Compared to Alternative A, Alternative D may allow for more harvesting of trees (depending on the comprehensive restoration strategy), would conduct more restoration and rehabilitation of WUI areas, and would remove more invasive species and noxious weeds in the urban interface and recreation areas. Impacts on the visual setting would be dependent on the number of acres identified for treatment and treatment locations as they relate to VRM management.

Effects under Alternative E

Under Alternative E, the BLM would thin and remove trees in pinyon-juniper areas. The BLM would design and implement ESR treatments to protect WUI

areas, improve high value wildlife habitat, and prevent invasive species dominance. The BLM would assign priority ranking of weed projects based on degree of infestation, location, and resource availability. Compared to Alternative A, Alternative E would allow for more harvesting of trees (8,500 acres), conduct more restoration and rehabilitation of both WUI areas and high value wildlife habitat, and continue to remove invasive species and noxious weeds (but based on fewer criteria). Potential impacts on visual settings would be greater than under Alternatives A, C, and D.

Visual Resources: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Under Alternative A, the BLM would continue to manage wildfires according to Category A, B, C, or D designation of an area. The categories vary in the number of acres a fire is allowed to burn. Depending on location, the number of acres is 10 acres, 25 acres, 2,000 acres, or unspecified. There would be no new impacts on visual resources.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Under Alternative B, a full range of fire management activities (as outlined in the fire management plan) and options would be utilized to protect all identified values at risk. The BLM would utilize wildfire, prescribed fire, and nonfire fuels treatments to modify vegetation communities to achieve condition class, fuels, habitat, watershed, and riparian objectives. Compared to Alternative A, Alternative B would increase the use of fuels treatments, especially to meet habitat, watershed, and riparian objectives. The potential for impacts on visual settings would be subject to treatment location and VRM management class.

Effects under Alternative C

Under Alternative C, minimum impact suppression tactics would apply, whereby the environmental impacts of emergency fire management methods would be no greater than necessary to meet fire management objectives. The use of dozers would only be authorized when there is a threat to public safety or property damage. Chemical agents would not be allowed for suppression activities. The BLM would design and implement fuels treatments that would maintain, protect, and expand healthy resilient vegetative ecosystems. Compared to Alternative A, Alternative C would decrease the use of fire suppression tactics in some instances, depending on the nature and location of the fire, due to employing minimum impact suppression tactics. It would also increase the use of fuels treatments for all habitats in order to develop resilient vegetative ecosystems. Management actions that restrict suppression activities would reduce disturbance from suppression operations but would also increase the potential

for large fires. Large fires would increase the potential for impacts on visual setting.

Effects under Alternative D

Alternative D would be the same as Alternative B with respect to the range of fire management activities and options to protect all identified values at risk. The BLM would design and implement fuels treatments that would create fire safe communities resistant to catastrophic wildfire events. Compared to Alternative A, Alternative D would prioritize fire suppression tactics and increase the use of fuels treatments to protect communities. Impacts on visual settings would occur near urban interface areas from fuel treatments. Suppression activities should be more efficient near these areas which would reduce the size of burned areas reducing visual setting impacts. Areas outside of the urban interface maybe more prone large fire as fire near urban areas would have a higher priority.

Effects under Alternative E

Under Alternative E, a full range of fire management activities and options would be utilized to protect all values at risk and sustain healthy ecosystems within acceptable risk levels. Local agency administrators and resource advisors would convey protection priorities to incident commanders. The BLM would utilize wildfire, prescribed fire, and nonfire fuels treatments to create fire safe communities and modify vegetation communities to achieve condition class, fuels, habitat, watershed, and riparian objectives. Compared to Alternative A, Alternative E would apply the full range of suppression tactics providing input on protection priorities. It would also increase the use of fuels treatments, especially to protect communities and meet habitat, watershed, and riparian objectives. Impacts on visual settings would be less, as wildfires would be more effectively controlled. Fuelbreaks would create linear visual intrusions to settings. However, fuelbreaks would also reduce the potential for wildfire to spread which would reduce large areas impacted by fire and reduce impacts on the visual setting.

Visual Resources: Effects from Visual Resources Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, the BLM would continue to manage visual resources according to existing VRM class designations. This means that 3,494,900 acres would continue to lack a VRM class designation. As a result, there would continue to be the potential for activities to degrade the visual quality of the lands lacking a VRM class designation. This concern would remain greatest for the 358,900 acres of VRI Class II and III lands. There would be no new impacts on visual resources.

Effects under Alternative B

Alternative B would improve the management of visual resources by assigning a VRM class to all BLM-administered lands. However, 83 percent of VRI Class II lands would be designated as VRM Class III or IV lands. This would allow the visual quality of lands containing the most valued visual resources to degrade. For comparison, this same situation would only occur for 36 percent of the VRI Class II lands under Alternative A.

Under Alternative B, 56 percent of the VRI Class III lands would be designated as VRM Class IV. This would allow the visual quality of VRI Class III to degrade. For comparison, this same situation would only occur for 9 percent of the VRI Class III lands under Alternative A.

Effects under Alternative C

Alternative C would improve the management of visual resources by assigning a VRM class to all BLM-administered lands. However, 53 percent of VRI Class II lands would be designated as VRM Class III or IV lands. This would allow the visual quality of lands containing the most valued visual resources to degrade. For comparison, this same situation would only occur for 36 percent of the VRI Class II lands under Alternative A.

Under Alternative C, 47 percent of the VRI Class III lands would be designated as VRM Class IV. This would allow the visual quality of VRI Class III to degrade. For comparison, this same situation would only occur for 9 percent of the VRI Class III lands under Alternative A.

Effects under Alternative D

Alternative D would improve the management of visual resources by assigning a VRM class to all BLM-administered lands. However, 81 percent of VRI Class II lands would be designated as VRM Class III or IV lands. This would allow the visual quality of lands containing the most valued visual resources to degrade. For comparison, this same situation would only occur for 36 percent of the VRI Class II lands under Alternative A.

Under Alternative D, 71 percent of the VRI Class III lands would be designated as VRM Class IV. This would allow the visual quality of VRI Class III to degrade. For comparison, this same situation would only occur for 9 percent of the VRI Class III lands under Alternative A.

Alternative D contains the smallest percentage of VRI Class IV lands that have been designated as VRM Class I, II, or III. This demonstrates the intent to allow the scenic quality on these VRI Class IV lands to be subject to further alteration.

Effects under Alternative E

Alternative E would improve the management of visual resources by assigning a VRM class to all BLM-administered lands. However, 79 percent of VRI Class II lands would be designated as VRM Class III or IV lands. This would allow the

visual quality of lands containing the most valued visual resources to degrade. For comparison, this same situation would only occur for 36 percent of the VRI Class II lands under Alternative A.

Under Alternative E, 45 percent of the VRI Class III lands would be designated as VRM Class IV. This would allow the visual quality of VRI Class III to degrade. For comparison, this same situation would only occur for 9 percent of the VRI Class III lands under Alternative A.

Alternative E contains the highest percentage of VRI Class IV lands that have been designated as VRM Class I, II, or III. This demonstrates the intent to protect the scenic quality on these VRI Class IV lands from further alteration.

Visual Resources: Effects from Livestock Grazing Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, the BLM would continue to manage 4,796,600 acres as available for livestock grazing. Impacts on visual resources would continue as described directly above. There would be no new impacts on visual resources.

Effects under Alternative B
Under Alternative B, the BLM would manage 4,797,200 acres as available for livestock grazing, approximately the same number as Alternative A. Consequently, impacts on visual resources would be similar to Alternative A.

Effects under Alternative C
Under Alternative C, the BLM would manage 2,101,300 acres available for livestock grazing. Impacts on visual resources would continue as described under Alternative A, except fewer acres would experience impacts.

Effects under Alternative D
Under Alternative D, the BLM would manage 4,792,600 acres as available for livestock grazing, which is only slightly less than Alternative A. Consequently, impacts on visual resources would be similar to Alternative A.

Effects under Alternative E
Under Alternative E, the BLM would manage 4,797,200 acres as available for livestock grazing, which is only slightly more than Alternative A. Consequently, impacts on visual resources would be similar to Alternative A.

Visual Resources: Effects from Geology and Mineral Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A

Alternative A maintains 839,100 acres closed to fluid mineral leasing, 564,200 acres would be managed as closed to mineral material disposal, and 738,800 acres closed to nonenergy mineral leasing. Alternative A closes 194,900 acres to locatable mineral entry and would pursue withdrawal of 3,700 acres from operation of locatable minerals. Closed and withdrawn areas would reduce the potential disturbance from exploration and development of mineral resources and would provide protection to visual settings.

Effects under Alternative B

Alternative B proposes to close 768,500 acres to fluid mineral leasing, 807,200 acres would be managed as closed to mineral material disposal, and 981,900 acres closed to nonenergy mineral leasing. Alternative B closes 194,900 acres to locatable mineral entry and proposes withdrawal of 439,600 acres from operation of locatable minerals. Closed and withdrawn areas would reduce the potential disturbance from exploration and development of mineral resources and would provide protection to visual settings. Fewer impacts would occur to visual settings compared to alternative A.

Effects under Alternative C

Alternative C would close 2,081,700 acres to fluid mineral leasing, 3,004,800 acres would be managed as closed to mineral material disposal, and 2,960,800 acres closed to nonenergy mineral leasing. Alternative C closes 194,900 acres to locatable mineral entry and proposes withdrawal of 117,500 acres from operation of locatable minerals. Closed and withdrawn areas would reduce the potential disturbance from exploration and development of mineral resources and would provide protection to visual settings. This alternative would provide the highest number of acres with mineral restrictions affording the highest level of protection to visual resources.

Effects under Alternative D

Alternative D would close 737,000 acres to fluid mineral leasing, 807,700 acres would be managed as closed to mineral material disposal, and 981,900 acres closed to nonenergy mineral leasing. Alternative D would also close 194,900 acres to locatable mineral entry and proposes withdrawal of 440,800 acres from operation of locatable minerals. Closed and withdrawn areas would reduce the potential disturbance from exploration and development of mineral resources and would provide protection to visual settings. Impacts would be similar to Alternative C except more acres would be proposed for withdrawal under locatable minerals.

Effects under Alternative E

Alternative E, proposes 1,007,200 acres closed to fluid mineral leasing, 1,778,700 acres would be managed as closed to mineral material disposal, and 1,785,900 acres closed to nonenergy mineral leasing. Alternative E closes 194,900 acres to locatable mineral entry and proposes withdrawal of 470,600

acres from operation of locatable minerals. Closed and withdrawn areas would reduce the potential disturbance from exploration and development of mineral resources and would provide protection to visual settings. This alternative provides greater protection of visual resources compared to Alternative A but fewer compared to the other Alternative C.

Visual Resources: Effects from Recreation and Visitor Services

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be 67,700 acres of SRMAs and 0 acres of ERMAs. Although there are only two SRMAs, other recreation activities in unofficial recreation areas occur in the planning area. When not properly planned and managed, unofficial recreation areas (such as in the urban interface areas) can create unintended impacts on visual resources. Depending on the type and location of this recreation, loss of vegetation, litter, or scarring of the terrain can occur, thereby degrading the scenic quality in unofficial recreation areas. There would be no new impacts on visual resources other than what is occurring under current management.

Effects under Alternative B
Under Alternative B, there would be six SRMAs (totaling 76,100 acres) and eight ERMAs (totaling 1,678,320 acres). Compared to Alternative A, there would be a notable increase in the number of ERMA acres. The impacts on visual resources would be concentrated in these areas. Designating specific recreation management areas and enforcing proper use of the recreation management areas would alleviate impacts on visual resources in unofficial recreation areas (such as in the urban interface areas).

Effects under Alternative C
Under Alternative C, there would be three SRMAs (totaling 74,700 acres) and 15 ERMAs (totaling 1,528,760 acres). Compared to Alternative A, there would be a notable increase in the number of ERMA acres. The impacts on visual resources would be concentrated in these areas. Designating specific recreation management areas and enforcing proper use of the recreation management areas would alleviate impacts on visual resources in unofficial recreation areas (such as in the urban interface areas).

Effects under Alternative D
Under Alternative D, there would be four SRMAs (totaling 67,100 acres) and six ERMAs (totaling 292,610 acres). Compared to Alternative A, there would be an increase in the number of ERMA acres. The impacts on visual resources would be concentrated in these areas. Designating specific recreation management areas and enforcing proper use of the recreation management areas would

alleviate impacts on visual resources in unofficial recreation areas (such as in the urban interface areas).

Effects under Alternative E

Under Alternative E, there would be six SRMAs (totaling 106,120 acres) and 15 ERMAs (totaling 2,085,730 acres). Compared to Alternative A, there would be a notable increase in the number of ERMA acres. The impacts on visual resources would be concentrated in these areas. Designating specific recreation management areas and enforcing proper use of the recreation management areas would alleviate impacts on visual resources in unofficial recreation areas (such as in the urban interface areas).

Visual Resources: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, most of the decision area is open to cross-country travel, resulting in the highest impacts on visual resources. A small number of places are closed to motorized or mechanized travel and visual resources would be maintained to a certain degree in these areas.

Effects under Alternatives B, C, D, and E

Under the action alternatives, only select areas would be managed as open to cross-country travel, reducing the impact from such use throughout the decision area. Instead, travel throughout most of the decision area would be limited to existing roads, primitive roads, and trails until subsequent route designation occurs. More areas would also be closed to motorized or mechanized travel under each of the action alternatives compared to Alternative A. The *Nature and Types of Effects* would be the same under all alternatives, though the potential magnitude varies.

Visual Resources: Effects from Lands and Realty

Effects Common to All Alternatives

Locating utilities in designated utility corridors would concentrate surface-disturbing activities in the corridors. Correspondingly, impacts on visual resources would be concentrated in these locations instead of dispersed across the landscape.

Effects under Alternative A

Alternatives A and D have the fewest ROW exclusion acres. Alternative A has the fewest ROW avoidance acres. Most lands in the planning area are available for land use authorizations without restrictions (i.e., not in ROW avoidance or exclusion areas). Only WSAs are managed as ROW exclusion areas due to the

nonimpairment standard for these areas. Potential for impacts would be the greatest under this alternative. There would be no new impacts on visual resources.

Effects under Alternative B
Alternative B has more acres managed as ROW avoidance than Alternatives A and C, but fewer than Alternatives D and E. Alternatives B, D, and E would reduce the number of VRI Class II and III acres that are open to ROWs.

Effects under Alternative C
Alternative C has the most ROW exclusion acres. Alternative C would reduce the most VRI Class II and III acres that are open to ROWs.

Effects under Alternative D
Alternatives A and D have the fewest ROW exclusion acres. Alternatives B, D, and E would reduce the number of VRI Class II and III acres that are open to ROWs.

Effects under Alternative E
Alternatives B, D, and E would reduce the number of VRI Class II and III acres that are open to ROWs.

Visual Resources: Effects from Renewable Energy (Wind and Solar)

Effects Common to All Alternatives
While WSAs are not specifically exclusion areas for renewable energy, managing them according to the nonimpairment standard would essentially preclude wind or solar development from occurring, protecting visual resources in these areas.

Effects under Alternative A
Under Alternative A, the most acres would be available for renewable energy development. No areas would be restricted from wind energy development and the most acres would be available for utility-scale solar development subject to the variance process.

Effects under Alternatives B, C, D, and E
Under the action alternatives, fewer acres would be available for renewable energy development than under Alternative A. The *Nature and Types of Effects* would be the same under all alternatives, though the potential magnitude varies. Fewer acres would be identified as variance areas for utility-scale solar development, meaning more acres would be identified as exclusion areas. The reduction in variance area from Alternative A would be due to additional proposed ACECs, SRMAs, ROW avoidance and exclusion areas, NSO stipulations, and VRM Class I and II areas. Under Alternatives B, D, and E, no areas would be excluded from wind energy development but areas would be identified as avoidance areas for such development. Under Alternative C, the Virginia City National Landmark Historic District ACEC would be an exclusion

area for wind energy development and other areas would be identified as avoidance areas for such development.

Visual Resources: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
The nature and types of incidental effects would be similar under all alternatives. The magnitude of the impact would vary by the number and size of ACECs proposed for designation under each alternative.

The Incandescent Rocks Scenic ACEC would remain an ACEC under each alternative and would continue to be managed according to VRM Class II objectives. The objective of this class is to *retain* the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Effects under Alternatives A, B, D, and E
Except for the Incandescent Rocks Scenic ACEC, no potential ACECs have a scenic relevant and important value. Impacts under Alternatives A, B, D, and E are described under *Effects Common to All Alternatives*.

Effects under Alternative C
In addition to the Incandescent Rocks Scenic ACEC, the Lassen Red Rock Scenic ACEC would be designated to protect scenic values. The BLM would manage the area as VRM Class II; impacts would be the same as those described for the Incandescent Rocks Scenic ACEC.

Visual Resources: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, the BLM would manage eligible stream segments to protect the streams' free-flowing nature, outstandingly remarkable values, and water quality. All segments have a scenic outstandingly remarkable value, so visual resources would be protected within the study corridors.

While no specific allocations are identified for each segment, the East Fork of the Carson River Segment 1 is within the Carson-Iceberg WSA which is managed according to VRM Class I objectives and also precludes most new surface-disturbing activities that might impact visual resources. As long as the WSA remains in place, visual resources would be protected in the study corridor of this segment.

Effects under Alternative B

Under Alternative B, all eligible stream segments would be determined not suitable for inclusion in the NWSRS and would be released from interim protective management. Visual resources would not receive protection within the study corridors under this alternative.

Effects under Alternative C

Like under Alternative A, the BLM would manage suitable stream segments to protect the streams' free-flowing nature, outstandingly remarkable values, and water quality. All segments have a scenic outstandingly remarkable value, so visual resources would be protected within the study corridors. Impacts on visual resources along the East Fork of the Carson River Segment 1 would be the same as those identified for Alternative A.

The BLM would manage the East Fork of the Carson River Segments 2 and 3 as VRM Class II, which allows for low levels of changes to retain the existing character of the landscape. While the recreational tentative classification along the East Fork of the Carson River Segment 2 would allow for more development than the other two segments, any such activities must meet VRM Class II objectives so the landscape is expected to remain similar to current levels.

Effects under Alternative D

Impacts would be similar to those described for Alternative C. However, the BLM would manage the East Fork Carson River Segment 2 as VRM Class III. This would allow moderate levels of changes to partially retain the existing character of the landscape. Because the tentative classification of the segment is recreational, more development would be allowed that could impact the visual quality of the landscape within the study corridor. The BLM would manage the East Fork Carson River Segment 3 for a recreational classification. This would allow more development than the scenic classification identified under Alternative C. However, the BLM would manage the area as VRM Class II, like Alternative C, so impacts on visual resources are expected to be similar.

Effects under Alternative E

Impacts would be the same as those identified for Alternative C.

Visual Resources: Cumulative Effects

Past and Present Actions

Projects and activities identified as having the greatest likelihood to generate potential cumulative impacts when added to the RMP alternatives are displayed in **Table 4-1**, Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Make up the Cumulative Impact Scenario. Of the items in the table, the following past and present topics involve the most notable impacts on visual resources:

- Energy and minerals development
- Renewable energy
- Vegetation management
- Livestock grazing
- Recreation and visitor use
- Invasive/non-native species and noxious weeds
- Wildland fire management

These topics generally involve surface disturbances or the construction of roads, infrastructure, and facilities, all of which affect visual resources as described above under *Nature and Types of Effects*.

Additionally, the present VRM classifications throughout the planning area do not adequately reflect the visual quality of the region and mitigation standards and design alternatives are not sufficiently outlined in the Consolidated RMP or subsequent activity plans. Approximately 3,494,900 acres lacks VRM Class objectives for managing visual resources. This can threaten the integrity of visual resources.

Reasonably Foreseeable Actions

The topics discussed above under Past and Present Actions are expected to continue to affect visual resources. With respect to impact of visual resources, the following are anticipated to represent the most prominent concerns: unauthorized dispersed recreation uses (such as in the urban interface), travel corridors, popular recreation sites, areas with multiple or conflicting resource use demands, mineral and energy development, and wildland fire management.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Incremental cumulative impacts would be similar for Alternatives B, D, and E. Alternative A would have more incremental cumulative impacts, because of the lack of VRM class management objectives for 3,494,900 acres. Alternative C would have fewer incremental cumulative impacts, because of the greater number of acres of VRM Class I and II lands, ROW exclusion lands, ACECs, and WSRs, all of which would limit opportunities for actions to have cumulative impacts that degrade visual resources.

4.3.12 Lands with Wilderness Characteristics

This section discusses impacts on lands with wilderness characteristics from proposed management actions of other resources and resource uses. Existing conditions are described in **Section 3.2.12**, Lands with Wilderness Characteristics.

Summary

Actions for managing areas identified as having lands with wilderness characteristics apply under Alternatives C and E only. Under Alternatives C and E, the actions outlined for management of these areas would provide protection for the indicators of wilderness characteristics by limiting or closing activities and development within these areas. Although the inventoried lands would not be managed for lands with wilderness characteristics under Alternatives A, B, or D, effects were analyzed to represent the management actions of overlapping resources such as ACECs and VRM, which have actions that will impact or protect wilderness characteristics in these areas.

Methods of Analysis

Methods and Assumptions

There are currently no lands being managed for wilderness characteristics outside of existing WSAs in the planning area. An updated inventory for wilderness characteristics was performed by the BLM, and a draft report will be available fall of 2014. 12 units within the planning area were inventoried for wilderness characteristics totaling 416,500 acres. Alternatives A, B, and D would not be managed to maintain wilderness characteristics on any of these acres, but Alternative C would be managed to maintain wilderness characteristics in all 416,500 acres within the 12 inventoried units and Alternative E would be managed to maintain wilderness characteristics on 332,600 acres within 8 units. See **Section 3.2.12**, Lands with Wilderness Characteristics.

Assumptions

- Use and development of BLM-administered lands will increase into the foreseeable future.
- The proposed management prescribed for an area with wilderness characteristics would protect the qualities that are associated with the area.
- Any proposed action within an area to be managed as having wilderness characteristics would be processed in accordance with the policies stated in BLM Manual 6320 (BLM 2012c).
- Wilderness characteristics would be protected in the long term from management actions that include vegetation treatments. These treatments improve ecosystem composition, structure, and diversity, which would improve the overall apparent naturalness of the area. In the short term, however, wilderness characteristics would be impacted due to an increase in human presence and vehicle and road use.

Management for the following resources would not result in an effect on lands with wilderness characteristics: air quality management, climate management, soil and water resources, fish and wildlife management, special status species

management, wildland fire ecology and management, cultural resources management, paleontological resources management, caves and cave resources, forestry and woodland product management, backcountry byways, national trails, wild and scenic rivers, wilderness study areas, backcountry wildlife conservation areas, tribal interests, public health and safety, interpretation and environmental education, socio and economic conditions, environmental justice, and facilities and transportation maintenance.

Indicators

Lands with wilderness characteristics are parcels that meet a size requirement of 5,000 roadless acres (or exception criteria) and contain naturalness and either outstanding opportunities for solitude or primitive and unconfined recreation. In addition, they may also possess supplemental values (e.g., ecological, geological, or other features of scientific, educational, scenic, or historical value). They are identified through a process described in BLM Manual 6310 – Conducting Wilderness Characteristics Inventory on BLM Lands (BLM 2012b), and considered in the land use planning process under BLM Manual 6320 – Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process (BLM 2012c).

Indicators used in the lands with wilderness characteristics analysis include the following:

- Size: A parcel inventoried for lands with wilderness characteristics must be a roadless area with over 5,000 acres of contiguous BLM-administered lands. This acreage determination does not include state or private lands within the parcel. Some exceptions apply, as described in BLM Manual 6310 (BLM 2012b).
- Naturalness: Lands and resources exhibit a high degree of naturalness, are affected primarily by the forces of nature, and are areas where the imprint of human activity is substantially unnoticeable.
- Outstanding opportunities for solitude: The ability for visitors to have outstanding opportunities for solitude is impacted by the sights, sounds, and evidence of other people. Outstanding opportunities for solitude exist when these impacts are rare or infrequent and where visitors can be isolated, alone, or secluded from others.
- Outstanding opportunities for primitive and unconfined types of recreation: Visitors may have outstanding opportunities for primitive and unconfined types of recreation where the use of the area is through nonmotorized, nonmechanical means, and where no or minimal developed recreation facilities are encountered.
- Supplemental Values: Although not necessary for an area to contain wilderness characteristics, when an areas updated wilderness

inventory is being performed if the following features are found they will be noted: ecological, geological, or other features of scientific, educational, scenic, or historical value that may enhance the characteristics of the area.

Nature and Type of Effects

BLM-administered lands possessing the above values may be managed to maintain some or all of those characteristics. Wilderness characteristics such as solitude, primitive recreation, and naturalness are a part of the land use planning process and will be evaluated and addressed along with all other resource values and uses.

In general, wilderness characteristics conditions tend to be more qualitative in nature, measured by the overall visual quality and naturalness of an area that may be affected by changes to levels of recreational activities, development, and surrounding land use. Indicators that can quantitatively be measured include changes to the frequency and number of routes, including the number of unauthorized trails, the number of encounters with other users, and increased requests for use of areas with wilderness characteristics for renewable or nonrenewable resource development.

Areas to be managed to protect wilderness characteristics should retain a high degree of naturalness where the imprint of humans on lands and resources is substantially unnoticeable. Furthermore, outstanding opportunities for solitude and primitive or unconfined types of recreation should be maintained or enhanced.

Lands with Wilderness Characteristics: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

Impacts on apparent naturalness from wild horse and burro management in HMAs and HAs would occur due to soil compaction and browsing into defined areas. This would concentrate such impacts as noxious weed invasion and plant reduction in certain areas.

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. There are currently178,900 acres of HA and 177,600 acres of HMA within areas inventoried for lands with wilderness characteristics. Impacts would be the same as those described under *Effects Common to All Alternatives.*

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. There would be 178,900 acres of HA and 143,200 acres of HMA within inventoried lands with wilderness characteristics. Impacts

would be similar to Alternative A, but less in degree due to fewer acres being managed as HMA.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. There would be 178,900 acres of HA and 173,400 acres of HMA within inventoried lands with wilderness characteristics. Impacts would be similar to Alternative A, but less in degree due to fewer acres being managed as HMA.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. There would be 178,900 acres of HA and 143,200 acres of HMA within inventoried lands with wilderness characteristics. Impacts would be the same as Alternative B.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. There would be 178,900 acres of HA and 173,400 acres of HMA within inventoried lands with wilderness characteristics. Impacts would be the same as Alternative C.

Lands with Wilderness Characteristics: Effects from Lands with Wilderness Characteristics

Effects Common to All Alternatives

Management of lands with wilderness characteristics would prevent surface disturbance activities in certain areas within the CCD. However, these management actions would impact vegetation improvement treatments on these lands, which would have impacts similar to those described under Methods and Assumptions. Lands with wilderness characteristics would only be managed to protect those characteristics on 416,500 acres in Alternative C and 332,600 acres in Alternative E. The other alternatives include limitations and restrictions based on other resources that occur in these areas, but lands would not be specifically managed for wilderness characteristics for under Alternatives A, B, or D.

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. The areas inventoried for wilderness characteristics would be managed for multiple use and sustained yield which would allow for some human disturbances throughout the landscape.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics, and impacts would be similar to Alternative A

Effects under Alternative C

Alternative C would provide the greatest protection for lands with wilderness characteristics by specifically managing 416,500 acres to protect wilderness characteristics and implementing restrictions and stipulations in these areas, including managing as VRM Class I and closures to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. Any potential new ROWs and maintenance of existing facilities would be evaluated and managed as ROW avoidance areas. Areas within the lands with wilderness characteristics would be managed as ROW exclusion zones for utility-scale renewable energy.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics, and impacts would be similar to Alternative A.

Effects under Alternative E

Alternative E would provide protection similar to Alternative C, but to a slightly lesser degree due to fewer acres being managed with a VRM Class II objective and fluid mineral leasing being managed with an NSO stipulation. Any potential new ROWs and maintenance of existing facilities would be managed as ROW avoidance areas.

Lands with Wilderness Characteristics: Effects from Visual Resources

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. Lands within the inventoried areas are currently managed with 10,500 acres of VRM Class II objectives, 54,700 acres of VRM Class III objectives, and 43,400 acres of VRM Class IV objectives. The VRM Class II designation would allow for greater retention of the existing naturalness with minimal changes to the landscape, while the VRM Class III and Class 4 designation areas would allow for a greater change in the landscape, which would allow a higher range of disturbances that impact the overall apparent naturalness of the area.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. Lands within the inventoried areas would be managed with 9,200 acres of VRM Class II, 201,000 acres of VRM Class III, and 206,000 acres of VRM Class IV. The VRM Class II designation would allow for retention of the existing naturalness with minimal changes to the landscape, while the VRM Class III and Class IV designation areas would allow for a greater change in the landscape which would allow a higher range of disturbances that impact the overall apparent naturalness of the area. Apparent naturalness would be impacted considerably more under this alternative when compared to Alternative A because more acreage would be managed as VRM Class III and VRM Class IV.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 416,300 acres as VRM Class I, which would allow a low level of changes to the landscape and offer the most protection from impacts on apparent naturalness than any other alternative.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. However, the BLM would manage 1,100 acres as VRM Class II and 415,000 acres as VRM Class IV. The VRM Class II designation would allow for retention of the existing naturalness with minimal changes to the landscape, while the VRM Class IV areas would allow for a greater change in the landscape which would allow a higher range of disturbances that impact the overall apparent naturalness of the area. Apparent naturalness would be impacted considerably more under this alternative when compared to Alternative A because more acreage would be managed as VRM Class IV.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 340,600 acres as VRM Class II and 43,100 acres as VRM Class III, which would only allow for minimal to moderate changes to the landscape and offer more protection from impacts on apparent naturalness when compared to Alternative A.

Lands with Wilderness Characteristics: Effects from Geology and Minerals

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. Under Alternative A, 402,600 acres within inventoried lands are managed as open to each of the following uses: fluid minerals, mineral material disposal and nonenergy leasing. The degree of impact would depend on the type and intensity of development, but any surface-disturbing activities are expected to lower the apparent naturalness and any outstanding opportunities for solitude and primitive and unconfined recreation.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. Under Alternative B, 402,600 acres within inventoried lands would be managed as open to fluid minerals. The BLM would manage 341,400 acres as open to mineral material disposal and 74,800 acres as closed to mineral material disposal. The BLM would also manage 327,800 acres as open to nonenergy leasing and 88,400 acres as closed to nonenergy leasing. The BLM would apply CSU stipulations to leases on 244,500 acres and NSO stipulations to leases on 67,000 acres. Impacts would be similar to Alternative A, but to a lesser degree due to the acres closed to development and restrictions on surface disturbance from the CSU and NSO stipulation.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 416,300 acres within inventoried lands as closed to fluid minerals, mineral material disposal, and nonenergy leasing. This alternative would offer the most protection to apparent naturalness and opportunities for solitude and primitive types of recreation due to the restrictions on these surface disturbing activities.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. This alternative would allow for 402,600 acres within inventoried lands to be managed as open to fluid minerals. The BLM would also manage 341,400 acres as open to mineral material disposal and 74,800 acres as closed to mineral material disposal. The BLM would manage 327,800 acres as open to nonenergy leasing and 88,400 acres as closed to nonenergy leasing. The BLM would apply CSU stipulations to leases on 223,700 acres and NSO stipulations to leases on 137,900 acres. Impacts would be similar to those in Alternative B but slightly less due to more acres being managed with a NSO stipulation.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 384,500 acres as open and 31,800 acres as closed to fluid minerals. The BLM would manage 184,800 acres as closed to mineral material disposal and 356,600 acres as closed to nonenergy leasing. The BLM would apply CSU stipulations to leases on 212,900 acres and NSO stipulations to 350,000 acres. Impacts would be similar to those in Alternative B but considerably less due to more acres being managed with NSO stipulations.

Lands with Wilderness Characteristics: Effects from Livestock Grazing

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. Under Alternative A, the BLM would manage 416,300 acres as available to livestock grazing. Fences, stock trails, springs, and stock ponds that need to be maintained will impact the apparent naturalness and opportunities for solitude and primitive recreation due to structures and access routes facilitating these human developments used for livestock grazing.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. Under Alternative B, the BLM would manage 416,300 acres as available to livestock grazing. Impacts would be the same as those described under Alternative A.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 196,400 acres as available to livestock grazing, and 219,900 acres as unavailable to livestock grazing. Impacts would be similar to those in Alternative A but to a lesser degree due to fewer acres being available for livestock grazing. New or expanded range improvements would be prohibited, which would provide the most protection to apparent naturalness of all the alternatives due to less human made developments occurring on the landscape.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. Under Alternative D, 416,300 acres would be available to livestock grazing. Impacts would be the same as those described under Alternative A.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 416,300 acres as available to livestock grazing. Impacts would be the same as those described under Alternative A.

Lands with Wilderness Characteristics: Effects from Recreation

Effects Common to All Alternatives

Managing BLM-administered lands to provide dispersed recreation could directly degrade wilderness characteristics throughout the CCD through human disturbance, noise, weed introduction or spread, and impacts on vegetation. Depending on the type of activities allowed in the area, impacts would vary with the duration and intensity of any recreational activities and could be short term or long term.

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. When areas where nonmechanized and nonmotorized types of recreation such as picnicking, hiking, backpacking, horse riding, or camping are available this increases the opportunities for a visitor to experience an outstanding opportunity for primitive types of recreation.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. Alternative B would be managed to contain 255,500 acres of ERMAs that overlap with lands within the areas inventoried for wilderness characteristics. Specific ERMA management objectives would determine the impact on apparent naturalness and outstanding opportunities for solitude and primitive types of recreation. For example, ERMAs with recreational activities such as horseback riding or hiking would enhance opportunities for primitive recreation whereas ERMAs with OHV use would

detract from naturalness and the ability to find solitude due to soil compaction or vegetation trampling that can occur.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. 264,500 acres would be managed as ERMAs. Impacts would be similar to those in Alternative B, but more intensive due to more ERMA acreage. Also, competitive motorized events would be prohibited in areas being managed for having wilderness characteristics which would provide the most protection to apparent naturalness than any other alternative.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. 23,300 acres would be managed as ERMAs. Impacts would be similar to those in Alternative B, but much less intensive due to less ERMA acreage.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. 315,700 acres would be managed as ERMAs. Impacts would be similar to those in Alternative B, but more intensive due to more ERMA acreage.

Lands with Wilderness Characteristics: Effects from Comprehensive Travel and Transportation Management

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. The BLM would manage 5,500 acres of units inventoried for lands with wilderness characteristics as closed to motorized travel, 70,000 acres as limited to existing routes, and 340,800 acres as open to unrestricted vehicle use. This alternative allows for the most acres to be open to unrestricted vehicle use out of all alternatives. Apparent naturalness and outstanding opportunities for solitude and primitive types of recreation are impacted by the increase in human and vehicle presence, noise, soil compaction and vegetation trampling.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. The BLM would manage 5,500 acres of units inventoried for lands with wilderness characteristics as closed to motorized travel and 410,700 acres as limited to existing routes. Impacts such as vegetation trampling would be greatly reduced in this alternative compared to Alternative A because nearly all of the acreage within the lands inventoried for wilderness characteristics would be managed as being limited to existing routes.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 140,600 acres of units inventoried for lands with wilderness characteristics as closed to motorized travel and 270,600 acres as limited to existing routes. Impacts would be similar to Alternative B, but less in degree because many more acres within the lands inventoried for wilderness characteristics would be managed as closed to travel.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. The BLM would manage 5,500 acres of units inventoried for lands with wilderness characteristics as closed to motorized travel and 410,700 acres as limited to existing routes. Impacts would be the same as Alternative B.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 5,500 acres of units inventoried for lands with wilderness characteristics as closed to motorized travel, and 410,700 acres would be limited to existing routes. Impacts would be the same as Alternative B.

Lands with Wilderness Characteristics: Effects from Lands and Realty

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. Currently, 1,200 acres are suitable or available for disposal, and 500 acres are in petition for withdrawal from mineral entry on lands overlapping with lands inventoried for wilderness characteristics. The impact of disposing lands would vary depending on what human made developments occurred in the area. Withdrawn lands would increase the areas apparent naturalness due to decreased surface disturbances caused from mineral development. If ROWs were located on these lands, there would be impacts on the size of the area, naturalness, and primitive and unconfined recreation. Depending on the extent of the ROWs, wilderness characteristics could be eliminated.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. The BLM would consider 1,200 acres to be suitable or available for disposal. The BLM would petition 75,800 acres for withdrawal from mineral entry and would manage 204,800 acres as ROW avoidance. Impacts would be similar to Alternative A, but to a lesser degree due to more acres being in petition for withdrawal from mineral entry and being managed as ROW avoidance.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. The BLM would petition 10,200 acres for withdrawal from mineral entry. The BLM would also manage 123,400 acres as ROW avoidance and 292,900 acres as ROW exclusion. Impacts would be less than all the other alternatives on apparent naturalness and opportunities for solitude and primitive recreation due to the reduction in surface disturbing activities from managing more acres as ROW avoidance and exclusion areas. Also, any new ROWs and maintenance of existing facilities would be evaluated and allowed only under certain circumstances (see *Lands and Realty* section in Table 2-2).

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. The BLM would consider 2,400 acres as suitable or available for disposal and would petition 76,000 acres for withdrawal from mineral entry. The BLM would also manage 184,600 acres as ROW avoidance. Impacts would be similar to Alternative A, but to a lesser degree because more acres would be petitioned for withdrawal from mineral entry and managed as ROW avoidance.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. Under The BLM would consider 2,400 acres as suitable or available for disposal and would petition 76,900 acres for withdrawal from mineral entry. The BLM would manage 361,500 acres as ROW avoidance. Impacts would be similar to Alternative A, but to a lesser degree because more acres would be petitioned for withdrawal from mineral entry and managed as ROW avoidance. Also, any new ROWs and maintenance of existing facilities would be evaluated and allowed only under certain circumstances (see *Lands and Realty* section in Table 2-2).

Lands with Wilderness Characteristics: Effects from Renewable Energy

Effects Common to All Alternatives

Impacts on wilderness characteristics could occur with issuance of new ROWs, which require vegetation clearing and access roads and would increase human presence, machinery, noise, weed potential, and habitat fragmentation. This would degrade wilderness characteristics over the long term. BMPs, stipulations, and mitigation measures such as ROW exclusion and avoidance areas would be implemented to minimize impacts.

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. Under Alternative A, 39,800 acres of solar variance areas within the inventoried lands with wilderness characteristics areas would allow the potential for solar development to occur. If developed, apparent

naturalness and opportunities for solitude and primitive recreation would be impacted from increased human occupancy and surface disturbance during construction of facilities. Existing ROW exclusion and avoidance areas in the CCD would protect and limit disturbances to vegetation and prevent noxious and invasive weeds from spreading caused by development.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. Under Alternative B, the BLM would manage 26,800 acres of solar variance areas and 204,800 acres of ROW avoidance areas for wind development on inventoried lands with wilderness characteristics areas. Impacts would be similar to Alternative A, but less in degree because more acres would be managed specifically as ROW avoidance for wind development.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 292,900 acres as ROW exclusion for wind development. These exclusion areas would provide the most protection to wilderness characteristics out of all alternatives.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. The BLM would manage 23,400 acres of solar variance areas and 98,700 acres of ROW avoidance for wind development. Impacts would be similar to Alternative B, but slightly less because fewer acres would be managed as solar variance areas.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. The BLM would manage 85,400 acres as ROW exclusion areas for wind development. Impacts would be similar to Alternative C, but less protective because fewer acres would be managed as ROW exclusion for wind development.

Lands with Wilderness Characteristics: Effects from ACECs

Effects Common to All Alternatives

Where ACEC and lands inventoried for wilderness characteristics overlap, ACEC management could indirectly protect wilderness characteristics due to the protective measures proposed for the ACECs, which are complementary to management objectives for lands with wilderness characteristics. ACEC management would offer some indirect protection of apparent naturalness and outstanding opportunities for solitude and primitive recreation should the ACEC overlap any of the inventoried areas, even if it will not be managed directly for lands with wilderness characteristics.

Effects under Alternative A

Under Alternative A, the BLM would not specifically manage lands to protect wilderness characteristics. A total of 9,200 acres of ACECs would overlap the areas inventoried for lands with wilderness characteristics. Impacts would be the same as those described in *Effects Common to All Alternatives*, but to a lesser degree than all other alternatives due to the relatively few acres of overlap.

Effects under Alternative B

Under Alternative B, the BLM would not specifically manage lands to protect wilderness characteristics. A total of 76,100 acres of ACECs would overlap the areas inventoried for lands with wilderness characteristics. Impacts would be the same as those described in *Effects Common to All Alternatives*, but to a higher degree than most alternatives due to the number of acres that overlap with ACECs.

Effects under Alternative C

Under Alternative C, the BLM would manage lands to protect wilderness characteristics. A total of 89,800 acres of ACECs would overlap the areas inventoried for lands with wilderness characteristics. Impacts would be the same as those described in *Effects Common to All Alternatives*, but to a higher degree than other alternatives due to the number of acres that overlap with ACECs.

Effects under Alternative D

Under Alternative D, the BLM would not specifically manage lands to protect wilderness characteristics. A total of 6,000 acres of ACECs would overlap the areas inventoried for lands with wilderness characteristics. Impacts would be the same as those described in *Effects under Alternative A,* but to a slightly greater degree due to the number of acres that overlap with ACECs.

Effects under Alternative E

Under Alternative E, the BLM would manage lands to protect wilderness characteristics. A total of 13,900 acres of ACECs would overlap the areas inventoried for lands with wilderness characteristics. Impacts would be the same as those described in *Effects under Alternative D*.

Lands with Wilderness Characteristics: Cumulative Effects

Past and Present Actions

No past impacts have occurred from any resources or resource uses due to the relatively new identification of lands with wilderness characteristics within the CCD.

Reasonably Foreseeable Actions

Development from minerals, renewable energy, and lands and realty projects are most likely to impact the indicators for lands with wilderness characteristics due to the surface disturbance and facility development associated with these resource uses.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Future Actions – All Alternatives

Incremental impacts would be dependent to the amount of minerals, renewable energy, and ROWs development within land with wilderness characteristics. Overall impacts would remain low mainly from avoidance and exclusion restrictions in areas that were inventoried for lands with wilderness characteristics. Areas to be managed specifically for wilderness characteristics under Alternative C would be on 416,500 acres within 12 units and under Alternative E there would be 332,600 acres within 8 of the inventoried units.

4.3.13 Caves and Cave Resources

This section discusses effects on caves and cave resources from proposed management actions of other resources and resource uses. Existing conditions concerning caves and cave resources are described in **Section 3.2.13**, Caves and Cave Resources.

Caves within the planning area have significance due to bat habitat, prehistoric use, or the presence of artifacts and pictographs as well as spiritual and traditional uses and purposes by local tribes. Cave and rock areas provide day and night roosting habitat for bat species and are important elements in supporting the sensitive species in the planning area. Cave features also provide opportunities for recreation. Interpretive tours of Hidden Cave and Dynamite cave and surrounding area have been provided for 30 years, and in 2010, over 1,300 people were provided tours of Hidden Cave by BLM interpretive specialists and the Churchill County Museum.

Summary

The geologic setting of the planning area consists of granitic and metamorphic rocks that are overlain by volcanic and sedimentary rocks, so there is little opportunity for the formation of large or extensive cave systems. The majority of the caves in the planning area consist of undercut rock shelters and shallow cavities in basalt or rhyolite rock that were formed by wave action from ancient Lake Lahontan approximately 21,000 years ago.

There are several named and unnamed caves in the planning area. Caves with cultural significance exist but have not been identified or mapped in a single database, or the caves are proprietary in nature and the locations are documented only in cultural files as a means to protect the resource. Natural caves suitable for supporting biota such as bats are scattered throughout the planning area, but minimal mapping or identification has occurred for this resource as well.

Caves are managed under the Federal Cave Resources Protection Act (CRPA), Sec. 3(1) of 1988. The purpose of CRPA is to secure, protect, and preserve significant caves on federal lands for the perpetual use, enjoyment, and benefit of all people and to foster increased cooperation and exchange of information between governmental authorities and those who utilize caves located on

federal lands for scientific, education, or recreational purposes. With the Act, Congress established policy that federal lands be managed in a manner that protects and maintains, to the extent practical, significant caves, and cave resources.

Overall, objectives and actions associated with other resources that result in closure to surface disturbance activities would result in beneficial impacts on any caves that might be present due to a reduce risk for disturbance of the cave. Management for the following resources would not result in an effect on caves and cave resources: air quality, climate, soil and water resources, vegetation, wild horses and burros, wildland fire management, visual resources, forest and woodland products, ACECs, Back Country Byways, national trails, WSRs, BCWCAs, and WSAs.

Methods of Analysis

Methods and Assumptions

Caves and cave resources baseline information in **Section 3.2.12,** Caves and Cave Resources, was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws pertinent to determining effects on caves and cave resources (e.g., Federal Cave Resources Protection Act [CRPA]) were considered and included in criteria for determining impacts. This known information was overlain with the actions found under each alternative in Chapter 2, and conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

The following assumptions regarding the resource base and management practices were considered in the analysis:

- Education of the public increases support for protection of caves and bats, but also increases visitation.
- Damage, theft, and vandalism is likely to increase with increased visitation.
- The bats that might live in caves could be impacted by vandalism, noise from visitors, and litter.
- Cave resource protection and mitigation measures apply to all proposed federal or federally assisted undertakings, and will be applied at project design and implementation phases.

Indicators

The following indicators were used to assess the degree of impacts on cave resources:

- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the cave resources
- Loss of integrity, and in some cases a loss of archeological information resulting from physical damage or destruction of all or parts of a cave
- Health of biological communities of cave resources
- Alterations to the level of public access to cave resources, which may result in increased use, erosion, bat disturbance and abandonment, looting, and vandalism
- A lack of action, which, in certain cases, can allow a cave resource to deteriorate

Nature and Type of Effects

Impacts on caves occur by excavation, theft, vandalism, and disturbance to biological resources. Typically, disturbance, damage, theft, and vandalism occurrence to caves are concentrated near roads and trails. Impacts on cave resources may increase with additional visitation to areas within the planning area.

Cave Resources: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Fish and wildlife management encompasses management of wildlife habitat, big game species, migratory bird corridors and Important Bird Areas, and active raptor nest sites. Management actions would impose surface restrictions that vary by management objectives, habitat type, and Alternative. These surface use restrictions, if within the vicinity of cave resources, would protect these caves from damage or impact from surface disturbing activities, but these effects are essentially common to all alternatives.

Fish and wildlife management would also provide actions and management objections for bats and bat habitat. This would directly affect caves, and would vary by alternative.

Effects under Alternative A

Alternative A would not provide additional or new guidelines for the management or protection of bat habitat, and would therefore not result in any additional protection of caves and their resources.

Effects under Alternative B

Alternatives B through E would require bat gates for the closure of caves and abandoned mine lands where caverniculous bat roosting, maternity sites, and winter hibernacula occur. Installation of bat gates would be temporarily disturbing to cave resources as research, documentation of resources, and

construction of the gate occur, but would afterwards protect these cave resources from public intrusion, theft, or vandalism.

Alternative B would also inventory for bats and bat habitat usage before allowing surface disturbing activities within 0.25 miles of caves not known to be occupied by bats. This would reduce the potential for disturbance to these caves from surface disturbing activities or increased visitor use related to the surface disturbing activity.

Effects under Alternative C

Alternative C would be similar to Alternative B in respect to bat gates. In addition, Alternative C would provide for bat gate closures at the entrance of all caves to protect important bat habitat and to minimize potential impacts on roosting bats.

Alternative C would inventory for bats and bat habitat usage before surface disturbing activities within 0.5 miles of caves not known to be occupied by bats, and would prohibit large-scale surface disturbing discretionary actions within 500 feet of bat occupied caves. This would reduce possibility of impacts on cave features in these caves. These surface restrictions and inventory requirement would provide greater protection to caves and their resources than Alternative A.

Effects under Alternative D

Alternative D would be the same as Alternative B in respect to bat gate implementation.

Like Alternative B Alternative D would require an inventory for bats and bat habitat usage in caves not known to be occupied by bats within 0.25 miles of proposed surface disturbing activities. Additionally, Alternative D would prohibit large-scale surface disturbing discretionary actions within 200 feet of bat occupied caves. This would reduce the possibility of impacts on caves and their resources more than Alternative A and B, but less than Alternative C.

Effects under Alternative E

Alternative E would be the same as Alternative B in respect to bat gate implementation.

Like Alternatives B and D, Alternative E would require an inventory for bats and bat habitat usage in caves not known to be occupied by bats within 0.25 miles of proposed surface disturbing activities. Alternative E would also prohibit large-scale surface-disturbing discretionary actions within 0.5 miles of bat occupied caves, which is the largest buffer of all the alternatives, and would therefore provide the most protections of caves and cave features that are occupied by bats.

Cave Resources: Effects from Special Status Species Management

Effects Common to All Alternatives

Measures to protect special status fish, wildlife, and wildlife habitat include a variety of restrictions, buffers, closures, height limits, and bat gates that would limit activities that are incompatible with maintaining special status species. These actions could indirectly reduce the potential for disturbance of caves and their associated resources through land use restrictions.

Effects under Alternative A

Management of special status species under Alternative A would not provide for any additional land use restrictions that would reduce the possibility of impacts on cave resources.

Effects under Alternative B

Greater Sage-Grouse

Greater Sage-Grouse habitat management would manage PPMA (275,600 acres) with CSU stipulations for fluid mineral leasing and as ROW avoidance areas.

Effects under Alternative C

Greater Sage-Grouse:

Alternative C would close PPMA and PGMA (414,200 acres) to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. In addition, the BLM would manage these areas as ROW exclusion areas. Alternative C would implement the most restrictions on Greater Sage-Grouse habitat, and would therefore be the most protective of cave resources within these areas.

Effects under Alternative D

Greater Sage-Grouse:

Under Alternative D Greater Sage-Grouse habitat management would apply NSO stipulations for fluid mineral leasing within PPMA (275,600 acres) with no exceptions, modifications, or waivers. Alternative D would apply NSO stipulations for fluid mineral leasing within PGMA (138,600 acres) with exceptions, modifications, and waivers as outlined in **Appendix C**, and would manage PPMA and PGMA as ROW avoidance areas (414,200 acres). These restrictions are greater than Alternative A.

Effects under Alternative E

Greater Sage-Grouse:

Greater Sage-Grouse habitat management under Alternative E would be similar to those described under Alternative D. In addition to the management actions under Alternative D, Alternative E would close PPMA and PGMA to nonenergy

mineral leasing and mineral material disposal. Alternative E would be more protective of cave resources than Alternative A.

Cave Resources: Effects from Cultural Resources Management

Effects Common to All Alternatives

There are potentially more caves in the planning area that may contain cultural resources. If so, the BLM would manage these resources under the cultural resources program, in accordance with the cultural resource management objectives and actions. The effects of management of Hidden Cave and Dynamite Cave, which do contain cultural resources, are discussed under Effects from Cave Resources Management.

Unless a cave contains cultural resources, there likely would be no impacts on cave resources resulting from cultural resource management objectives or actions under any of the alternatives. With respect to effects on cave resources, all of the alternatives are essentially equivalent.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Cave Resources: Effects from Paleontological Resources Management

Effects Common to All Alternatives

Any caves yet to be discovered could contain paleontological resources. If so, the BLM would manage these resources under the paleontological resources program, in accordance with the paleontological resource management objectives and actions.

Unless a cave contains paleontological resources, there likely would be no impacts on caves and cave resources resulting from paleontological resources management objectives or actions under any of the alternatives.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Cave Resources: Effects from Caves and Cave Resource Management

Effects Common to All Alternatives
Under all alternatives significant cave resources would be protected for educational, scientific, and recreational values. Additional significant caves, if there are any, would be identified in accordance with 43 CFR Part 37, added to the currently maintained list of designated significant caves, and managed according to all federal and state laws and regulations. Caves with no previous bat inventories will be evaluated for their potential value as bat habitat in coordination with state and federal wildlife agencies.

Under all alternatives, 10 caves would be designated as having significant cultural, biological, educational, or scientific resources. In no order, these caves are: Hidden Cave, Burnt Cave, Cowboy Cave, Fish Cave, Eastgate Shelter, Picnic Cave, Salt Cave, Spirit Cave, Dynamite Cave, Topia Cave. Other caves could be designated as identified. Of these, Hidden Cave and Dynamite Cave will have specific management actions under the alternatives to protect their cultural and biological resources. Burnt Cave and Picnic Cave are two rock shelters located next to Hidden Cave, and would benefit from management actions pertaining to Hidden Cave.

Effects under Alternative A
Alternative A would continue to manage significant caves based on current land use plan decisions, policy, and regulations. Limited or outdated protections for significant cave resources could result in a limited capacity to protect cave resources from irreparable damage from theft, vandalism, or conflicting resource use.

Alternative A would not limit ROW or mineral development near Hidden Cave or Dynamite Cave, and would therefore be the least protective of these caves of all the alternatives.

Effects under Alternative B
Under Alternative B, BLM would develop a public education and outreach program to foster an appreciation for caves and their associated resources, and

would provide staff or a site steward to monitor caves identified as culturally significant and heavily used by the public. Implementation of public awareness of significant caves and their resources and added security would reduce the likelihood of theft, vandalism, or defacing of the caves.

Alternative B would manage Dynamite Cave as having significant cultural resources and would protect these by implementing a 0.25-mile ROW avoidance area around the cave, closing the cave to mineral material disposals, and applying for a 500-foot CSU stipulation for fluid mineral leasing.

Alternative B would manage Hidden Cave as having significant cultural resources and would protect these by implementing a 500-foot ROW avoidance buffer around the cave, closing the area to mineral material disposal, and applying CSU stipulations within 500 feet of the cave for fluid mineral leasing.

Due to these additional measures, management of caves and cave resources under Alternative B would be more protective than Alternative A.

Effects under Alternative C

Like Alternative B, BLM would develop a public outreach and education program to foster an appreciation for caves and their cultural resources under Alternative C. Additionally, BLM would provide staff, law enforcement, or volunteer site stewards to monitor caves identified as culturally significant and heavily used by the public. Implementation of public awareness of significant caves and added security around them would reduce the likelihood of theft vandalism of the cultural resources associated with the caves.

Alternative C would also include significant caves in the fuels-treatment program to reduce risk of fire and increase protections of sensitive cultural resources that may be impacted by a high-fuels load.

Alternative C would manage Dynamite Cave as having significant biological and cultural resources, and would protect these by implementing a 0.5-mile ROW exclusion buffer around the cave, closing the area to mineral material disposal and fluid mineral leasing, recommending the area for withdrawal from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Alternative C would manage Hidden Cave as having significant cultural resources and would protect these by implementing a 500-foot ROW exclusion a buffer around the cave, closing the area to fluid mineral leasing and mineral material disposal, recommending the area for withdraw from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Alternative C is similar to Alternatives B and D, but with greater restrictions in respect to ROW exclusion, mineral closures, travel management designations,

and fuels-treatments. Alternative C would be more protective of significant caves and their resources than the other Alternatives.

Effects under Alternative D

Like Alternatives B and C, Alternative D would develop public outreach programs to foster an appreciation for caves and their cultural resources, and provide staff to monitor caves identified as culturally significant and heavily used by the public. Like Alternative C, Alternative D includes culturally significant caves in the fuels-treatment program to protect sensitive attributes that may be impacted by a high-fuels load. Unlike the other Alternatives, Alternative D would also protect cultural resources associated with caves from vandalism or theft by installing gates, security fencing and signs near urban or developed areas in effort to protect human health and safety.

Specific management of Hidden Cave and Dynamite Cave under Alternative D would be the same as Alternative B. These measures would be more protective of significant caves than Alternative A.

Effects under Alternative E

General outreach and protection of significant caves under Alternative E would be similar to Alternative C.

Alternative E would manage Dynamite Cave as having significant bat and cultural resources and would protect these by implementing the same restrictions to ROW and mineral development and to motorized travel as Alternative C would.

Management of Hidden Cave under Alternative E would be the same as management of the Cave under Alternative B, with the addition of increasing public education and interpretation, and archaeological investigation and reinvestigation of the Cave.

Management of significant caves under Alternative E would be more protective of the caves and their associated resources than Alternative A, but less protective than Alternative C would be, due to less closure to mineral resources and travel management around Hidden Cave than Alternative C would provide.

Cave Resources: Effects from Livestock Grazing Management

Effects Common to All Alternatives

Caves and their associated resources within the planning area that are not identified for specific management, are not protected or blocked from surface disturbing activates, or are not gated to protect bat habitat, may be at risk for damage from livestock seeking shelter within the cave. These effects would be mitigated at the planning level with closures or restrictions on livestock grazing.

On a case-by-case basis, newly identified caves would be mitigated to prevent undue degradation to significant caves resources.

Effects under Alternative A
Under Alternative A, 6,700 acres would not be available for livestock grazing. This is the least restrictive among the alternatives; therefore, the potential effects from livestock grazing on cave resources could occur over the largest area.

Effects under Alternative B
Under Alternative B, the BLM would manage 6,100 acres as not available for livestock grazing. This alternative makes slightly fewer acres available for grazing than under Alternative A.

Effects under Alternative C
Under Alternative C, 2,702,000 acres would not be available for livestock grazing. This is much more restrictive than Alternative A and would substantially reduce grazing-associated impacts.

Effects under Alternative D
Alternative D would manage 10,700 acres as not available for livestock grazing, which is greater than Alternative A, but impacts would only be slightly reduced compared to Alternative A.

Effects under Alternative E
Alternative D would manage 6,100 acres as not available for livestock grazing. The impacts would be the same as those described for Alternative B.

Cave Resources: Effects from Geology and Mineral Management

Effects Common to All Alternatives
If caves are present where mining occurs, these resources could be impacted by the extent and depth of ground disturbance associated with salable and locatable mineral development. Drilling activities could intersect with undiscovered caves or lava tubes. While none of the known caves in the planning area contain mineral resources, yet to be discovered caves might contain cave specific deposits (e.g., crystals and sheet flows). If so, the BLM would manage these areas on a case-by-case basis in coordination with the minerals resources program objectives and actions, which include some restrictions on mining operations near caves.

Restrictions for mineral development by alternatives are discussed under Cave Resources: Effects from Cave Resources, and requirements for bat inventory are discussed under Cave Resources: Effects from Wildlife Management.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Cave Resources: Effects from Recreation and Visitor Services

Effects Common to All Alternatives
Designation of SRMAs and ERMAs could increase visitor use, however, specific management actions for these areas would also provide protection of resources. Increased recreation, visitation, and recreation may result in the exploration and discovery of cave resources, and in the negative effects of tampering with undocumented cave resources, or theft or vandalism of the resources. This would result in the loss of nonrenewable scientific data.

Effects under Alternative A

Summary
Alternative A would designate 67,700 acres under two SRMAs for intensive recreational uses, which may increase the potential for new cave discoveries in these areas.

Effects under Alternative B
In total, Alternative B would designate 1,754,400 acres in 14 areas for intensive recreational use. This would increase the likelihood of new cave discovery over Alternative A, which would designate fewer acres in fewer areas.

Effects under Alternative C
In total Alternative C would designate 1,603,500 acres in 18 areas for recreation use. This would increase the likelihood of new cave discovery in 18 areas, which is greater than Alternative A.

Effects under Alternative D

SRMAs
Alternative D would designate 4 SRMAs totaling 67,100 acres, including Alpine (7,400 acres), Dead Camel Mountain (37,400 acres), Hungry Valley (21,800 acres), and Wilson Canyon (500 acres).

Alternative D would designate more SRMAs than Alternative A. Alternative D would manage the fewest acres as SRMAs of the alternatives.

ERMAs

Alternative D would designate 6 ERMAs totaling 292,600 acres. These ERMAs include Faye-Luther (600 acres), Mustang (400 acres), Pah Rah (20,000 acres), Pine Nut (201,100 acres), Reno Urban Interface (70,400 acres), and 102 Ranch (120 acres).

Alternative D would designate more ERMAs than Alternative A. Alternative D would manage more acres as ERMAs than Alternative A.

Summary

Alternative D would manage a total of 359,700 acres in 10 areas for intensive recreation use. Alternative D would manage the fewest acres as SRMA or ERMAs. This would result in a lowered potential for new cave discovery in comparison to the other alternatives. However, Alternate A would manage the fewest areas for intensive recreation use. This would result in the lowest potential for new cave discovery.

Effects under Alternative E

SRMAs

Alternative E would designate 6 SRMAs totaling 106,100 acres including Alpine (7,700 acres), Dead Camel Mountain (37,400 acres), Hungry Valley (16,200 acres), Sand Mountain (19,700 acres), Walker Lake (24,600 acres), and Wilson Canyon (500 acres).

Alternative E would designate the same number of SRMAs as Alternative B would, and more than Alternative A. Alternative E would manage the most acres as SRMAs of the alternatives.

ERMAs

Alternative E would designate 15 ERMAs totaling 2,085,800 acres. These ERMAs include Bagley Valley (2,600 acres), Dry Valley (83,000 Acres), Faye-Luther (110 acres), Middlegate (268,700 acres), Mina (824,700 acres), Mustang (400 acres), Pah Rah (20,000 acres), Petersen (42,000 acres) Pine Nut (201,000 acres), Reno Urban Interface (70,600 acres), Salt Wells (280,400 acres), Singatse (174,900 acres), Virginia Mountains (68,100 acres), Virginia Range (48,800 acres) and 102 Ranch (120 acres).

Alternative E would designate the same number of ERMAs as Alternative C, and more than Alternative A. Alternative E would manage the most acreage as ERMAs of the alternatives.

Summary

Alternative E would designate 2,191,900 acres in 24 areas for intensive recreation. Alternative E would provide the highest opportunity for new cave discovery of all the alternatives, and therefore the highest risk for damage of caves and their resources.

Cave Resources: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Travel management designations could open, limit, or close roads that would provide access to cave resources, or would provide access to the vicinity of cave resources which may result in their unintended discovery and potential misuse.

Effects under Alternative A

Alternative A would manage 3,840,300 acres as open to cross-country travel, 31,800 acres as closed to motorized and mechanized travel, 6,900 acres as closed to motorized travel with mechanized travel limited to existing routes, and 924,300 acres as limited to existing roads for motorized travel for a total of 963,000 acres of restrictions.

Alternative A would managed more acres closed to motorized and mechanized travel than Alternatives B, D, and E, and less than Alternative C. Alternative A would manage more acres as closed to motorized travel with mechanized travel limited to existing routes than Alternatives B, D, and E, but less than Alternative C. Alternative A would manage the fewest acres as limited to existing routes for motorized and mechanized travel than all of the alternatives. Overall, Alternative A would place the fewest restrictions on travel management of the alternatives.

Effects under Alternative B

Alternative B would manage 95,300 acres as open to cross-country travel, 26,700 acres as closed to motorized and mechanized travel, and 4,300 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,677,000 acres as limited to existing roads for motorized travel.

Alternative B would manage fewer acres as closed to motorized and mechanized travel than Alternative A. Alternative B would manage fewer acres as closed to motorized travel, with mechanized travel limited to existing routes than Alternative A. Alternative B would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A. Overall, Alternative B would manage more acres with restrictions than Alternative A.

Effects under Alternative C

Alternative C would manage 1,300 acres as open to cross-country travel, 1,190,500 acres as closed to motorized and mechanized travel, 598,000 acres as

closed to motorized travel with mechanized travel limited to existing routes, and 3,013,500 acres as limited to existing roads for motorized travel.

Alternative C would manage the most acres as closed to motorized and mechanized travel of all the alternatives. Alternative C would also manage the most acres as closed to motorized travel with mechanized travel limited to existing routes. Alternative C would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A. Alternative C would place the most restrictions on travel management of all the alternatives.

Effects under Alternative D

Alternative D would manage 22,700 acres as open to cross-country travel, 30,600 acres as closed to motorized and mechanized travel, 1,600 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,748,400 acres as limited to existing roads for motorized travel

Alternative D would manage fewer acres as closed to motorized and mechanized travel than Alternative A. Alternative D would manage the fewest acres as closed to motorized travel, with mechanized travel limited to existing routes of all the alternatives, and more acres as limited to existing routes for motorized and mechanized travel than all the alternatives. Overall, Alternative D would manage more acres with restrictions than Alternative A.

Effects under Alternative E

Alternative E would manage 55,700 acres as open to cross-country travel, 24,100 acres as closed to motorized and mechanized travel, 6,200 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,717,300 acres as limited to existing roads for motorized travel.

Alternative E would manage the fewest acres as closed to motorized and mechanized travel of all the alternatives. Alternative E would manage fewer acres as closed to motorized travel, with mechanized travel limited to existing routes than Alternative A. Alternative E would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A. Overall, Alternative E would manage more acres with restrictions than Alternative A.

Cave Resources: Effects from Lands and Realty

Effects Common to All Alternatives

Granting ROW access in areas that do not currently have ROW access could result in unintended cave discovers, and may result in misuse of the cave and cave resources. Areas that are limited or closed to ROW entry would result in protection of cave resources.

Effects under Alternative A

Alternative A would manage 564,100 acres as ROW exclusion, and would not manage any acres as ROW avoidance. Land Use Authorizations and

management under Alternative A would provide the least protection for cave resources.

Effects under Alternative B
Alternative B would manage 580,000 acres as ROW exclusion and 1,195,800 acres as ROW avoidance, totaling 1,775,800 acres of land restriction that would provide protection of cave resources. This is more than Alternative A.

Effects under Alternative C
Alternative C would manage 2,675,800 acres as ROW exclusion and 369,300 acres as ROW avoidance totaling 3,045,100acres of land restriction. This would provide the most protections of cave resources from potential impacts for lands and realty development.

Effects under Alternative D
Alternative D would manage 564,100 acres as ROW exclusion and 1,226,100 acres as ROW avoidance, totaling 1,790,200 acres of land use restriction that would protect cave resources. This is more than Alternative A.

Effects under Alternative E
Alternative E would manage 605,900 acres as ROW exclusion and 1,448,200 acres as ROW avoidance totaling 2,054,100 acres of land restrictions that would prevent impacts on cave resources. This is more than Alternative A.

Cave Resources: Effects from Renewable Energy

Effects Common to All Alternatives
Potential impacts from renewable energy projects (e.g., solar, wind, and biomass) include direct impacts from ground-disturbing activities, erosion, and indirect impacts from intrusions to setting, and access, leading to unauthorized collection or vandalism. The siting of wind energy facilities could affect the visual setting of historic trails and other cultural resources. All permits and ROWs would be subject to stipulations, restrictions, and mitigation measures. This would reduce the potential for impacts on cultural resources. Under all alternatives the development of renewable energy in a timely manner to meet national, regional, and local needs would be encouraged.

Effects under Alternative A
Alternative A would manage 905,900 acres as variance areas for utility-scale solar development, and would not manage any acres as ROW avoidance or exclusion areas for wind energy projects.

Effects under Alternative B
Alternative B would manage 773,400 acres as variance areas for utility-scale solar development, and would manage 1,220,200 acres as ROW avoidance for wind energy projects. Alternative B would manage 1,993,600 acres with restrictions on renewable energy development. This would be more than Alternative A.

Effects under Alternative C

Alternative C would manage 578,400 acres as variance areas for utility-scale solar development, and 2,073,200 acres as ROW exclusion areas for wind energy projects, including 14,700 acres in the Virginia City National Landmark Historic District ACEC. This would reduce the potential for impacts on cave resources the most of all the alternatives.

Effects under Alternative D

Alternative D would manage 672,100 acres as variance areas for utility-scale solar energy, and 1,228,100 acres as ROW avoidance areas for wind energy projects. This would be a total of 1,900,200 acres managed with restrictions on renewable energy development. This would be more than Alternative A.

Effects under Alternative E

Alternative E would manage 629,900 acres as variance areas for utility-scale solar energy, 956,900 acres as ROW avoidance areas, and 629,900 acres as ROW exclusion areas for wind energy projects. This would be a total of 2,216,700 acres managed with restrictions on renewable energy. This would be more than Alternative A.

Cave Resources: Cumulative Effects

Table 4-1 lists the reasonably foreseeable cumulative actions for the CCD.

Special status species management has included management actions that protect caves resources by restricting human access, utilizing land use restrictions, and to protect bats. Generally, habitat improvement projects to protect bats and bat habitat by gating protect cave resources and any significant features associated with the cave. Managing to protect and rehabilitate wildlife and sensitive species habitat will continue.

Past and present impacts resulting from livestock grazing has generated no known impacts on significant cave resources but cattle have been known to seek out shallow caves for shelter. There have also been few known impacts from minerals, lands and realty, and renewable energy developments, although these developments may increase the potential for cave discovery and exploration. Activities associated with minerals, lands and realty, and renewable energy developments would increase the number of facilities, roads, and other disturbances that may directly impact caves. Based on implementation of land use plan goals, objectives, and management actions, disturbance near these features would be limited.

Increase demand for recreation as population grows could put known and unknown cave resources at risk due to ease of access from further development of ROWs, mineral resources, and SRMAs and ERMAs. Recreation use from caving has damaged some cave features due to removal or vandalism. These impacts would be reduced based on implementing public outreach and education, seasonal closures, installation of bat gates, and other mitigation measures.

4.4 RESOURCES USES

This section contains a description of impacts on the human uses of resources in the Planning Area and follows the order of topics addressed in Chapter 2:

- Forestry and Woodland Products
- Livestock Grazing
- Geology and Minerals (locatable, salable, and leasable [excluding geothermal])
- Recreation and Visitor Services
- Comprehensive Travel and Transportation Management Lands and Realty
- Renewable Energy

4.4.1 Forestry and Woodland Products

Summary

Forested vegetation would be directly affected most by fire management and forest vegetation management. Restrictions on management activities to protect other resources, primarily cultural, visual, and special status species, would indirectly affect the level, location, and effectiveness of forest management actions to improve forest health. Effects from other resources would be limited and localized. Forest and woodland product utilization results in additional impacts to those analyzed under the vegetation section.

From the standpoint of managing forest stands to maintain forest health or improve wildlife habitat, Alternative C would provide the greatest benefit, followed by Alternatives E, D, A, and then B. All alternatives would allow for managing forest stands for stand health and vigor. Multiple uses would be emphasized the most in Alternative B, followed by Alternatives E, D, A, and C.

Management for the following resources would not result in an effect on forest and woodland products: air quality, caves and cave resources, Back Country Byways, national trails, WSRs, WSAs, back country wildlife conservation areas, public health and safety.

Methods of Analysis

Methods and Assumptions

Impacts are determined by assessing which actions, if any, would change vegetation structure or composition, decrease the extent of forests, allow for increased dominance of invasive weeds, affect habitat value for wildlife species, or decrease the potential for multiple use.

Direct impacts on forest and woodland resources from product utilization include removal of wood, plants, and seeds, creation of roads or trails by

equipment, increased traffic on roads from the transport of products, potential introduction of invasive or noxious weeds, spread of invasive or noxious weeds by equipment or foot traffic, trampling of understory vegetation, and soil compaction. Indirect effects include the potential for increased spread of invasive or noxious weeds (colonization of bare mineral soil), reduced regeneration rates where seed material has been removed, and increased abundance and vigor of native understory vegetation.

The effects of each action on forest and woodland vegetation resources are quantified when possible, but many impacts must be qualitatively assessed when suitable data are not available. The following assumptions were made for this analysis:

- Current trends in plant succession and vegetation will continue.
- Noxious and invasive weeds will continue to be introduced and will spread as a result of ongoing vehicle traffic in and out of the planning area, recreational activities, wildlife and livestock grazing and their movements, and surface-disturbing activities.
- Noxious and invasive weeds will further expand into native plant communities, and disturbances to these communities will create opportunities for the spread of nonnative invasive plant species.
- Many actions that occur within the planning area will be subject to BMPs. Although BMPs are designed to minimize the effects of projects, they generally cannot eliminate all impacts. This impact analysis assumes that BMPs will minimize but not eliminate possible effects.

Indicators

The following indicators were used to assess the degree of impacts on forest resources:

- Acres of forest lost or restored
- Forest Health Indicators – Forest stand die-off areas, presence of insect infestations and pathogens, and conditions relating to drought.

Nature and Type of Effects

The nature and type of effects vary by resource and alternative as described in the following sections.

Forestry and Woodland Products: Effects from Climate Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The BLM would continue climate management by implementing site-specific management actions response to degradation of areas from drought conditions.

Effects under Alternative B

Under Alternative B, the BLM would consider current and potential climate change induced threats to BLM special status species and ecosystems functions. Treatments would be implemented to remove existing threats that may exacerbate the negative effects of climate change on BLM special status species and ecosystem functions. Climate change impacts would be considered in project approval and funding, and specialists would use adaptive management in considering climate change in project design and operation. A Rapid Ecological Assessment would be employed to assess impacts of climate change and maintain connectivity. These approaches would increase the ability of BLM management to respond to climate change. Adaptive management for climate change would improve management of forest resources.

Effects under Alternative C

Effects under Alternative C would be similar to those described under Alternative B, however steps would be taken to conserve habitat to ensure adequate conditions.

Effects under Alternative D

Effects under Alternative D would be similar to those described under Alternative B. Management under Alternative D would develop proactive steps that can be taken to mitigate the effects of climate change on BLM special status species and unique plant assemblages through community workshops, tribal consultations, and other organizations. Impacts from climate change would be addressed across administrative boundaries and would be more effective on a regional scale.

Effects under Alternative E

Effects under Alternative E would be the same as under Alternative D.

Forestry and Woodland Products: Effects from Soil Resources

Effects Common to All Alternatives

Soil erosion reduction measures, involving seeding and improving vegetative cover, would reduce compaction and increase infiltration. This would indirectly improve forest health and habitat value. These changes could lead to increased vegetative productivity and improved wildlife habitat and connectivity. Increased vegetation productivity will provide for a sustained yield of forest and woodland products. All alternatives would restrict surface disturbing activities on steep slopes and highly erosive areas, would prevent harvesting of trees in these areas, resulting in a reduction of the total available products. Since all alternatives would provide for the same amount of product removal as current management, this effect is minimal.

Effects under Alternative A

Alternative A would limit OHV use to designated roads and trails in highly erosive soil areas. This approach would protect forested areas not currently used as roads or trails. Limiting OHV to existing roads and trails would reduce access to areas for harvesting or would make harvesting more difficult.

Effects under Alternative B

Alternative B would apply an erosion control plan to projects on slopes, would apply soil amendments to minimize soil disturbance, and would apply CSU stipulations on highly erosive soils. These management approaches would diminish erosion and soil damage and protect forests more than current management. Minimizing soil disturbance may limit access to harvest areas or make harvesting more difficult.

Effects under Alternative C

In addition to the approaches under Alternative B, Alternative C would minimize soil crust breakage by applying litter. These management approaches would protect forests and diminish erosion and soil damage compared to current management but could also restrict woodland harvesting in areas.

Effects under Alternative D

In addition to the approaches under Alternatives B and C, Alternative D would also mandate re-seeding of disturbed soils to minimize erosion. Along with Alternative E, Alternative D includes the most specific actions to reduce soil damage and provide sustainable woodland stands.

Effects under Alternative E

Effects under Alternative E would be similar to those described for Alternative D.

Forestry and Woodland Products: Effects from Water Resources

Effects Common to All Alternatives

Water resource management would improve conditions for forest stands based on implementation of BMPs and standard operating procedures that would reduce erosion.

Effects under Alternative A

Alternative A limits BLM-authorized activities in degrading watersheds and specific portions of urban watersheds at the most immediate risk of degradation, and limits OHV use in riparian areas. These approaches protect water supply in specific localized areas, but provide limited oversight of watershed health and water quality on a regional scale.

Effects under Alternative B

In addition to the efforts under current management, Alternative B and the other action alternatives would establish a listing of priority watersheds and

priority water supply areas based on presence of wildlife habitat, among other factors. These management actions may improve management of water supply for forested areas.

Effects under Alternative C
In addition to the approach under Alternative B, Alternative C would also use permitting, land acquisitions, and other realty actions to acquire minimum pool and in-stream flows or to gain access to water sources or developments. The actions would improve hydrologic function in forested areas, especially riparian forests.

Effects under Alternative D
Effects under Alternative D would be similar to those described for Alternative C.

Effects under Alternative E
Effects under Alternative ***E*** would be similar to those described for Alternative C.

Forestry and Woodland Products: Effects from Vegetation Resources

Effects Common to All Alternatives
Implementing strategies to remove or thin pinyon-juniper would protect woodland harvesting areas from wildfire. All alternatives provide for some removal (salvage) of trees after fire allowing for increased availability of some woodland products. Restoring vegetation following a fire would regenerate woodland stands and make them available for woodland harvesting in the long term. Management actions to protect and enhance vegetation would improve forest health and provide for sustainable harvesting of woodland products. Implementing management actions to achieve and manage proper functioning condition of riparian areas would improve woodland stand health within riparian areas. Actions to decrease weeds on BLM-administered lands would indirectly improve forest health and habitat values by increasing native species and decreasing the risk of catastrophic wildfire in both the short term and long term. Wildfire could directly damage or kill stands, further allowing for spread of weeds, and destroy wildlife habitat. Further coordination with agencies and implementation of BMPs would reduce the introduction and spread of weeds.

Vegetation treatments for rangeland improvement projects may reduce the prevalence of invasive species and would directly improve ecological conditions. Such projects would reestablish an understory of forbs and perennial bunchgrasses that are less susceptible to fire than invasive annuals, such as cheatgrass. This would reduce the risk of catastrophic wildfire on rangelands, which might otherwise spread into woodlands.

Improving and maintaining meadows and riparian areas could limit the type of forest treatments that could be used to achieve forest and woodland health and

habitat goals. This could indirectly prevent health and habitat goals from being attained. However, these restrictions are not expected to completely prevent the attainment of these goals over the long term.

Effects under Alternative A

This alternative would allow for the collection of vegetative products to meet personal use and small-scale commercial use. Large-scale product utilization projects (e.g., biomass removal) would be limited and would deter the ability to encourage new markets.

Effects under Alternative B

Management under Alternative B would emphasize the utilization of products from treatments and would allow commercial, biomass, and harvesting within riparian stands. This alternative is designed to meet current and future demand for these products. Management under this alternative would remove trees, causing surface disturbance and fragmentation within harvesting areas affecting forest health and woodland sustainability, resulting in the greatest impacts of any alternative.

Effects under Alternative C

Alternative C would restrict forest and woodland product utilization to personal use, limiting surface disturbance, erosion potential, and tree harvesting while maintaining stand health and sustainability. Alternative C would close riparian areas to woodcutting or any other vegetative removal, except where important for traditional cultural practices identified by Native American tribes or for restoration to benefit riparian values. Woodland products would not be available to commercial users. Limiting commercial activities, including native seed collection, would limit the amount of seed available for use in restoration projects.

Effects under Alternative D

Management under Alternative D would develop strategic plans for vegetation treatments in order to mitigate the impacts of providing the full suite of forest and woodland product utilization. Collection opportunities would be limited until the strategy is prepared, which may cause commercial producers to leave the local market in search of available products. There would be a lag in opportunities to utilize products from restoration activities as these markets would have to be redeveloped. Alternative D would also close riparian areas to harvesting of woodland products.

Effects under Alternative E

Forest and woodland vegetation treatment levels under Alternative E would reflect a sustained yield calculation designed to result in no net loss of acres. Any wildfires that occurred would be counted towards annual treatment targets insuring the thresholds of treatment would never be exceeded. Implementing these management actions would ensure that sustainable woodland harvesting areas are maintained. Alternative E would only allow personal woodland

harvesting. Impacts from personal harvesting restrictions would be the same as those described under Alternative C.

Forestry and Woodland Products: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Maintaining habitat integrity, continuity, connectivity, and productivity to support self-sustaining fish and wildlife populations would ensure healthy sustainable woodlands are maintained. Implementing habitat improvement projects where necessary to stabilize or improve unsatisfactory or declining wildlife habitat conditions would also improve forest conditions. Applying use restrictions and NSO or CSU stipulations would also protect and provide sustainable forests while allowing for harvesting of woodland products.

Implementing timing restrictions and distance buffers during important life-cycle periods (e.g., breeding, nesting, fawning, and major migrations) may impact vegetation treatments and product utilization in the short term. However, clearance surveys may be used to minimize this impact.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Forestry and Woodland Products: Effects from Special Status Species Management

Effects Common to All Alternatives

Impacts from special status species management would be similar to those described under the wildlife section. Management aimed at maintaining and improving special status species habitat would directly impact woodlands and forests by helping to achieve forest health in these areas. Designating ACECs to protect sensitive plants and sensitive fish and wildlife would also protect forests and contribute towards forest health for stands located within ACECs.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Forestry and Woodland Products: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Management of wild horses and burros within HMAs could directly impact forest and woodlands by concentrating soil compaction and browsing. In particular, forest and woodland species, such as aspen, willow, mahogany, and alder, could be browsed and broken, especially impacting young age classes. Horses and burros concentrate under canopies for shade and compact soils in these areas. Direct impacts on vegetation include the removal of forage, which alters the amount, condition, production, and vigor of vegetation in grazed areas. Direct impacts from management occur from year-long use, resulting in lower vigor of desired plant species and a change in plant species composition. Overuse of vegetation next to water sources, troughs, and stock reservoirs results in a loss of plant cover. This allows localized areas to become dominated by invasive plants. Vegetation recovery and regeneration of woodlands on burned areas could be slowed or reduced by wild horses and burros. Managing wild horses and burros in a manner that ensures significant progress is made toward achieving the Standards and Guidelines for Rangeland Health and Wild Horses and Burros, and other site-specific or landscape-level objectives would reduce the potential for adverse impacts.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Forestry and Woodland Products: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Wildfire suppression and creation of fuel breaks would reduce the potential for catastrophic destruction of woodlands and forests over the long term and would help maintain sustainable woodland forests. Minimum impact suppression tactics would minimize unanticipated direct effects on forest and woodland resources during fire suppression activities. In addition, ESR and other rehabilitation treatments, such as seeding with native perennial species, would deter the spread of weeds and invasive species, directly and indirectly improving the composition of forests and woodlands. This helps to maintain native vegetation in woodlands and forests.

Because fire retardants are composed largely of nitrogen and phosphorus fertilizers, they may encourage growth of some species at the expense of others, possibly leading to changes in community composition and species diversity. Differential growth may also influence herbivorous behavior; both insect and vertebrate herbivores tend to favor new, rapidly growing shoots.

Fuels management actions would result in a short-term, direct loss of vegetation on a small scale. In the long term, fuel reduction projects would have direct impacts by reestablishing native vegetative communities, providing for healthy forests. These actions would allow fire to play its natural role more frequently and would reduce the likelihood of catastrophic wildfire. This would protect forest and woodland vegetation from direct destruction in the long term and over large areas.

Effects under Alternative A
Alternative A would manage wildfires in Category A, B C, and D, each with target fire suppression goals to protect property and resources. Fire suppression would protect forested habitat in areas threatened by fire, but can contribute to more damaging fires if dense understory vegetation builds up.

Effects under Alternative B
Alternative B would develop fire management plans to guide response to wildfire and prioritize suppression activities, and prioritizes ESR to deter cheatgrass and other invasive species from dominating burned areas and altering the natural fire regime by re-establishing appropriate species/subspecies. This approach would benefit forests more than current management.

Effects under Alternative C
Management under Alternative C would be similar to Alternative B, with more focus on protecting sensitive biological, cultural, and other natural resources, and use of native species in revegetation. This alternative would do the most to protect forests from fire damage.

Effects under Alternative D
Effects under Alternative D would be similar to those described for Alternative B but would focus on the urban interface zone.

Effects under Alternative E
Effects under Alternative E would be similar to those described for Alternative B.

Forestry and Woodland Products: Effects from Cultural Resources Management

Effects Common to All Alternatives
Protection of cultural resources would prevent direct disturbance and fragmentation of forests and woodlands. These areas are small relative to the amount of forested vegetation in the planning area; therefore, impacts would be localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Forestry and Woodland Products: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Conservation measures and law enforcement actions would prevent direct disturbance to and degradation of forest and woodland habitat, while potentially impacting the ability to implement vegetation treatments in certain areas. These areas are small relative to the acres of forested vegetation; therefore, impacts would be localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Forestry and Woodland Products: Effects from Visual Resources Management

Effects Common to All Alternatives
Complying with VRM guidelines and objectives may restrict the size and location of woodland health management treatments. Impacts would vary based on the VRM classification of the specific project area. Class I and II guidelines would limit the scope of stand treatments or prescribed burning and would prohibit treatments and prescriptions that would change the visual character of the area, increasing the difficulty of accomplishing forest and woodland management actions. Overall, impacts would be expected to minor and localized.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Forestry and Woodland Products: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
Under all alternatives, forest product management actions, including monitoring and stand treatments, would improve forest health over the long term by

increasing diversity in age classes and species composition. Implementing BMPs, standard operating procedures, and mitigation measures would minimize or reduce direct and indirect impacts on woodland habitats over the long term.

The proposed vegetation management actions would allow utilization of vegetative products for personal use under all the alternatives. Products available for harvest include but are not limited to firewood, Christmas trees, posts, poles, lumber, wildings, cuttings, native seed, and pine nuts. Harvest would only be allowed up to the maximum treatment acres or poundage proposed under each alternative with the exception of native seed (excludes pine nuts). Native seed collections typically occur on rangeland sites and include harvest seed from grasses, forbs, and shrubs for subsequent seeding of fires or restoration sites. The issuance of these permits is dependent upon seed availability/viability and site health, which vary significantly from year to year. Since the collection of native seed typically involves low impact hand harvest the impacts to vegetation are very minimal.

The collection and removal of vegetative products may affect stand woodland health in areas by the introduction of non-native species, damage to vegetation from vehicles and equipment, increased activity fuels, creation of access roads if permittees drive off existing roads to collect products.

Consideration of aspen, cottonwood, and mountain mahogany in implementation plans would reduce direct and indirect impacts on these species. Further, managing pinyon pine and juniper would improve stand health in these woodlands by removing unhealthy or diseased trees. These effects would be direct and long term.

Effects under Alternative A

Current management would continue under Alternative A, including allowing the cutting and sale of standing or downed cottonwood and aspen trees, outside of deer migration corridors, riparian areas and critical watersheds. Sales within identified high erosion areas must not reduce ground cover more than 50 percent. Pinyon nut harvests for personal use would be allowed as many as 25 pounds without a permit. Commercial collection of pine nuts may be allowed with field manager approval and the issuance of a commercial permit for fair market value.

This alternative allows for the collection of vegetative products to meet personal use and small scale commercial use. This alternative prevents any large-scale product utilization projects (e.g., biomass removal), which limits the ability to encourage new markets.

Effects under Alternative B

Alternative B and the other action alternatives would prohibit the harvest of live or dead/down cottonwood or aspen trees on personal-use firewood permits. Alternative B would also allow extraction of vegetative material for biomass

facilities. Pinyon nut limits for personal use would be similar to those described under Alternative A. This alternative proposes the highest amount of vegetative product removal; the actual impacts of this removal will depend upon current and future markets. Vegetative product removal would be limited to the acres of treatment proposed under this alternative; these acres are based on sustained yield calculations of available woodland (See **Section 3.3.1**, Forestry and Woodland Products). Issuing commercial permits would include permit stipulations or requirements to protect the soil, water, and vegetation that would maintain forest health.

Effects under Alternative C

Under Alternative C, no commercial permits would be issued. Vegetative product removal would be limited to the acres of treatment proposed under this alternative; these acres are based on sustained yield calculations of available woodland (See **Section 3.3.1**, Forestry and Woodland Products). The reduction of personal use limits from 25 pounds to 10 pounds may reduce the likelihood for illegal collection going undetected because small-scale collectors are also selling nuts in the local market.

Effects under Alternative D

Effects under Alternative D would be similar to those described for Alternative B with fewer acres available for product harvest. This alternative prohibits commercial pine nut collection within the Pine Nut, Virginia, and Stillwater Mountain Ranges and in Alpine County. The rest of the planning area would be available for commercial pine nut collection.

Effects under Alternative E

Effects under Alternative E would be similar to those described for Alternative C, with fewer acres available for vegetative product removal. Impacts would be limited to the acres of treatment, which are based on sustained yield calculations of available woodland (**Section 3.3.1**, Forestry and Woodland Products). This alternative prohibits commercial pine nut collection.

Forestry and Woodland Products: Effects from Livestock Grazing Management

Effects Common to All Alternatives

Forests and woodlands would be subject to grazing of young trees' shoots and trampling of saplings, as well as indirect impacts such as soil compactions and higher weed spread potential. Woodland stand health objectives may be affected by a decrease in diversity of age classes.

Effective grazing management and range improvement actions would improve forest health including maintenance of various age classes of vegetation, protection of sensitive areas, including riparian areas, and control of weed spread.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Forestry and Woodland Products: Effects from Geology and Mineral Management

Effects Common to All Alternatives
Impacts on forest and woodland vegetation could result from fluid, leasable, and locatable mineral development and mineral material sales or disposal. Direct impacts associated with these actions include loss of or injury to plants due to excavation or trampling and increased exposure to dust and weed spread associated with construction and use of access roads. In some instances, all vegetation would be removed from a parcel. In these cases, the proponent would be required to pay fair market value for the vegetation that was destroyed, reducing the potential availability of woodland products. Other impacts on woodlands would vary depending on the size of disturbance and if location of proposed mineral actions are within woodland stands. Delineating closed areas to mineral development, implementing use restrictions, NSO and CSU stipulations, and withdrawals would protect woodland stands within delineated areas.

Under all alternatives, BMPs would be implemented, and revegetation would be required during operation, thus minimizing and mitigating impacts. Unnecessary roads would be closed to reduce fragmentation and to restore habitat. In addition, special status species habitat would be avoided, thus protecting some forest and woodland areas.

Effects under Alternative A
Alternative A would open the greatest acreage (**Table 2-1**) and would close the least acreage of forest and woodland to mineral development, thus having the greatest likelihood to impact forest and woodland vegetation.

Effects under Alternative B

Compared to Alternative A, Alternative B would open fewer acres and close more acres (**Table 2-1**) to mineral development, thus having a lower likelihood to impact forest and woodland vegetation.

Effects under Alternative C

Alternative C would open the fewest acres (**Table 2-1**) and would close the most acres of forest and woodland to mineral development, thus having the lowest likelihood to impact forest and woodland vegetation of all alternatives.

Effects under Alternatives D and E

Based on the acres open and closed to mineral development, Alternatives D and E would have a lower likelihood to impact forest and woodland vegetation than Alternative A.

Forestry and Woodland Products: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Managing BLM-administered lands to provide dispersed recreation could impact forests and woodlands through direct trampling, or indirectly through human disturbance, soil compaction, weed introduction or spread, increase the potential for human-caused fire, and increased dust. Together, these would reduce forest and woodland health and vigor, alter stand composition, and lower habitat value.

Recreation uses would impact forestry and woodlands from activities such as camping, target shooting, and hunting. The potential for human-caused fire on forest stands and woodlands would increase depending on the number of recreationalists. Illegal harvest of trees for firewood could damage forests.

Motorized travel is the most damaging form of recreation, resulting in soil and streambank erosion, habitat trampling, and woodland disturbance. OHV management actions that result in increased OHV use would have higher impacts on forest resources.

All alternatives would provide a wide range of developed and dispersed recreation opportunities to meet projected recreation demand in the planning area. All alternatives would also manage recreation use on BLM-administered land to protect natural resources, provide for health and safety, and minimize conflicts among land uses. Increased recreation use and OHV use has the potential to impact forest and woodland resources through the potential for human caused wildfire, soil compaction from OHV use, introduction of invasive or noxious weeds, cutting of limbs or live trees for campfire use, and traffic congestion with product transport vehicles and recreational vehicles using the same road system.

Effects under Alternative A

Under this alternative, the BLM would continue to manage 67,700 acres in the Walker Lake and Alpine SRMAs. Continued management of these lands as SRMAs could encourage additional use of these lands and thus increase damage to woodland areas. Implementation of BMPs and development of mitigation measures would reduce impacts.

Effects under Alternative B

Under Alternative B, the BLM would manage 76,100 acres as SRMAs, 12 percent more than Alternative A. The Alpine and Walker Lake SRMAs would be maintained but reduced in size, and four additional SRMAs would be designated, identifying recreation as the principal use of these lands. Managing lands as SRMAs could encourage additional use of these lands and thus increase soil compaction and dust. Alternative B would also establish 7 ERMAs further increasing the potential for visitation. This alternative would have the highest potential for increased use of these areas and, therefore, damage to woodland resources.

Effects under Alternative C

Under Alternative C, 74,700 acres would be designated as SRMAs, 10 percent more than Alternative A. The Walker Lake SRMA would be maintained and the Alpine SRMA expanded, and one new SRMA, Sand Mountain, would be established. Fourteen ERMAs would also be established. Alternative C would manage fewer SRMAs, reducing the potential for development of recreational facilities that would attract visitors, and would place the most limitations on motorized travel use.

Effects under Alternative D

Three new SRMAs would be designated, and one (Walker Lake) closed, for a total of 67,100 acres managed as SRMAs, approximately the same as Alternative A. Four ERMAs would also be established, including one in the urban interface zone.

Effects under Alternative E

This alternative would designate four new SRMAs while reducing the size of the Walker Lake SRMA, for a total of 106,100 acres, 63 percent more than Alternative A. Fourteen ERMAs would also be established. Impacts would be similar to Alternative D.

Forestry and Woodland Products: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Maintaining roads would allow access to forests and woodlands. This would help achieve forest and woodland vegetation management goals in the long term and would assist in accessing resources for development. Roads may spread noxious weeds into forests and woodlands. BMPs and mitigation measures to minimize

this spread would indirectly help improve forest health and stand composition in the long term.

Effects under Alternative A

Under Alternative A, there would be no change to current acreage open to motorized and mechanized travel (see **Table 2-1**) or limited to existing routes. Alternative A would have the greatest impact on forests and woodlands from motorized travel and road and trail construction, including vegetation removal, soil compaction, and increased dust. Under Alternative A most of the planning area (3,840,300 acres) would be open to motorized use with limited travel management delineated at 924,300 acres and closed areas at 31,800 acres. There would be potential for damage to woodlands from soil compaction and erosion. These activities would decrease forest and woodland health and vigor, alter stand composition, and lower habitat value. Improved and increased access to stands would also facilitate implementation of forest treatments and allow for multiple uses.

Effects under Alternative B

Under Alternative B, over 3,500,000 additional acres (**Table 2-1**) would be limited to existing routes. Under Alternative B, 95,300 acres would be open to motorized use, with 4,677,000 acres limited and 26,700 acres closed. The increase in acres restricted to existing routes would provide more protection for forest resources from road impacts than under current management. This alternative would reduce impacts on woodlands use compared to Alternative A.

Effects under Alternative C

Under Alternative C, approximately an additional 1.5 million acres (**Table 2-1**) would be closed to motorized travel and an additional 2 million acres limited to existing routes. OHV use would be the most restricted under this alternative, managing 1,190,500 acres as closed, 3,013,500 acres as limited, and 1,300 acres as open to OHV use. The smallest amount of acreage would remain open to motorized travel, resulting in the lowest level of impacts on forest resources from OHV use. However, this alternative would restrict access into areas for woodland harvesting

Effects under Alternative D

Alternative D management would be similar to Alternative B, managing 30,600 acres as closed, 4,748,400 acres as limited, and 22,700 acres as open. With fewer acres managed as open to motorized and mechanized travel and more acres managed as limited to existing routes, management under this alternative would better protect forest resources from road and other travel-related impacts. Impacts on woodlands would be lower than under Alternative A.

Effects under Alternative E

Under this alternative, the BLM would manage 24,100 acres as closed, 4,717,300 acres as limited (including priority wildlife habitat areas), and 55,700 acres as

open to OHV use. These closure levels and limitations are more protective of forest resources than Alternative A.

Forestry and Woodland Products: Effects from Lands and Realty

Effects Common to All Alternatives

Vegetation and wildlife habitat value would be given consideration in disposal and acquisition decisions. Impacts on forest and woodland vegetation would vary on a case-by-case basis, but impacts would be minimized since only lands with little resource values would be identified for disposal, and further NEPA documentation would minimize potential impacts on forests and woodlands. Acquisition of forests and woodlands would enhance forest and woodland resources.

ROWs alter habitat with their footprint. Most of the footprints are localized and cover a small area, but ROWs tend to be linear and stretch for miles. Impacts from ROWs include permanent removal of forest and woodland vegetation, introduction and spread of weeds, soil compaction, habitat disturbance and fragmentation, and increased dust. In the long term, this would lower forest and woodland health and vigor, alter stand composition, and lower habitat value.

Effects under Alternative A

Alternative A would not manage additional ROW avoidance areas. Existing ROW exclusion areas (564,100 acres; **Table 2-1**) would continue to be managed under Alternative A. Forests within ROW exclusion areas would be protected from ROW development. ROW development impacts outside of exclusion areas would continue, resulting in habitat fragmentation, loss of vegetation, and increased potential for weed spread. Under this alternative, 179,700 acres of BLM-administered land would be identified for disposal. Disposal lands may enhance forest resources if the disposal enables the BLM to acquire other land to form contiguous habitat parcels.

Effects under Alternative B

Under Alternative B, 1,195,800 acres (**Table 2-1**) would be managed as ROW avoidance areas. Forest health would be maintained as projects within ROW avoidance areas would be subject to stipulations that would protect resource values. ROW exclusion areas would remain at levels similar to Alternative A (580,000 acres). Under this alternative, 273,500 acres of BLM-administered land would be identified for disposal. Overall, management under Alternative B would be more protective of forest resources than Alternative A because of the establishment of ROW avoidance areas and a 15,900-acre increase in ROW exclusion areas.

Effects under Alternative C

Under Alternative C, 2,675,800 acres would be managed as ROW exclusion areas and 369,300 acres (**Table 2-1**) as ROW avoidance areas. Forests would

be protected from development within ROW exclusion areas. Forest health would be maintained based on implementation of special stipulations that protect or reduce impacts on resources within ROW avoidance areas. No acres of BLM-administered land would be identified for disposal under this alternative. This alternative would afford the greatest protection to forest woodlands from lands and realty management compared to other alternatives.

Effects under Alternative D

Under Alternative D, the BLM would manage 564,100 acres as ROW exclusion areas and 1,226,100 acres as ROW avoidance areas. Impacts would be similar to Alternative B, however 15,900 fewer acres would be protected within ROW exclusion areas.

Effects under Alternative E

Under Alternative E, the BLM would manage 605,900 acres as ROW exclusion areas and 1,448,200 acres as ROW avoidance areas. Acres identified for disposal would also increase. More acres containing forests would be protected within ROW exclusion areas compared to Alternatives A, B, and D. However, the BLM would manage fewer ROW avoidance area acres compared to Alternatives B and D. This alternative would afford the second highest level of protection.

Forestry and Woodland Products: Effects from Renewable Energy

Effects Common to All Alternatives

Direct impacts on forest and woodland vegetation could occur from renewable energy projects and associated issuance of new ROWs, which require vegetation clearing and access roads that disturb or destroy forests and woodlands. Weed spread or introduction could result as an indirect impact of renewable energy-associated ROWs and would result in reduced forest health. BMPs, stipulations, and mitigation measures would minimize direct and indirect impacts on forest vegetation.

Effects under Alternative A

Current management does not manage any avoidance areas for wind energy, and this would continue under Alternative A. Approximately 905,900 acres (**Table 2-1**) are managed as variance areas for solar projects. Variance areas allow development but require provisions to protect resources in the area. Outside variance areas, utility-scale solar energy development would not be permitted. Outside of exclusion and variance areas Alternative A would provide limited protection to forests from renewable energy impacts.

Effects under Alternative B

Alternative B would manage 773,400 acres as variance areas for solar energy development and 1,220,200 acres as avoidance areas for wind energy turbines or transmission lines. Management of avoidance areas would protect forests and woodlands from disturbance and limit indirect effects, such as noxious weed

invasion or spread caused by development. These provisions would protect forests in the designated areas more than current management.

Effects under Alternative C

Renewable energy impacts on forest resources would be reduced most under Alternative C due to the delineation of 2,073,200 acres as wind energy exclusion zones. Designating exclusion zones would have the greatest benefit for forests and woodlands by protecting against direct disturbance and by limiting indirect effects such as noxious weed invasion. Approximately 600,000 acres would be managed as variance areas for utility-scale solar development, protecting more acreage from large-scale solar projects.

Effects under Alternative D

Impacts under Alternative D would be similar those described under Alternative B.

Effects under Alternative E

Under Alternative E, the BLM would manage 629,900 acres as variance areas for utility-scale solar energy development, and 629,900 acres of wind energy avoidance and exclusion zones. This alternative would protect forests and woodlands more than Alternative A.

Forestry and Woodland Products: Effects from Areas of Critical Environmental Concern

Special management areas, such as ACECs, result in increased protection of forest resources, and long-term improvement or maintenance of habitat quality as a result of special management and use restrictions in these areas. However, establishment of ACECs would restrict harvesting of forest resources in certain ACEC due to OHV motorized travel closures.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under current management, the BLM manages 6 ACECs (21,800 acres), the largest being the Stewart Valley Paleontological Area (**Table 2-1**). Management of these areas under Alternative A would continue to restrict development to protect sensitive resources, providing incidental protection to forest habitat from loss or damage. Only 400 acres of forests would be protected in ACECs under this alternative.

Effects under Alternative B

Under Alternative B, an additional 9 ACECs (371,170 acres, including 133,100 acres of woodlands) would be established in the planning area. Forests in these areas would have enhanced protection from development as an incidental result of protection of other resources, primarily cultural resources.

Effects under Alternative C

Under Alternative C, an additional 18 ACECs (786,270 acres, including 180,300 acres of woodlands) would be established in the planning area. This alternative would protect the largest amount of land through management of ACECs and includes ACECs for botanical species and Greater Sage-Grouse. Forest resources in these areas would have enhanced protection from development as an incidental result of protection of other resources, but access and harvesting would be limited.

Effects under Alternative D

Under Alternative D, 11 ACECs (180,000 acres, including 76,400 acres of woodlands) would be established in the planning area. This alternative would more acreage in ACECs than Alternative A. Forests in these areas would have enhanced protection from development as a result of protection of other resources.

Effects under Alternative E

Under Alternative E, 8 ACECs (82,770 acres, including 18,400 acres of woodlands) would be established in the planning area. The BLM would manage more acreage in ACECs than Alternative A, but fewer than the other action alternatives. It would provide additional protection in newly designated ACEC areas compared to current management.

Forestry and Woodland Products: Effects from Tribal Interests

Effects Common to All Alternatives

Tribal interest could limit certain vegetation management action or limit harvesting of forestry and woodland products in areas in order to protect Native American traditional use areas.

Tribal consultation is not likely to adversely impact forest resources. Consulting with tribes to identify culturally significant plants, important habitats, and traditional use locations would emphasize protection of natural resources, including forests and woodlands. This would limit direct disturbance to woodlands in certain areas. Consultation could place higher treatment priority in areas not previously identified or limit actions in planned treatment areas. Impacts would be direct and localized.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Forestry and Woodland Products: Cumulative Impacts
Table 4-1 lists the past, present, and reasonably foreseeable cumulative actions for the CCD. Pinyon and juniper thinning and reduction projects under the alternatives would reduce the acreage of these woodlands in the short term with expansion and infilling of trees replacing those lost to vegetation treatments. Fuels treatments, including prescribed understory burns in forested areas, would protect woodlands by reducing the potential for a stand-replacing fire. Potential increases in minerals, renewable energy, and lands and realty actions under the alternatives would disturb forest stands. Impacts from these uses would be reduced with implementation of permit stipulations, BMPs, standard operating procedures, and mitigation measures. Climate change trends of including higher tree densities, expansion of pinyon-juniper, and mortality from drought, insects and disease are expected to continue. Aspen groves and riparian woodlands are forecast to continue to decline. Woodlands in areas proposed for ACEC designation and priority wildlife habitat areas would be protected from these trends by management actions and also prioritized for fire suppression response, reducing the potential for wildfire.

4.4.2 Livestock Grazing

Summary
This section discusses impacts on livestock grazing from proposed management actions of other resources and resource uses. Existing conditions are described in **Section 3.2.2**, Livestock Grazing.

Consistent with BLM Washington Office Instruction Memorandum No. 2012-169, criteria considered while developing livestock grazing alternatives included suitability for grazing, riparian issues, private land conflicts, recent use (10 years or longer since land was used or permitted), and special use areas (e.g., threatened and endangered species). Across all alternatives, the variation in permitted AUMs from high to low is 73 percent, and variation in areas available to livestock grazing is 44 percent.

Grazing would be impacted when all or part of an allotment is temporarily made unavailable to livestock grazing (such as during vegetation treatments, fire, drought, or watershed or riparian restoration) or made unavailable to grazing (to protect other resources such as sensitive species and cultural or paleontological resources) or when changes in grazing management practices are needed to support objectives for other resources. Under all alternatives, potential for conflicts with other resource uses may occur. Due to the high level of urban interface and the growing importance of recreation in the planning

area, conflicts with recreation are possible under all alternatives; conflicts would be minimized where recreation could be focused in specific areas (as in Alternative B and E).

In general, Alternative A would maintain the current level of grazing and impacts from Alternative B would have minimal changes to areas available for grazing or permitted AUMs, but may increase the level of development and recreational use, resulting in the potential for increased disturbance to grazing management. Alternative C includes a 44 percent increase in acres unavailable to livestock grazing and 73 percent decrease in permitted AUMs compared to Alternative A. In addition, Alternative C would impose the highest level of limitations on access to allotments and decrease the flexibility in grazing management by imposing restrictions on season of use and range improvements. Under Alternative D management actions will focus on the urban interface area. Implementation of specific management actions in this area may introduce some local limitations on livestock grazing management, but it is likely to reduce conflicts between recreation and livestock grazing, which are high in the urban interface. Alternative E combines actions from other alternatives and balances limitations on livestock grazing management with increased flexibility, especially in situations where rangeland health is maintained, thereby mitigating impacts on grazing management.

Variation in acres available to grazing and permitted level of AUMs is shown in **Table 4-14**, Change in Area Permitted for Grazing. Additional restrictions within areas available to grazing may be implemented under all alternatives.

No impacts or negligible impacts would result to livestock grazing from management actions proposed for the following resources and resources uses: air quality, caves and cave resources, forestry and woodland resources, public health and safety, interpretation and environmental education, social and economic conditions, and environmental justice.

Table 4-14
Change in Area Permitted for Grazing

	A	B	C	D	E
Indicator					
Acres unavailable for livestock grazing	6,700	6,100	2,702,000	10,700	6,100
Acres available for livestock grazing	4,796,600	4,797,200	2,101,300	4,792,600	4,797,200
Permitted AUMs*	151,200	151,200	40,700	150,800	151,200

Source: BLM GIS 2014a
*Permitted AUMs by alternative are approximant numbers. When management direction results in a partial closure of an allotment, the percent of closure is used to determine the percent of AUMs permitted (e.g., 70 percent closure results in 70 percent reduction in permitted AUMs).

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on livestock grazing:

- All new and existing leases and permits will be subject to terms and conditions determined by the BLM Authorized Officer to achieve the management and resource condition objectives for BLM-administered lands and to meet BLM Nevada Public Land Health Standards.
- Management actions will be in accordance with the Omnibus Public Land Management Act of 2009, Subtitle E; Section 4(d)(4) of the Wilderness Act (16 United States Code [USC] 1133[d][4]); and the guidelines set forth in Appendix A of the report of the Committee on Interior and Insular Affairs of the House of Representatives accompanying HR 2570 of the 101st Congress (H. Rept. 101-405).
- Range improvements (e.g., fences, pipeline, water wells, troughs, and reservoirs) could result in a localized loss of vegetation cover throughout the improvements' useful life. Vegetation will be reestablished through reclamation practices along water pipelines within 5 years to the extent possible, whereas areas with fences, water wells, troughs, and reservoirs could contain a portion of the area disturbed during their useful life and will be revegetated when abandoned.
- The construction and maintenance of existing range improvements will continue in the decision area as needed. New range improvements could be subject to limitations, as defined in the RMP. Range improvements lead to better livestock distribution and management options, and maintain or improve rangeland health.
- By definition in this RMP, livestock grazing is not considered a surface-disturbing activity, but it could affect the surface in areas where livestock concentrate.
- Grazing preference is attached to base property owned or controlled by a permittee or lessee.
- Permitted AUMs by alternative are approximate. When management calls for a partial closure of an allotment, the percent of closure is used to determine the percent of AUMs permitted (i.e., 70 percent closure results in 70 percent reduction in permitted AUMs). Due to variability of acres in GIS data, changes of less than 100 acres are discounted. Actual changes in permitted AUMs will be determined during a periodic review or as specified in management direction by alternative.

Indicators

The following indicators were used to assess the degree of impacts on livestock grazing:

- A change in permitted AUMs in areas available for livestock grazing due to various resource issues or conflicts, or cumulative management actions
- An increase in forage levels that could allow an increase in permitted AUMs across the decision area
- Restrictions or prohibitions on the ability to construct or maintain range improvements and conduct treatments (infrastructure and vegetation)
- Closure of areas to livestock grazing
- Restrictions or prohibitions on the kind of livestock permitted
- Changes in the timing, duration, season, or frequency of permitted use

Nature and Type of Effects

Impacts on livestock grazing are the result of activities that affect forage levels, areas available to grazing, kind of livestock, season of use and timing, and ability to construct range improvements as well as human disturbance or harassment of livestock in grazing allotments. Key types of impacts are detailed below.

Management actions for climate change may require adjustment of grazing practices or permitted levels of AUMs should forage levels change over time based on changing climate patterns.

Management of vegetation resources enhances vegetative conditions and indirectly affects livestock grazing by increasing vegetation productivity and improving forage conditions in the long term. Vegetation treatments designed to reduce the incursion of nonnative annual grasses, such as cheatgrass and encroachment of shrubby vegetation, could have short-term effects on livestock grazing by removing forage and temporarily excluding livestock. However, these treatments generally enhance rangeland conditions by maintaining the forage base (the amount of vegetation available for wildlife and livestock use) in the long term. Allowing vegetation treatment areas to rest would result in direct short-term limited livestock management impacts such as decreases in AUMs, livestock herding, pasture rotations, and exclusion from the treated area. In the long term, resting treated areas would enhance vegetation by allowing seedlings to establish, resulting in a sustained forage base. Livestock grazing would improve over the long term as the ecological condition of vegetation in grazing allotments improves following restoration. Prescribed grazing is the application of domestic livestock grazing at a specified season and intensity to accomplish specific vegetation management goals, typically outside of permitted allotments.

Prescriptive grazing could potentially provide additional options to livestock operators, however, the degree to which prescriptive grazing would represent a meaningful increase in available forage would depend on the level of use, which is often variable and sporadic.

Unregimented livestock grazing can have adverse impacts on riparian ecosystems (Armour et. al 1991); therefore, managing riparian habitat can directly impact livestock grazing through excluding livestock at specific sites, implementing trailing only, increasing herding, adding range improvements (such as cross fences and water gaps), and adjusting season of use and livestock numbers.

Modified livestock grazing management practices could be necessary where soils are found to be sensitive to livestock disturbances (for example, soil on steep slopes and fragile soils). Short-term direct impacts on livestock grazing from soil resource management would consist of adjustments in season and duration of use to prevent erosion and soil compaction caused by congregating cattle. In the long term, however, soil resources management would generally result in protection of soils and help provide healthy plant communities, which can benefit livestock grazing by maintaining or increasing the forage base in the long term.

Managing for healthy watersheds provides for necessary water sources and improved forage conditions for livestock grazing in the long term. Protecting water quality and watershed health could require changes in livestock management, such as deferring or shortening grazing periods, adding range improvements, excluding grazing from riparian areas, establishing riparian pastures, and increasing livestock herding.

In areas next to public water supplies, there could be stricter regulations for livestock management to limit contamination of water supplies. These limitations include exclusion areas or other restriction on livestock management. This could result in increased costs to permittees if changes resulted in AUM reduction or increased livestock management costs.

Developing water sources for multiple uses would impact livestock grazing by making more water available. More dispersed water sources would prevent livestock from concentrating around current water holes and would allow for changes in utilization patterns, which may result in an increase in available forage.

Wildlife species could compete with livestock for forage, water, and cover when they occupy the same area. Big game species such as elk, bighorn sheep, pronghorn, and deer compete for similar forage as cattle, sheep, and horses. Fish and wildlife habitat management activities would directly affect livestock grazing through restrictions on grazing management, such as increased rotation, timing, or season of use and/or reduced forage. However, actions to improve or

expand wildlife habitat could also improve forage conditions in the long term and indirectly maintain or increase forage production.

Limitations on domestic sheep and goat grazing could be recommended in occupied bighorn sheep habitat to protect the bighorn sheep from disease transmission. A substantial change in livestock grazing management flexibility would result when domestic sheep grazing is prohibited or restricted in bighorn sheep occupied habitat. If an allotment is converted from domestic sheep use to cattle use, the operators would need to either change the kind of livestock in their operation or seek other grazing lands. This could result in financial hardship to permittees to the extent that they could be forced out of the sheep industry.

In habitat for special status species, including Greater Sage-Grouse, reduction in AUMs, closure of areas to livestock grazing, timing limitations or other limitations on management activities may be applied, resulting in increasing management of livestock, increased time and cost to permittees.

When livestock and wild horses occupy the same area, their needs for water and forage are competitive. Competition for water and forage can be mitigated through adjustments in season of use, AUMs, AMLs and water developments. This would improve distribution of livestock and wild horses and burros. In the short term, however, adjustments typically emphasize changes to livestock grazing management, which can result in in increased time and costs for permittees.

Wildland fire would have varying effects on livestock grazing, depending on fire location and its size, intensity, severity, and timing. Initially, wildland fire would likely displace livestock, and, depending on the proximity to the fire, livestock could be stressed, injured, or killed. Wildland fire would remove vegetation and forage over the short term. Additional impacts on livestock operations could occur when BLM guidelines require a rest period following rehabilitation before grazing is reestablished. Over the long term, wildland fire could improve forage production, especially when post-fire management efforts are implemented, such as reseeding. Restoring natural disturbance regimes, such as fire, and using vegetative treatments to accomplish biodiversity objectives to improve plant community resilience, would also benefit livestock grazing by maintaining a balance of seral stages. In general, removing woodland species benefits livestock grazing by creating a healthier grass, forb, and shrub community.

Activities associated with the management of cultural resources would affect relatively small areas (typically less than 1 acre) and with minimal effects on livestock grazing. In general, information provided by cultural resource inventories can limit or eliminate livestock management activities (specifically the presence or location of range improvements) on a case-by-case basis. For example, fencing some cultural sites could exclude grazing and cause a loss of available forage. Restrictions on surface disturbance and other disruptive

activities near cultural sites could require that some range improvements be modified or relocated, and, in rare cases, improvements could be precluded.

Livestock and their handling facilities could be authorized under all VRM classes; however, the design and placement of new range improvements in VRM Class I and II areas would have to be constructed in particular manner as identified in BLM Handbook H-8410-1. As a result, the cost of constructing fences, water tanks, and other range improvements could increase, which could increase costs for permittees. Areas classified as VRM Classes I and II could preclude the installation of certain projects. In general, VRM classes that restrict surface-disturbing activities because of their potential effect on visual resources would indirectly help maintain forage levels by reducing activities from BLM-administered land uses. However, if surface disturbance limitations were to restrict livestock improvements and management opportunities, then permittees may not be able to distribute livestock to effectively use allotments; the result could be an overutilization in some areas of an allotment, a decrease in AUMs, or an increase in permittees' cost or time.

Implementing particular livestock grazing management actions could affect livestock grazing by increasing operators' costs or changing management actions. Adjusting AUMs could potentially impact the rancher negatively or positively depending on the situation. Short-term and long-term costs to permittees could also change due to the following:

- Implementation of grazing strategy or modification to grazing systems
- Changes to allowed utilization level
- Change in season-of-use or livestock class
- Construction of range improvements or other approaches to meet rangeland conditions objectives or provide protection for other resources

The following allotments are closed due to conflicting public uses (airports, campgrounds, county and state parks) and other limitations listed below:

- Central. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments, and private properties containing homes that cattle may enter are within or adjacent to the allotment.
- Churchill Butte. Private properties containing homes that cattle may enter are within or adjacent to the allotment.
- Hangman. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments.

- Harvey Flat. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments, and private properties containing homes that cattle may enter are within or adjacent to the allotment and for other conflicting uses.
- Horse Spring. Stray horses have removed palatable vegetation within the allotment, and livestock safety would be at risk due to the close proximity to roads within the urban interface.
- Indian Creek. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments.
- Koch Ditch. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments, and private properties containing homes that cattle may enter are within or adjacent to the allotment.
- Milberry. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments and for other conflicting uses.
- Red Rock. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments, and it is landlocked by home owners whose property cattle may enter. Livestock safety would be at risk in this allotment due to the close proximity to roads within the urban interface.
- Stockton Flat. Stray horses have removed palatable vegetation within the allotment, and livestock safety would be at risk due to the close proximity to roads within the urban interface.
- Truckee-Virginia. Private properties containing homes that cattle may enter are within or adjacent to the allotment, and livestock safety would be at risk due to the close proximity to roads within the urban interface.
- Wade Valley. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments.
- Wedekind. This allotment has been found to be too small to feasibly manage for grazing because there are no adjacent grazing allotments, and it is landlocked by home owners whose property cattle may enter.

Impacts on grazing operators could occur if closures or restrictions occur in currently active allotments, especially if an area proposed for closure or restriction represents an allotment's primary use area. Adjusting seasons of use could limit permittee flexibility; reducing the amount of available forage in the

short term. Timing of livestock removal may cause additional impacts if it coincides with ranchers critical growing season on base property. Restriction on kind of livestock allowed in an allotment would most likely have an impact on the operator, both directly and indirectly. This type of change could cause the operator to seek grazing lands elsewhere to replace the area lost, and may necessitate purchase or rental of lands, or construction of new range improvements. If such costs are prohibitive to continuing grazing, operators could go out of business. In the long term, implementing BMPs and grazing management systems that achieve the Standards and Guidelines for Rangeland Health would improve forage conditions, indirectly improving livestock health.

Construction of range improvements that would improve livestock distribution and allow use of a larger portion of the rangeland would generally enhance rangeland health in the long term; however, it could impact the livestock permittee economically in the short term. Constructing off-site water sources and fencing riparian and spring sources could keep livestock away from sensitive riparian areas and provide a cleaner, more-reliable water source for livestock. In other cases, rangeland management changes could be designed to protect other resources or resource uses, such as cultural resources or threatened and endangered species. In these instances, management changes could result in additional limitations on livestock grazing, and no changes or enhancement to rangeland conditions. Forage banks are allotments where a previous permit has been relinquished or cancelled which are maintained for use to provide alternate grazing opportunities for ranchers after wildfires, restoration projects and during droughts. Management actions that allow forage banks would therefore provide enhanced management options for permittees/leases.

Energy and mineral development could impact grazing. During the exploration and testing phase of mineral development, there would be minimal acreage directly impacted. However, impacts on livestock dispersal and trespass could occur, increasing time and cost to permittees. In particular, should development occur in a small allotment, there is the potential for significant loss of AUMs for the affected permittee due to loss of available grazing acres. Surface-disturbing mineral development directly affects grazing areas in the short term during construction of well pads, roads, pipelines, and other facilities. Potential impacts include changes in available forage, reduced forage palatability because of dust on vegetation, limits on livestock movement, harassment, temporary displacement of livestock, and an increased potential for the introduction and proliferation of noxious weeds. This would cause a loss of livestock forage and associated AUMs. In the long term, a smaller amount of grazing acreage is permanently lost from mining operations, with the impact level dependent on the permanent acres of disturbance. Improving roads associated with mineral development could facilitate livestock management operations by maintaining or improving access to remote locations within allotments. Properly implemented BMPs and reclamation mitigation measures would likely improve rangeland health and forage levels for livestock.

Likewise, renewable energy development affects areas of grazing in the short term during construction of access roads and facilities (such as wind turbines, solar panels, and biomass plants). Impacts include temporary loss of forage, reduced forage palatability because of dust on vegetation, and temporary harassment and displacement of livestock. In the long term, a smaller amount of permanent grazing acreage would be lost, depending on the size of these operations.

Recreation can affect livestock grazing directly through human disturbance and indirectly through rangeland degradation. Direct disturbance can include undesired animal dispersing or trespassing due to gates left open by recreational users; animal displacement, harassment, or injury from collisions or shooting; or damage to range improvements. In addition, OHV use results in indirect impacts, such as increased dust on forage in high-use areas, leading to lower forage palatability. The degree of impacts would vary with the intensity of recreation, the timing of recreation activities (livestock could be more susceptible to disturbance during the spring when young are present), and location of recreation in the allotment (a higher level of disturbance could occur near areas frequented by livestock such as water sources or salt licks).

Due to management priorities, in SRMAs, grazing practices could be changed to accommodate recreation if visitor experience would be negatively affected by livestock grazing, Should these changes result in increased costs or time required by permittees, this could result in permittees' inability to fully utilize an allotment. In ERMAs, there would be a balance, or compromise, between recreation and grazing. ERMAs are managed for specific activities. While conflicts are possible, these management areas focus on a balance of recreational activities and grazing management needs; therefore, there are likely to be fewer changes required to grazing systems as a result of recreation management in ERMAs. Throughout SRMAs and ERMAs, development of recreation facilities could displace livestock and reduce area available for grazing on a given allotment. Overall, establishment of SRMAs and, to a lesser extent, ERMAs may focus recreational use in specific potions of the planning area, while these areas may become less compatible with grazing, the level of conflicts with dispersed recreation and livestock grazing could be reduced for the overall planning area. Public perception of livestock grazing and the degree to which BLM-administered land users see grazing as a compatible use may also differ depending on the recreation setting, with urban area land users less likely to see grazing as a compatible use. (Brunson and Steel 1996).

In general, transportation routes may provide access for permittees to range improvement and allow for expedited checking of livestock. Short-term impacts of road construction and temporary road closures include loss of forage, harassment, and livestock displacement. Long-term direct and indirect impacts on livestock from newly developed transportation routes include loss of forage, reduced forage palatability because of dust on vegetation, and disturbance and

harassment caused by increased levels of human activities. Decommissioning roads from the system inventory could directly impact permittees' access to their livestock. Conversely, when travel is closed or limited to existing or designated trails within areas available to livestock grazing, but administrative access is maintained, permittees could benefit from reduced livestock disturbance. Closing road or trails not leading to range improvements would also increase forage availability when the area is rehabilitated or when natural rehabilitation occurs.

Lands and realty actions, such as small land transfers and ROW authorizations (e.g., for power lines, pipelines, and other structures), could have short-term impacts, including temporary forage removal, livestock displacement, and an increased potential for noxious weed introduction and spread. The time frame for short-term displacement of livestock from a ROW can vary from a few weeks to months during construction, or last as long as two years (or more) following reclamation depending on the activity permitted in the ROW. Livestock can also be injured or killed during the construction and use of ROWs from open trenches and vehicle collisions if proper mitigation measures are not in place. Management of ROW exclusion areas would prohibit development for utilities in these areas and, therefore, reduce short- and long-term impacts on grazing. Similarly, ROW avoidance areas would limit impacts. Long-term impacts on livestock from site-specific lands and realty actions include changes in and loss of forage, reduced forage palatability because of dust on vegetation, and livestock disturbance and harassment from increased levels of human activities.

Acquisition of private lands within allotments can improve access for permittees and management options for livestock movement, or can provide additional resources, such as water. Land disposals may alter previous grazing management due to loss of watering sites, ingress or egress to the allotment, or loss of historic trailing routes. Any of these would require additional management strategies and possible short-term stress on livestock. Forage- and range-improvement projects could be permanently lost as a result of land disposals or exchanges. Loss of AUMs could occur where large blocks of land are either disposed to the public or the land exchange is not in the same area as the allotment losing the land. Many disposal tracts, though, are small and isolated, meaning disposals would not likely result in the loss of desirable allotments. The BLM would be required to notify the permittee two years before any land disposal (43 CFR 4110.4-2[b]), except in an emergency. The BLM would have to compensate the permittees for the range-improvement projects, in accordance with 43 CFR 4120.3-6(c).

Special management areas could impact livestock grazing when they are made unavailable to livestock grazing to protect specific resources. Short-term direct and indirect impacts of developing new Back Country Byways could include loss of forage and temporary displacement of livestock. Long-term impacts on cattle from newly developed Back Country Byway routes include loss of forage and

reduced forage palatability because of dust on vegetation. However, livestock and livestock operators could use Back Country Byways as access routes within or between allotments. When management decisions restrict surface disturbances, construction of structural range improvements could be restricted or limited, as described for VRM classes above. This could limit management options for permittees, which could increase cost or time.

Most ACECs within the decision area would be designated to protect sensitive plant and wildlife habitat and significant cultural resources. Grazing availability depends on the designated ACEC management objectives. Restrictions can include total exclusion of grazing from the ACEC, to the limitations on the kind of livestock animal, to the season, duration, or location that livestock are allowed to graze. Limitations on motorized travel may indirectly impact ability of permittees to access allotments for management. However, limitations on energy and mineral development and ROW authorizations would reduce conflicts of livestock grazing with other resource uses and may improve forage in the long term due to lack of disturbance.

Managing WSAs would have direct and indirect effects on livestock grazing. In general, limitations on surface-disturbing and other disruptive activities would likely reduce harassment of grazing animals and maintain and improve vegetation conditions, thereby maintaining or improving the livestock forage base. Protections afforded to these areas, however, limit the types of access by permittees (such as no OHV use and road closures). Management flexibility could be reduced, as described for special designation areas, above; therefore, permittees' costs to time could increase. Existing range improvements are considered valid rights and could be maintained in the same manner and to the same degree as they have been in the past. The construction of new range improvements would be limited, depending on their impact on wilderness values. WSA management would impose limitations on grazing to protect those wilderness values. If Congress were to release WSAs from wilderness consideration, impacts would vary by alternative and individual WSA.

When portions of grazing allotments overlay river segments eligible or suitable for inclusion in the NWSRS, livestock permittees along these segments could be required to change livestock management, including utilization levels, timing and duration of grazing, or maintaining and constructing range improvements to protect ORVs and adequate water quality to support those ORVs, free-flowing condition, and tentative classification. Restrictions would occur should grazing practices begin to cause degradation compared with the conditions that existed when NWSRS eligibility or suitability was determined. Even under Alternative B (in which none of the segments would be found suitable), segment 1 ORVs would still be protected through WSA management.

Livestock Grazing: Effects from Climate Management

Effects under Alternative A

No specific management actions are in place under Alternatives A for climate management. The BLM would continue to address climate management through strategies primarily addressing drought management. Based on drought conditions livestock may not be allowed to graze in areas. Hauling water would facilitate livestock grazing on a case-by-case basis.

Effects under Alternatives B, C, D, and E

Under Alternatives B through E, management would be adapted as needed to remove existing threats that may exacerbate the negative effects from climate change on BLM special status species and ecosystem functions. As a result, changes to grazing systems may require increased time and costs for permittees. However, should forage condition be impacted by changing climate, such changes are likely to be consistent with actions needed to meet Standards for Rangeland Health.

Livestock Grazing: Effects from Soil Resources

Effects Common to All Alternatives

Under all alternatives, objectives to maintain Standards for Rangeland Health and Guidelines for Grazing Management (BLM version 2, 2012) and Guidelines for Grazing may limit livestock grazing activities in riparian areas, resulting in increased time and costs for management. Similarly, implementation of BMPs and mitigation measures to protect sensitive soils and biological soil crusts may increase management of livestock in these areas resulting in increased time and costs for permittees. Improving vegetation cover and reducing erosion would improve rangeland health and would maintain sustainable grazing.

Effects under Alternative A

Management actions in Alternative A apply specific limits on authorized actions (e.g., not to exceed a 50 percent reduction in ground cover in High Erosion Susceptibility Areas). These actions may result in the limitation in grazing in site-specific locations that are susceptible to high soil erosion should ground cover criteria not be met.

Approximately 206,000 acres within available livestock grazing allotments are considered sensitive soils under Alternative A. Should a 50 percent reduction of ground cover in High Erosion Susceptibility Areas occur, protecting these areas would indirectly impact livestock grazing by increasing time and costs associated with range management.

Effects under Alternative B

Approximately 206,000 acres within available livestock grazing allotments are considered sensitive soils under Alternative B Management actions to reduce

erosion within areas having high soil erosion potential would improve rangeland health and protect forage.

Effects under Alternative C

Approximately 96,700 acres within available livestock grazing allotments are considered sensitive soils under Alternative C. Management actions to reduce erosion within areas having high soil erosion potential would improve rangeland health and protect forage.

Effects under Alternative D

Approximately 206,000 acres within available livestock grazing allotments are considered sensitive soils under Alternative D. Restrictions on surface uses would impact grazing as described in Alternative C.

Effects under Alternative E

Effects from management of soil resources under Alternative E would be the same as described under Alternative D.

Livestock Grazing: Effects from Water Resources

Effects Common to All Alternatives

Under all alternatives, objectives to maintain satisfactory watershed conditions as indicated by maintenance of riparian proper functioning conditions may limit livestock grazing activities in riparian areas, resulting in increased time and costs for management. Similarly, implementation of BMPs and mitigation measures to protect water quality may increase management of livestock in these areas resulting in increased time and costs for permittees.

Effects under Alternative A

Current impacts from water resources management on livestock grazing would continue under Alternative A.

Effects under Alternative B

Actions to develop water sources or wells, as needed, on BLM-administered lands that can be used for multiple uses, including fire suppression activities, would increase the available water for livestock use, allowing for better ability to disperse cattle, improving livestock access to forage that was previously not available due to lack of water to support livestock. Similarly, actions to develop partnerships and allow water importation projects would potentially result in additional water sources for livestock use. Allowing export of water could impact water quantity available to livestock due to decrease flows of springs or surface water sources.

Effects under Alternative C

Management of priority watersheds would apply use restriction that would protect watersheds, improve forage conditions, maintain range health, and provide sustainable forage for livestock grazing. Impacts from development of

water sources for multiple uses on livestock management would be similar to those described under Alternative B. Management emphasis on wildlife use may result in water available to livestock as well. Providing water for wildlife would increase costs to permittees to pump or maintain range improvements.

Effects under Alternative D

Management of priority watersheds would apply use restriction that would protect watersheds, improve forage conditions, maintain range health, and provide sustainable forage for livestock grazing. Protecting municipal wellheads may restrict grazing within buffer zones. Development of water sources for multiple uses would impact livestock management as described under Alternative B.

Effects under Alternative E

Effects from management of water resources under Alternative E would be the same as described under Alternative D.

Livestock Grazing: Effects from Vegetation Resources

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, rangeland treatments call for maintenance of sufficient quality and diversity of habitat and forage for livestock, wildlife, and wild horses, thus emphasizing treatments to improve forage and ensuring permittees have sufficient quantities of forage to maintain permitted levels of AUMs.

Under Alternative A, management for riparian areas would focus on maintenance of the condition of the riparian habitat with few specific actions impacting livestock grazing.

Effects under Alternative B

Similar to Alternative A, management actions for rangeland habitat emphasize treatments to increase the forage value of the resource, with potential for long-term benefits to forage condition for livestock and increased management options for permittees. Rest periods post treatment are two years at minimum, resulting in temporary impacts on livestock management as described under *Nature and Type of Effects*. Permittees would need to find alternate sources of livestock forage during rest periods.

Conversion of as many as 20,000 acres of low-density pinyon-juniper to sagebrush areas per year and thinning of 6,500 acres medium density woodlands may result in short-term disturbance of grazing activities, but improved forage conditions for livestock allotments within these areas in the long term.

Under Alternative B, in areas found to be in nonattainment of PFC as a result of livestock use, management changes would occur on a site-specific basis and may include exclusion of livestock, which could result in increased time or costs for permittees depending on the extent and quality of the area excluded. The provision to provide alternative water sources when conditions permit would minimize impacts. Revision of grazing management during the periodic review of permitted use in a grazing permit may result in required changes to grazing systems or level of permitted AUMs, which could increase time and costs to permittees; however, implementation of these changes during the periodic review would limit impacts.

Effects under Alternative C

Management actions for rangeland habitat emphasize treatment to restore healthy conditions. While long-term improvements to forage may occur as described under Alternative B, other habitat needs may be emphasized and impacts on forage may be at a lower level. No minimum period is set for rest of treated areas, however, grazing would not be allowed until objectives are met, which may result in a longer term exclusion than under Alternative A and thus increased cost for permittees.

Conversion of as many as 3,500 acres of low-density pinyon-juniper to sagebrush areas per year and thinning of 1,500 acres medium density woodlands may result in short-term disturbance of grazing activities, but improved forage conditions for livestock allotments within these areas in the long term.

Exclusion of livestock grazing while conducting woodland vegetation treatments would result in temporary loss of forage and may result in required changes to season of use and/or maintenance to range improvements, at increased cost to permittees/leases.

Under Alternative C, native plant materials would be emphasized in restoration treatments, however, exceptions would be granted when resource management objectives cannot be met with native species, therefore impacts on livestock grazing management would be minimized.

Prior to restoration treatment in Alternative C, monitoring of currently livestock management would be conducted and utilization levels examined, potentially resulting in change in levels to permitted use. As a result, permittees/leases would be required to move livestock to other pastures, and/or find alternative sources of forage on other public or private lands, in some cases in a short time frame (e.g., within five days in mountain big sagebrush communities), resulting at increased time and costs. In addition, permittee/leases may be require to repair range improvements if found to be contributing to unacceptable livestock use at increased cost to permittees/leases.

Under Alternative C, riparian area management may impact livestock grazing due to exclusion of livestock as described under Alternative A. Under this alternative changes to management may be required as soon as an area is observed to be in noncompliance with PFC. As a result, permittees could be required to reduce AUMs, increase herding or make other changes within the course of a grazing season, resulting in increased costs and time for management. Additionally, application of stipulations to grazing permits when treatments were applied, including but not limited to season of use limitations, utilization rate limits, and fencing, would increase time required for management and may impact the ability to graze at permitted AUM level, resulting in economic costs.

Effects under Alternative D

Treatments in rangeland habitat would emphasis forage improvement with impacts as described under Alternative B. Rest periods and impacts would be as described under Alternative B.

Monitoring of utilization and related impacts would be as described under Alternative C.

Temporary exclusion of livestock from treated areas would result in impacts as described under Alternative C.

Under Alternative D, riparian area management may include exclusion of livestock with impacts as described under Alternative A. Application of stipulation to permits may occur as described under Alternative C.

Effects under Alternative E

Treatments in rangeland habitat under Alternative E would emphasize healthy habitat as under Alternative C. Rest after ESR and rangeland treatments would be a minimum of two growing seasons and may be extended until objectives are met, thereby resulting in a longer term exclusion of grazing from treatment areas as compare to Alternative A, resulting in loss of forage availability and increased costs for permittees.

Monitoring of utilization and related impacts would be as described under Alternative C.

Conversion of as many as 8,500 acres a of low-density pinyon-juniper to sagebrush areas per year and thinning of 6,500 acres medium density woodlands may result in short-term disturbance of grazing activities, but improved forage conditions for livestock allotments within these areas in the long term. Temporary exclusion of livestock from treated areas would result in impacts as described under Alternative C

Under Alternative E, riparian areas management may impact livestock grazing as described under Alternative C. Application of stipulation to permits may occur as described under Alternative C.

Livestock Grazing: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Implementing habitat improvement projects where necessary to stabilize or improve unsatisfactory or declining wildlife habitat conditions would also improve conditions for livestock grazing. Habitat improvements that include fencing could exclude livestock from grazing, reducing the availability of forage. Under all alternatives, modification of fences may be required to allow for wildlife passage, at potential cost to permittees. Designing water developments to be constructed specifically for wildlife to exclude use from domestic livestock and wild horses and burros would restrict livestock from using alternative water sources.

Effects under Alternative A

Under Alternative A, direct impacts on livestock from wildlife management would be limited and would be similar to those described under *Nature and Types of Effects*.

Effects under Alternative B

Under Alternative B, fences that may inhibit big game movement would be evaluated on a case-by-case basis, with potential for some limited impacts in individual allotments should changes to fencing be required.

Management of priority habitat as a ROW avoidance areas and application of CSU stipulations within 500 feet of lentic and lotic habitat would reduce impacts on wildlife habitat and would protect areas used by livestock. Applying seasonal use restrictions to protect wildlife would also protect rangeland while restrictions are in place.

Under Alternative B, new translocation of bighorn sheep would have no impacts on livestock management as translocation would only be permitted when effective separation is possible, or permittees would not be liable for disease transmission.

Effects under Alternative C

Under Alternative C, the BLM would apply seasonal use restrictions to protect wildlife would also protect rangeland during the time restriction are in place. Alternative C would also apply NSO stipulations for fluid minerals within 500 feet of lentic and lotic habitat and would delineate ROW exclusion areas within priority wildlife habitat areas. Management within these areas would protect rangeland from disturbance and would maintain livestock forage. Under Alternative C, construction of fences that would conflict with big game

movement would be prohibited, with potential for increased herding costs for permittees in cases where fences are desired to contain livestock.

New translocation of bighorn sheep would have no impacts on domestic sheep permittees as described in Alternative B. However, domestic sheep and goat grazing would be limited to areas 9 miles or greater from potential and occupied bighorn habitat; this 9-mile buffer area overlaps with the majority of the planning area. These allotments would require change in kind of livestock, or the permittee would have to find alternative sources for grazing, which would increase grazing management costs.

In general, actions under Alternative C that would limit mineral and energy use in sensitive wildlife habitat would also limit disturbance of forage and conflicts with livestock grazing in these areas.

Effects under Alternative D

Applying seasonal use restrictions to protect wildlife would also protect rangeland during the time restrictions are in place. Impacts relating to management of ROW avoidance areas would be similar to those described under Alternative B. Under Alternative D, the BLM would also apply CSU stipulations within priority habitat areas applicable to fluid minerals within 500 feet of lentic and lotic habitat. Livestock forage within the buffer area would be protected. Under Alternative D, new translocation of bighorn sheep would have no impacts on domestic sheep permittees as described in Alternative B.

Effects under Alternative E

Applying seasonal use restrictions to protect wildlife would also protect rangeland during the time restrictions are in place. Impacts relating to management of ROW avoidance areas would be similar to those described under Alternative B. Under Alternative E, the BLM would also apply NSO stipulations for fluid minerals within 500 feet of lentic and lotic habitats located within priority wildlife habitat areas. Management within these areas would protect rangeland from disturbance and would maintain livestock forage. Under Alternative E, construction of fences that conflict with big game movement corridors would be prohibited, with potential for increased herding costs for permittees in cases where fences are desired to contain livestock.

New translocation of bighorn sheep would have no impacts on domestic sheep permittees as described in Alternative B. Restrictions on domestic sheep and goat grazing would have similar impacts as described under Alternative C, however, under this alternative restrictions would be limited to occupied habitat and would impact fewer allotments.

Livestock Grazing: Effects from Special Status Species Management

Effects Common to All Alternatives

Designating ACECs to protect sensitive wildlife and plant species would also protect rangeland and provide forage for livestock, except in ACECs that exclude grazing. Management actions to maintain, improve and restore sensitive species habitat would also improve conditions for livestock grazing.

Effects under Alternative A

Under Alternative A, impacts from special status species management would be minimal. Restriction of activities that might be disturbing to sage-grouse between February 15 and May 15 may apply some limitations on livestock grazing, but impacts would likely be limited due to flexibility in management direction in the RMP. Closure of areas to OHV use in order to protect sensitive plants may restrict access to permittees in order to maintain range improvements. Supporting the reintroduction of Lahontan cutthroat trout, bighorn sheep, and other endemic species into suitable, potential and historic habit may affect grazing management practices and increase permittee costs in those allotments where historic habitats are present. Alternative A would manage one ACEC to protect sensitive species (330 acres for Carson wandering skipper habitat) and would also protect rangeland.

Effects under Alternative B

Alternative B proposes designation of four new ACECs to protect habitat for sensitive plants and wildlife. While no ACEC would be proposed for Carson wandering skipper habitat, Carson Wandering Skipper habitat near Winnemucca Ranch Road would be made unavailable for livestock grazing (330 acres). The majority of this area (330 acres) is not available to grazing under Alternative A. If making additional acres unavailable impacted ability of livestock to effectively distribute or obtain sufficient forage, then time and cost for management could increase for livestock permittees in the Paiute Allotment. However, due to the limited acres closed, impacts are likely to be limited. Rehabilitation of PPMA habitat would restrict grazing for a minimum of two annual cycles. Impacts would be similar to those described under *Nature and Types of Effects*. Under Alternative B, actions to improve PPMA/PGMA habitat (414,200 acres available for grazing) may result in some site-specific limitation on grazing management, should for example, exclosures be imposed. Actions to improve habitat conditions may also improve forage in the long term by removing encroaching conifers and reducing catastrophic fire risk. Restrictions within PPMA areas on surface disturbing activities would limit protect sage-grouse habitat and also protect rangeland for livestock grazing.

Time of year and time of day restrictions within 2 miles of Greater Sage-Grouse leks may result in restrictions to livestock management, particularly related to accessing allotments, if access is restricted, costs of management would increase.

Effects under Alternative C

Alternative C proposes designation of 12 ACECS to protect habitat for sensitive plants and wildlife. The Carson Wandering Skipper ACEC would be unavailable to grazing. As described under Alternative B, due to the minimal acres involved (330 acres) and current area unavailable under Alternative A, impacts would likely be minimal. Specific to Greater Sage-Grouse management; all allotments overlapping with PPMA/PGMA would be made unavailable for livestock grazing (414,200 acres). As described under *Nature and Type of Effects*, this action would require permittees to locate alternative sources of forage, often at increased cots. Making large portions of the planning area unavailable represents potentially substantial economic costs for permittees as well as for the community as a whole.

Effects under Alternative D

ACEC management to protect sensitive plant and wildlife species under Alternative D would be the same as described under Alternative B. Carson Wandering skipper habitat near Winnemucca Ranch Road would be unavailable to livestock grazing as described under Alternative B. Under Alternative D, habitat improvement projects would include removal of encroaching junipers in PPMA and PGMA, improving forage quality and reducing fire risk in the long term in these areas (414,200 acres Available for grazing). Restrictions on disturbance and impacts would be similar to that described under Alternative B. Timing limitations would be present within 4 miles of active leks, with potential for limitations to access allotments for management activities as described under Alternative B.

NSO stipulations in PPMA would limit impacts from fluid mineral leasing on rangeland and would protect forage for livestock grazing in this area.

Effects under Alternative E

Under Alternative E, impacts from Greater Sage-Grouse management would be similar to those described under Alternative D. Management of ACECs would be the same as Alternative B. Carson wandering skipper habitat would be unavailable to livestock grazing with impacts as described under Alternative B.

Livestock Grazing: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

Managing wild horses and burros in a manner that ensures significant progress is made toward achieving the Standards and Guidelines for Rangeland Health and Wild Horses and Burros, and other site-specific or landscape-level objectives would provide healthy rangeland conditions for livestock. Under all alternatives, management for wild horses and burros at AML or below would limit impacts on rangeland and limit conflicts with livestock for forage resources where wild horse and burro HMAs and livestock grazing allotments overlap. Maintaining or improving HMAs would also improve rangeland for livestock grazing.

Effects under Alternative A

Under Alternative A, 1,196,000 acres in 19 HMAs would overlap areas available for livestock grazing with potential conflicts resulting from competition for available forage and water as discussed in Nature and Type of Effects. Conflict between horses and livestock may occur.

Effects under Alternative B

Under Alternative B, 996,500 acres in 13 HMAs would overlap areas available for livestock grazing. Under Alternative B, prioritization of management for HMAs would emphasize multi-use needs; therefore areas with conflicts between horses and livestock may be prioritized, limiting impacts on livestock. Gathering excess wild horses and burros to achieve a thriving natural ecological balance would ensure rangeland conditions are maintained for both wild horses and burros and livestock.

Effects under Alternative C

Under Alternative C, 427,200 acres in 9 HMAs would overlap areas available to livestock grazing (64 percent less than Alternative A). The BLM would manage HMAs to ensure a thriving natural ecological balance is maintained but would allow for potential increases in AMLs if forage resources would allow, with potential for increased conflicts and competition for forage and water with livestock grazing. Under this alternative, removal of horses from Lahontan HMA due to the lack of water would reduce any conflict with livestock for water in this area.

Effects under Alternative D

Under Alternative D, 996,500 acres in 13 HMAs would overlap areas available for livestock grazing. Under Alternative D, management for wild horses would achieve a thriving natural ecological balance of resources for wild horse and burros with other resource uses and values; therefore, impacts on livestock grazing would be limited. Management actions also allow for removal of wild horses and burros from other allotments during drought emergencies, further limiting conflicts between livestock and horses for limited water sources.

Effects under Alternative E

Under Alternative E, 1,070,200 acres in 12 HMAs would overlap areas available for livestock grazing. Management would emphasize a thriving natural ecological balance between rangeland health and multiple use as described under Alternative D. Ability to remove horses above AML during drought would occur as under Alternative D. No AML increase would be allowed without coordination with Lahontan state park for water and forage, limiting additional conflicts.

Livestock Grazing: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Under all alternatives, ESR and other rehabilitation projects would be prioritized to stabilize soils, re-establish hydrologic function, maintain and enhance biological integrity, promote plant resiliency, limit expansion or dominance or invasive species, and reestablish native species. Impacts from fire management are described under *Nature and Type of Effects* with level of impacts varying by treatments allowed and suppression priorities. ESR treatments would restrict grazing in the short term in areas that have burn but would re-establish forage overtime for livestock.

Effects under Alternative A

Under Alternative A, the planning area would be divided into fire management categories with different degrees of fire suppression. Short-term and long-term impacts on livestock forage as a result of fire would vary under these management areas. Alternative A would provide for a full range of fire management suppression and fuel treatment activities (as outlined in the fire management plan) and options would be utilized to protect all identified values at risk. Fire suppression operations would be the most effective having the highest potential for limiting wildland fire size. Fewer rangeland acres would burn maintaining forage for livestock. However, there would be more disturbances from suppression operations on rangeland. Fuel treatments would protect rangeland by potentially slowing the spread of wildfire and would improve vegetation conditions on rangelands in the long term.

Effects under Alternative B

Impacts would be similar to those described Alternative A. Under Alternative B, wildfire, prescribed fire, and nonfire fuels treatments would all be permitted to protect and modify vegetation communities to achieve condition class, fuels, habitat, watershed, and riparian objectives. As a result, a full range of management options would be available for promoting healthy forage.

Effects under Alternative C

Under Alternative C, minimum impact suppression techniques would be emphasized to limit disturbance from suppression activities, but these techniques may also hinder effective suppression operations. The potential for larger wildfires would occur under this alternative. Fuels treatments to maintain, protect, and expand healthy resilient vegetative ecosystems would be emphasized, potentially limiting treatments to increase forage resources.

Effects under Alternative D

Under Alternative D, emphasis on protecting WUI values from catastrophic fire would increase the risk of larger fires in areas outside of the WUI. More impacts on forage resources would occur in rangeland outside of WUI areas.

Effects under Alternative E

Impacts from suppression activities would have similar impacts as discussed under Alternative B.

Livestock Grazing: Effects from Cultural Resources Management

Effects Common to All

Requirements to inventory areas prior to implementation of range improvement projects could affect the location of fences and other improvements in order to avoid impacts to cultural resources.

Effects under Alternative A

Under Alternative A, few site-specific limitations for cultural resources would be in place, limiting impacts on livestock grazing. Alternative A would manage one ACEC to protect cultural resources. Protective management would also protect rangeland and provide forage for livestock.

Effects under Alternative B

Under Alternative B, implementation of protective measures for TCPs (including ROW avoidance and CSU limitations for fluid minerals) as well as 0.25-mile buffer for ROW avoidance for historic roads and trails, and protection measures within 0.125 miles of rock art, would mitigate impacts and limit disturbance. Impacts on rangeland would also be reduced. Alternative B would propose 8 ACECs to protect cultural resources. Protective management would also protect rangeland within the ACECs and provide forage for livestock. More rangeland would be protected compared to Alternative A.

Effects under Alternative C

Under Alternative C, implementation of protective measures for TCPs (including ROW exclusion, NSO stipulations, and closure to mineral material sales and CSU limitations for fluid minerals) as well as 2.5-mile buffer for ROW avoidance for historic roads and trails and protection measures within 1 mile of rock art, would protect cultural resources through use restrictions and implementation of mitigation measures to reduce surface disturbance. Rangeland values would also be protected. Alternative C would propose 9 ACECs to protect cultural resources. Protective management would also protect rangeland within the ACECs and provide forage for livestock. This alternative would protect the largest area of rangeland through cultural resource management.

Effects under Alternative D

Under Alternative D, implementation of protective measures for TCPs, historic roads, and rock art would be as describe under Alternative B. Alternative D would propose 6 ACECs to protect cultural resources. Protective management would also protect rangeland within the ACECs and provide forage for livestock.

Effects under Alternative E

Under Alternative E, implementation of protective measures for TCPs (including ROW avoidance and NSO stipulations) as well as a 1-mile buffer of ROW avoidance for historic roads and trails and protection measures within 0.5 miles of rock art, would protect cultural resources through use restrictions and implementation of mitigation measures to reduce or limit surface disturbance. Rangeland values would also be protected. Alternative E would propose 3 ACECs to protect cultural resources. Protective management would also protect rangeland within the ACECs and provide forage for livestock.

Livestock Grazing: Effects from Visual Resources Management

Effects Common to All Alternatives

Impacts of visual resources are as discussed in *Nature and Type of Effects*, with the highest level of impacts on grazing management in VRM Class I and II areas. VRM classes in areas available for livestock grazing are displayed below in **Table 4-15**, VRM Class in Areas Available for Livestock Grazing.

Table 4-15
VRM Class in Areas Available for Livestock Grazing

	A	B	C	D	E
Class I	540,200	540,200	302,900	540,200	540,200
Class II	36,300	51,100	300,800	59,100	480,200

Sources: BLM GIS 2014a, BLM GIS 2014b

Effects under Alternative A

Under Alternative A, 576,500 acres of Class I and II VRM areas overlap with areas available for livestock grazing. Within these areas, disturbance or visual intrusions from range improvement projects would be mitigated by modifying projects to achieve VRM class objectives. The type of improvement, the location, or other factors to reduce impacts to viewsheds would potentially increase time and costs for permittees.

Effects under Alternative B

Under Alternative B, 591,300 acres of Class I and II VRM areas overlap with areas available for livestock grazing. Impacts in overlapping areas would be as described in Alternative A.

Effects under Alternative C

Under Alternative C, 603,700 acres of VRM Class I and II areas overlap with areas available for livestock grazing. Many fewer acres available for livestock grazing would be managed under this alternative. The potential for limiting range improvements and increasing costs to permittees would be the highest under this alternative.

Effects under Alternative D

Under Alternative D 599,300 acres of VRM Class I and II areas overlap with areas available for livestock grazing. Impacts would be similar to those described under Alternative B.

Effects under Alternative E

Under Alternative E, 1,020,400 acres of VRM Class I and II areas overlap with areas available for livestock grazing. Impacts on livestock grazing would be greater than Alternatives A and B but less than Alternative C.

Livestock Grazing: Effects from Livestock Grazing Management

Effects Common to All Alternatives

Under all alternatives, management would comply with the Approved Standards and Guidelines for livestock grazing, and manage all allotments toward meeting Rangeland Health Standards, which could necessitate changes to grazing management at increased time and costs for permittees.

Effects under Alternative A

Under Alternative A, the current level of acres available for livestock grazing (4,796,600) and permitted AUMS (151,200) would be retained. Adjustments to permitted use would occur during a periodic review or an approximate 10-year cycle.

Not providing forage banks under Alternative A could take away an opportunity to help permittees continue to graze their livestock on BLM-administered lands when their own allotment is closed due to an emergency situation, negatively impacting the permittees financially.

Lack of restriction on year-round grazing would provide management options for permittees, but may contribute to failure of allotments to meet land health standards if forage resources become limited and adjustments are not made to grazing practices, with long-term impacts on ability to graze to permitted AUM levels.

Effects under Alternative B

Alternative B would result in approximately 4,797,200 acres available for livestock grazing (less than 1 percent change from Alternative A) and 151,200 permitted AUMS.

Under Alternative B, retaining of allotments overlapping the Pinenut HMA would minimize costs to permittee associated with locating alternative grazing locations, but would retain the potential for conflict between wild horses and livestock, particularly in drought years, when forage would be more limited.

Permittees would consider conversion of cattle grazing to sheep where there is no evidence of disease transmission; this would allow for management options for permittees.

Year-round grazing would not be allowed in any one allotment, allowing for some management options for permittees who can transfer livestock to alternative pastures, limiting impacts on land health in any one area.

Allowance of prescriptive grazing would provide potential for additional forage in specified areas, however, due to short-term usage, would not represent substantially increased opportunities for livestock permittees Potential to allow protein supplementation may also provide management opportunities for permittees, but would be available on a limited basis with special permit, therefore impacts would be minimized. Prescribed grazing would reduce the intensity and spread of wildfire in certain areas and vegetation communities.

Under Alternative B, allotments would be closed where management changes have failed to stop decreasing in ecological function due to livestock. As a result, permittees on the specified allotments would be required to temporarily relocate livestock to other pastures/allotments within CCD or on other public or private lands, often at increased costs.

Effects under Alternative C

Alternative C would result in approximately 2,702,000 acres (56 percent reduction from Alternative A) available for livestock grazing and 40,700 permitted AUMs (approximately 73 percent change from Alternative A). In addition, under Alternative C, reduction in AUMs may be required on allotments not meeting land-health standards. Under drought or other emergency situation, temporary closure of allotments would also occur as needed under this alternative.

As discussed under Nature and Type of impacts, reduction in permitted AUM levels may result in economic impacts for both individual permittees and the local economy as a whole, dependent on the level of AUM reduction and the importance of grazing in the local economy. Permitted AUM level is approximant, based on acres made unavailable for livestock grazing. Actual number of permitted AUMs in a given allotment would be determined at implementation. In cases where the majority of an allotment is closed permittees may determine that grazing on that allotment is no longer economical. Conversely, when only a small percentage of an allotment is made unavailable, permittees may be able to change management practices such that AUM reduction is not needed. Economic impacts of grazing are discussed further in **Section 4.6.4**, Social and Economic Conditions.

No continuous grazing would be allowed on an allotment basis, limiting management opportunities for livestock permittees, particularly for smaller scale

operators who do not have access to multiple pastures or allotments within the planning area.

Under Alternative C, allotments would be unavailable for livestock grazing once they become vacant. As weather and precipitation levels as well as market conditions are variable, this may result in the closure of allotments after one season on non-use due to conditions outside of the permittees control. Closure of allotments would result in increased time and costs for permittees and may impact the local economy as a whole if alternative grazing areas are not located.

Under Alternative C, livestock grazing in the Pinenut HMA would be made unavailable to grazing once they become vacant, reducing conflicts between wild horses and livestock and associated management costs to permittees.

Prohibition of prescriptive grazing would not provide additional opportunities for livestock permittees.

Allowance of conversion of cattle permits to sheep/goat permits would allow for options in management but only where consistent with bighorn sheep management, limiting opportunities.

Alternative C would have the highest potential to reduce permittee income and to increase livestock management costs as fewer acres would be available for livestock grazing, and permitted AUMs would be the lowest compared to other alternatives. Many livestock operations may not be sustainable under this alternative.

Effects under Alternative D

Alternative D would result in approximately 4,792,600 acres available for livestock grazing (less than 1 percent change from Alternative A) and 150,800 permitted AUMS (1 percent change from Alternative A). Management for grazing would be similar to Alternative A, with adjustment every 10 years or on a case-by-case basis (whichever is less) during the periodic review of permitted use for a grazing permit.

As under Alternative C, temporary closure of allotments during emergency situations could improve rangeland health in the long term but has potential for a high level of impacts in the short term.

Year-round grazing would be permitted with impacts as described under Alternative B.

Allotments where management changes have been implemented and the allotment is still decreasing in ecological function would be unavailable for livestock grazing. Impacts would be similar to those described under Alternative B. Under D, however, closures would be extended to areas where livestock use is incompatible with urban uses, with potential for additional impacts on

livestock permittees if alternative pastures cannot be located or if closures resulted in the need for more intensive management such as herding, movement to alternative pastures, or addition or improvement of structural range improvements.

Impacts from making Pinenut allotments unavailable to livestock grazing would be as described under Alternative C.

Allowance of prescriptive grazing would provide additional opportunities for permittees.

Potential for use of vacant allotments as a forage base may provide additional management options long term for leases/permittee.

Allowing conversion of allotments from cattle to sheep/goats represents management options for permittees, especially where urban interface issues are not consistent with cattle grazing. However, options would be limited by requirements to follow bighorn sheep management objectives.

Although management actions relating to other alternatives are included under Alternative E, the degree of overall impacts would be similar to those described under Alternative A but with more livestock management restrictions that would increase costs for permittees.

Effects under Alternative E

Alternative E would result in approximately 4,797,200 (same as Alternative B) acres available for livestock grazing and 151,200 permitted AUMs. Periodic review and adjustment would be conducted as described under Alternative D. Temporary closure may occur with impacts as described under Alternatives C and D.

Year-round grazing would be allowed where allotments have shown ability to meet land health standards under current year long use. This system would allow management opportunities for permittees who have demonstrated responsible grazing practices and limit costs to these permittees while maintaining land health.

Alternative E actions to close allotments to livestock grazing would be similar to those discussed under Alternative B but would include closures when allotments fail to reach other defined objectives. This would result in an increased level of impacts on permittees. Adjustment to allotments would be considered when not compatible with urban uses, resulting in potential for increased management by permittees, but reducing conflicts between livestock grazing use and other resource users. Vacant allotments would be assessed for forage bank suitability with impacts as discussed under Alternative D.

Impacts from retaining allotments in Pinenut HMA would be as discussed under Alternative B.

Prescriptive grazing would be allowed with impacts as described under Alternative B; however, grazing would only be allowed in urban interface areas, reducing impacts.

Conversion of livestock kind would have impacts as described under Alternative D.

Impacts would be similar to Alternative D but with more AUMs permitted.

Livestock Grazing: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Under all alternatives, impacts from fluid mineral management, exploration, and development would cause surface disturbance and removal of rangeland vegetation reducing forage available to livestock. Development could close off area available to livestock grazing further reducing availability of forage. Impacts would be minimized by CSU, NSO and other restrictions. Areas available for livestock grazing and open to fluid mineral leasing and those open with stipulations are shown in **Table 4-16**, Area Available for Livestock Grazing and Fluid Mineral Leasing.

Table 4-16
Area Available for Livestock Grazing and Fluid Mineral Leasing

	A	B	C	D	E
Indicator					
Open to fluid mineral leasing	3,962,500	4,029,000	1,477,100	4,060,800	3,790,300
Open with NSO stipulations	700	404,600	693,400	864,300	1,150,600
Open with CSU stipulations	0	2,119,700	641,500	2,071,000	1,844,900

Sources: BLM GIS 2014a, BLM GIS 2014b

Impacts on grazing from locatable mineral development include removal of vegetation to conduct exploration and develop mines. Removal of vegetation would reduce forage available to livestock. Impacts would be dependent on the size and location of surface disturbing activities. Mitigation measures to reduce impacts would be developed during site-specific permitting and NEPA analysis. For all alternatives 193,000 acres would be closed to mineral entry and no impacts would occur to livestock grazing from locatable development in these areas.

Impacts from mineral material development would be limited under all alternatives due to relative small disturbance footprints of gravel pits.

Effects under Alternative A

Under Alternative A, the majority of the planning area (3,962,500 acres) would continue to be open to fluid mineral development and available to livestock grazing, with potential for disturbance from geothermal development as described under *Nature and Type of Effects*.

Effects under Alternative B

Under Alternative B, while the level of area open to fluid mineral development and available to livestock grazing would increase slightly (4,029,000 acres), additional restrictions on surface disturbance (as shown in **Table 4-16**) would limit impacts on grazing from geothermal development.

Effects under Alternative C

Under Alternative C, the highest level of closures and restriction on fluid mineral development would be in place, decreasing the disturbance from development compared to Alternative A (see **Table 4-16**). Due to the emphasis on restoration of lands disturbed by mineral operations would provide potential for additional protections for rangeland and provide forage in the long term.

Effects under Alternative D

Under Alternative D, impacts would be similar to that described under Alternative B. Increased NSO restrictions would further mitigate impacts of development on livestock. As under Alternative C, restoration of lands disturbed by mineral operations would provide potential for additional forage in the long term.

Effects under Alternative E

Under Alternative E, impacts would be similar to that described under Alternative B. As under Alternative C, restoration of lands disturbed by mineral operations would provide potential for additional forage in the long term.

Livestock Grazing: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Under all alternatives, disturbance of livestock grazing and forage may occur from dispersed recreation, Special Recreation Activities and within ERMAs and SRMAs as discussed in *Nature and Type of Effects*. Special Recreation permits would be issued under all alternatives with potential conflicts with recreation when events occurred in areas with livestock grazing. Level of impacts from ERMAs and SRMAs varies by alternative as described below.

Effects under Alternative A

Approximately 62,600 acres of available grazing areas would be located within 2 SRMAs under Alternative A. Impacts on grazing may result from fencing or development of facilities reducing availability of livestock forage. Increase public visitation may stress livestock and change grazing patterns on rangeland. No

ERMAs would be established under Alternative A but dispersed recreation is expected to continue, with conflicts between recreation and livestock grazing as discussed under *Nature and Type of Effects*.

Effects under Alternative B

Approximately 58,400 acres of available grazing areas would be located in 6 SRMAs. Within the Alpine SRMA (emphasizing non-motorized recreation), permittee access to allotments and herding may be impacted. In Dead Camel Mountains, Hungry Valley, San Mountain, Walker Lake, and Wilson Canyon SRMAs disturbance from motorized recreation could increase disturbance and unwanted dispersal of livestock as described under *Nature and Type of Effects*.

The BLM would manage an additional 1,653,800 acres of available grazing areas as ERMAs with impacts as described under Nature and Type of Effects.

Effects under Alternative C

Under Alternative C, approximately 36,000 acres available for grazing would be located in 2 SRMAs. Under Alternative C, the emphasis of SRMAs is on non-motorized recreation and therefore impacts would focus on restrictions to access of allotments and herding. The BLM would manage an additional 491,100 acres as ERMAs.

Effects under Alternative D

Under Alternative D, approximately 49,100 acres available for grazing would be located in 4 SRMAs, a less than one percent change from Alternative A. Impacts from motorized recreation would be similar to discussed in Alternative B for Dead Camel Mountains, and Wilson Canyon and Hungry Valley SRMA, however, some limitations on travel to routes and development of route systems would decrease level of conflicts with grazing. The BLM would manage an additional 273,000 acres as ERMAs with impacts as discussed under *Nature and Type of Effects*. Impacts would be similar to Alternative A, but with higher impacts on range resources from management of SRMAs.

Effects under Alternative E

Under Alternative E, approximately 88,400 acres available for grazing would be located in 6 SRMAs, the most of any alternative. The BLM would manage an additional 2,026,800 acres as ERMAs, the most of any alternative. Impacts would be similar to those described under Alternative B; however, under Alternative E the increased area managed as SRMAs and ERMAs would increase the potential for conflicts with grazing in these recreation focused areas, but may decrease the overall level of conflicts with dispersed recreation in the planning area. This alternative has the highest potential to affect livestock management as the number and size of SRMAs would increase both public visitation and development of recreational facilities, which would reduce forage or access to forage.

Livestock Grazing: Effects from Comprehensive Travel and Transportation Management

Travel management designations in areas available for livestock grazing are shown in **Table 4-17**, Travel and Transportation Management in Areas Available for Livestock Grazing, below.

Table 4-17
Travel and Transportation Management in Areas Available for Livestock Grazing

	A	B	C	D	E
Open to unrestricted vehicle use	3,840,300	95,300	0	22,700	55,700
Limited to Existing routes	917,800	4,671,400	1,632,000	4,797,900	4,711,500
Closed to motorized, limited to existing for mechanized	31,800	26,400	356,100	30,600	24,100
Closed to motorized and mechanized	6,700	4,000	113,200	1,400	6,000

Sources: BLM GIS 2014a, BLM GIS 2014b

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, 3,840,300 acres would be open to unrestricted travel, the most of any alternative. Impacts from OHV such as disturbance, dust, and noise, use as described under *Nature and Type of Effects* would be highest under this alternative. Access to permittee allotments for management would not be restricted.

Effects under Alternative B

Under Alternative B, 95,300 acres available for livestock grazing would be designated as open (97.5 percent reduction compared with Alternative A), with the majority of this area changes to limited to existing routes. As discussed under *Nature and Type of Effects*, changing motorized vehicle use areas from an open to a limited designation would affect livestock grazing by reducing disturbance from multiple uses on grazing allotments but could also impact permittees that use OHVs to access allotments or herd cattle. Exceptions for authorized use such as accessing allotments may be granted, which could lessen the impacts from changing OHV designations from open to limited.

Effects under Alternative C

Under Alternative C, no areas available for livestock would be open to unrestricted travel. Areas open to existing trails would be decreased due to the decrease in areas available for livestock grazing overall. Areas closed to motorized use would be substantially increased compared to Alternative A (see **Table 4-17**) with impacts as discussed under Alternative B and *Nature and Type of Effects*.

Effects under Alternative D

Under Alternative D, 22,700 acres available for livestock grazing would be designated as open (99.4 percent reduction compared with Alternative A), with the majority of this area changes to limited to existing routes. Impacts would be similar to those discussed under Alternative B and *Nature and Type of Effects*.

Effects under Alternative E

Under Alternative E, 55,700 acres available for livestock grazing would be designated as open (98.5 percent reduction compared with Alternative A), with the majority of this area changes to limited to existing routes. Impacts would be similar to those discussed under Alternative B and *Nature and Type of Effects*.

Livestock Grazing: Effects from Lands and Realty

Effects Common to All Alternatives

As discussed under *Nature and Type of Effects*, under all alternatives, allowing ROW authorization and development would increase disturbance of livestock grazing. Level of disturbance is determined by ROW exclusion and avoidance areas, as shown in **Table 4-18**, Lands and Realty Actions in Areas Available for Livestock Grazing, below. In addition, disposal of lands under all alternatives has potential to increase lands available for grazing or, if containing current allotments, decrease forage available. Level of impacts would be determined by the size, quality and location of disposed lands.

Table 4-18
Lands and Realty Actions in Areas Available for Livestock Grazing

	A	B	C	D	E
Indicator					
ROW Exclusion	564,000	580,000	1,007,600	564,100	605,900
ROW Avoidance	0	1,038,800	228,200	1,219,900	1,447,300
Lands identified for Disposal	178,800	273,500	0	332,500	266,300

Sources: BLM GIS 2014a, BLM GIS 2014b

Effects under Alternative A

Under Alternative A, the BLM would manage 564,000 acres Available for livestock grazing as ROW exclusion areas. As discussed under *Nature and Type of Effects*, these areas would have a decreased chance of development and associated disturbance to livestock forage and management activities.

Effects under Alternative B

Under Alternative B, 1,038,800 acres would be maintained as ROW avoidance and 580,000 acres as ROW exclusion areas (3 percent more than Alternative A) in areas available for livestock grazing. As a result, disturbance of livestock from development would decrease compared to Alternative A. Acquiring lands in Washoe County may provide additional forage. Retaining and acquiring lands within PPMAs and PGMAs may result in additional lands for livestock grazing,

but these lands would have limitations on grazing management in order to protect Greater Sage-Grouse. Exact level of impacts would be determined only when site-specific parcels disposed. Impacts would be minimized by following BLM criteria for disposal.

Effects under Alternative C

Under Alternative C, 228,200 acres would be maintained as ROW avoidance and 1,007,600 acres as ROW exclusion areas. As a result, disturbance of livestock from development would decrease compared to Alternative A. Acquisition of Greater Sage-Grouse occupied habitat would not provide additional lands for grazing, as these areas would be made unavailable for livestock grazing. No lands are identified for disposal, so no forage would be lost to disposal.

Effects under Alternative D

Under Alternative D 1,219,900 acres would be maintained as ROW avoidance and 564,100 acres as ROW exclusion areas (nearly the same as Alternative A) in areas available for grazing. As a result, disturbance of livestock from development would decrease compared to Alternative A. Disposal of 332,500 acres (86 percent more than Alternative A) would have potential impacts as discussed under *Nature and Type of Effects*. An additional 4,870 acres would be designated for disposal to state and local government through the Recreation and Public Purposes Act, however these lands would remain available for livestock leasing under the Taylor grazing act, section 7, minimizing impacts.

Effects under Alternative E

Under Alternative E, 1,447,300 acres would be maintained as ROW avoidance and 605,900 acres as ROW exclusion areas (7 percent more than Alternative A) in areas available for grazing. As a result, disturbance of livestock from development would decrease compared to Alternative A. Impacts from disposal and acquisition of lands would be similar to that discussed under Alternative D.

Livestock Grazing: Effects from Renewable Energy

Effects Common to All Alternatives

Under all alternatives, the greatest level of impacts comes from potential development of geothermal resources which is managed under fluid minerals. While potential for solar and wind development is present, development has been limited in the planning area to this point. Greatest potential for development occurs in solar variance areas and potential for development from wind energy is decreased in wind ROW avoidance areas which vary by alternative.

Effects under Alternative A

Under Alternative A, potential for disturbance of livestock forage and cattle grazing occurs from areas available for solar variance areas (905,300 acres available for livestock grazing). No wind specific ROW avoidance areas would

be established; therefore impacts could occur from wind energy development throughout the planning area where the resource is present.

Effects under Alternative B

Under Alternative B, potential for disturbance of livestock forage and cattle grazing occurs from areas available for solar variance areas (722,900 acres Available for livestock grazing 20 percent less than Alternative A). Wind development and related disturbance to livestock would be decreased in the wind ROW avoidance areas (1,220,200 acres).

Effects under Alternative C

Under Alternative C, wind development and related disturbance to livestock would be decreased in the wind ROW exclusion areas (638,400 acres). Overall, impacts from renewable energy development would be decreased due to fewer acres available for livestock grazing under this alternative.

Effects under Alternative D

Under Alternative D, potential for disturbance of livestock forage and cattle grazing occurs from areas available for solar variance areas (671,500 acres Available for livestock grazing, 26 percent less than Alternative A). Wind development and related disturbance to livestock would be decreased in the wind ROW avoidance areas (1,223,100 acres).

Effects under Alternative E

Under Alternative E, potential for disturbance of livestock forage and cattle grazing occurs from areas available for solar variance areas (629,400 acres Available for livestock grazing 29 percent less than Alternative A). Wind development and related disturbance to livestock would be decreased in the wind ROW avoidance areas (629,400 acres).

Livestock Grazing: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, all 16,800 acres of the 6 existing ACECs would be available for livestock grazing. In these areas, restrictions on grazing would vary depending on the resource for which the ACEC was designated, with impacts as described under *Nature and Type of Effects*.

Effects under Alternative B

Under Alternative B, 287,700 acres of the 13 ACECs (371,170 total acres) would be available for livestock grazing, and 6,100 total acres would be made unavailable for grazing. The types of impacts from management of the ACECs available for livestock grazing are the same as those described under *Nature and*

Types of Effects, but they would occur over a larger area than under Alternative A.

Effects under Alternative C

Under Alternative C, 21,200 acres of the 21 ACECs (786,270 total acres) would be available for livestock grazing (3 percent more than Alternative A), and2,702,000 total acres would be made unavailable for grazing. The types of impacts from management of the ACECs available for livestock grazing are the same as those described under *Nature and Types of Effects*. Under this alternative, direct impacts on grazing are increased due to the closure of Greater Sage-Grouse habitat to grazing, as well closures of other ACECS for resource protection.

In addition to closures, seasonal restrictions for grazing in place for the 109,200 acres of the Virginia Mountains Greater Sage-Grouse ACEC, Clan Alpine Greater Sage-Grouse ACEC (98,400 acres), Desatoya Greater Sage-Grouse ACEC (105,058 acres), Pine Nut Bi-State Sage Grouse ACEC (100,400 acres) would place seasonal limitations on livestock grazing, which may require adjustments to grazing rotations and season of use, with increased time and cost for permittees. Similarly, restrictions on OHV use will limit ability of permittees to access allotments for management.

Fencing of the Dixie Valley Toad ACEC (410 acres) to exclude cattle would impose limitations on management but overall impacts likely minimal due to small size of the closure.

Closures to motorized use in the Greater Sand Mountain ACEC (17,000 acres) could limit ability of permittees to access allotments for management.

Effects under Alternative D

Under Alternative D, 174,500 acres of the 11 ACECs (180,000 total acres) would be available for livestock grazing, and 10,700 total acres would be unavailable for grazing. The types of impacts from management of the ACECs available for livestock grazing are the same as those described under *Nature and Types of Effects*, but they would occur over a larger area than under Alternative A.

Effects under Alternative E

Under Alternative E, all 82,800 acres of the 8 ACECs would be available for livestock grazing. The types of impacts from management of the ACECs available for livestock grazing are the same as those described under *Nature and Types of Effects*, but they would occur over a larger area than under Alternative A.

Livestock Grazing: Effects from Back Country Byways

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, impact of the existing Fort Churchill Back Country Byway would be as described under *Nature and Type of Effects*.

Effects under Alternative B
Under Alternative B, maintenance and expansion of Fort Churchill Back Country Byway and development of the Marietta and New Pass Hawthorne Back-County By-ways would result in potential disturbance from increased visitation as discussed under *Nature and Type of Effects*.

Effects under Alternative C
Impacts from the development of Marietta and New Pass Hawthorne Back Country Byways would be as described under *Nature and Type of Effects*. Declassification of the Fort Churchill byway would decrease visitation and related disturbance in that area.

Effects under Alternative D
The BLM would manage no Back Country Byways in the planning area under Alternative D, reducing the impacts on livestock grazing than under Alternative A.

Effects under Alternative E
Impacts would be as described under Alternative B.

Livestock Grazing: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, eligible river corridors overlapping with areas available for livestock grazing would be given protection either through continued interim protective management with impacts as described under *Nature and Type of Effects*.

Effects under Alternative B
Under Alternative B, eligible segments in the East Fork of the Carson River would be released from consideration in the WSR system. Potential for restrictions on grazing in this area would be reduced.

Effects under Alternative C

Under Alternative C, eligible segments in the East Fork of the Carson River would be determined suitable for WSR Inclusion, minimizing disturbance from development in this area and potentially limiting grazing management should current practices impact ORVs. Management of segment 2 as recreational may result in increased visitation in this area, with potential for increases in unwanted dispersal of cattle due to gates left open by recreational users.

Effects under Alternative D

Under Alternative D, eligible segments in the East Fork of the Carson River would be determined suitable for WSR Inclusion with impacts as described under Alternative C. Management of segments 2 and 3 as recreational may result in increased visitation in this area, with potential for increases in unwanted dispersal of cattle due to gates left open by recreational users.

Effects under Alternative E

Under Alternative E, eligible segments in the East Fork of the Carson River would be determined suitable for WSR Inclusion with impacts as described under Alternative C.

Livestock Grazing: Effects from Wilderness Study Areas

Effects Common to All Alternatives

Under All Alternatives, WSAs are managed in accordance with Manual #6330 Management of Wilderness Study Areas (BLM 2012e). WSAs are managed under federal non-discretionary guidelines which limit motorized travel, close areas to mineral leasing, and manage them as VRM Class I. Impacts while managed as a WSA would be as described under *Nature and Type of Effects*.

Effects under Alternative A

Should WSAs be released from wilderness consideration, no special management would apply to the 564,000 acres available for livestock grazing currently managed as WSAs, as a result disturbance to rangeland from other resource uses could increase, however, ability to construct range improvements and access allotments would have fewer restrictions imposed.

Effects under Alternative B

Under Alternative B, the BLM would manage the 564,000 acres available for livestock grazing as WSAs. Should WSAs be released from wilderness consideration disturbance to rangeland from other resource uses could increase. Under Alternative B, the BLM would manage 7 WSAs as VRM Class II, with some potential for limitations on structural range improvements in these areas.

Effects under Alternative C

Under Alternative C, the BLM would manage the 106,400 acres available for livestock grazing as WSAs. WSAs would be closed to all motorized and

mechanized travel, further limiting the ability of permittees to access allotments for management. Should WSAs be released from wilderness consideration, limitations on mineral leasing, ROW development and SRPs would maintain a low level of disturbance from development and recreation, limiting conflicts. However, range improvements would not be permitted which could result in the need to increased herding and/or altered management systems at a higher cost to permittees.

Effects under Alternative D

Under Alternative D, the BLM would manage the 564,000 acres available for livestock grazing as WSAs. Should WSAs be released from wilderness consideration impacts would be as described under Alternative C, however, some level of development may be permitted therefore some disturbance could occur and range improvements are restricted rather than prohibited, therefore impacts on grazing management would be reduced.

Effects under Alternative E

Under Alternative E, the BLM would manage the 564,000 acres available for livestock grazing as WSAs. Impacts would be as described under Alternative D.

Livestock Grazing: Cumulative Effects

Past and Present Actions

Past and present actions in the cumulative impacts analysis area impacting livestock grazing management include vegetation treatments; mineral, renewable energy, and lands and realty development activities; recreation; wild horse and burro management; and habitat management for special status species.

Vegetation treatments on public and private rangelands to improve forage conditions and treat nonnative and invasive species have impacted forage availability. Treatments in riparian areas to achieve proper functioning condition can result in site-specific exclusion of livestock; assessments show that the majority of riparian areas are not in proper functioning condition. The number of authorized AUMs has fluctuated due to adjustments based on monitoring data and from temporary closures necessitated by insect outbreaks, fire, and drought. Minerals, lands and realty, and renewable energy developments have contributed some minor impacts on grazing due to ground disturbance and/or exclusion of forage when rangelands are fenced in order to protect infrastructure. Recreation has affected grazing management principally due to gates being left open or vandalism of range improvements. Management of sensitive species habitat has limited the degree or intensity of grazing in areas containing special status species habitat in site-specific locations where grazing has been limited or excluded to protect these species. Wild horses and burros compete with livestock for forage, limiting forage availability for livestock in HMAs where AMLs are exceeded and requiring permittees to adjust grazing management strategies. Wildfire has historically removed forage available for

livestock grazing. Impacts have varied based on the size and intensity of wildfires. ESR treatments have helped restore forage for livestock over time.

Reasonably Foreseeable Actions

Reasonably foreseeable future actions are likely to have similar impacts on the past and present actions. Grazing on private lands within the Cumulative Impact Analysis Area (CIAA) is expected to remain stable or slightly decrease as residential development increases and demand for grazing on public lands will be retained. Disposal or other land tenure adjustment of BLM-administered lands for local community use may reduce the availability of public grazing lands, increasing demand for the remaining area. On-going mineral exploration and development and geothermal development as described in Table 4-1, Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Make up the Cumulative Impact Scenario, have the potential to impact grazing by reducing forage when livestock grazing access is restricted as well as when project activities result in surface disturbance. Similarly, ROW grants for solar development could result in a decrease in availability of forage due to disturbance of lands. With a projected increase in population, unwanted dispersal from gates left open and other conflicts with recreation are likely to increase. Increased population in the WUI may also increase the risk of wildfire, or shift resources from rangelands to protect private property. However, proposed fuels management projects would reduce fire size or spread and reduce the number of acres burned, reducing the impacts on forage for livestock use.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Incremental cumulative impacts would be similar for all alternatives. Overall, incremental impacts to livestock grazing would vary based on permit requirements, use restrictions, and the size and number of minerals and renewable energy developments and construction associated with ROW and communication site authorizations. Larger facilities would fence off areas to livestock grazing. Management of ACECs and priority wildlife habitat areas would protect forage available to livestock grazing. Incremental impacts would vary by alternative depending on the size and number of ACECs and type of priority habitat areas. Wild horse and burro management would aim to provide forage by attempting to manage for AML. ESR and wildlife habitat improvement treatments would slowly restore forage over time post fire.

4.4.3 Geology and Minerals (Locatable, Salable, and Leasable)

This section is a discussion of the potential impacts of the alternatives on the mineral resources of the CCD. Existing conditions concerning geology and mineral resources are described in **Section 3.3.3**, Geology and Minerals. General management of geologic features would not have an effect on other resources. Areas of unique geological resources are discussed under **Section 4.3.13**, Caves and Cave Resources and **Section 4.5.1**, Areas of Critical

Environmental Concern. Historical mining features, such as abandoned mine lands are discussed in **Section 4.6.2**, Public Health and Safety.

Summary

Mineral resources include fluid and solid minerals leased for development under the Mineral Leasing Act of 1920 and amendments and the Geothermal Steam Act of 1970, the Energy Policy Act of 2005 for geothermal leasing, locatable minerals that may be claimed and patented under the 1872 Mining Law, and common variety materials that may be purchased under the Mineral Material Sales Act of 1947.

Development of the alternatives involved the identification of BLM-administered land that is open or closed, including segregated and withdrawn, to salable, leasable, and locatable mineral activities. On BLM land open to leasing or mineral development, certain areas may be subject to surface use stipulations in addition to those required by regulation or policy or identified on the standard lease or permit form. These additional restrictions could include NSO, CSU, and restrictions based on season or location-specific environmental factors. In many instances, more than one stipulation may apply on the same parcel of land. **Table 2-1** indicates the difference among the alternatives in terms of the level of mineral resource availability and surface use restrictions.

Almost all of the proposed management goals, objectives and actions under each alternative are aimed at protecting other resources and resource uses. In general, these objectives and actions result in varying amounts of use restrictions applicable for each of type of mineral resource category. They also result in varying types and levels of mitigation required for protection of sensitive environmental resources. Other goals, objectives and actions involve frequency and types of audits and inspection of activities related to mineral development to ensure permit compliance and fair compensation for the minerals extracted.

Management for the following resources would not result in an effect on geology and minerals and are therefore not discussed in detail: climate, wild horses and burros, wildland fire ecology and management, paleontological resources, forestry and woodland management, livestock grazing, recreation and visitor services, renewable energy, WSRs, and Back Country Byways.

Methods of Analysis

Methods and Assumptions

This section presents potential impacts on leasable, locatable, and salable mineral (mineral material) resources from management actions for other resource and resource use programs. Mineral resource baseline information in **Section 3.3.3**, Geology and Minerals, was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws pertinent to determining effects on mineral resources (e.g., Mineral Leasing

Act of 1920 and amendments; the Energy Policy Act of 2005; the Federal Onshore Oil and Gas Leasing Reform Act of 1987; Geothermal Steam Act of 1970; 1872 Mining Law; Mineral Material Sales Act of 1947) were considered and included in criteria for determining impacts. This known information was overlain with the actions found under each alternative in Chapter 2, and conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

This analysis includes the following assumptions:

- Existing leases and claims will not be affected by the closures or withdrawals proposed under this RMP.
- Existing leases will be managed under the stipulations in effect.
- All surface-disturbing activities include mitigation measures to reduce impacts on geologic resources. Analysis of impacts assumes that all mitigation measures are in place.
- There will be no major regulatory changes in federal or state statutes, regulations, policy, or guidance that govern exploration and development of minerals.
- Surface-disturbing and other disruptive activities at authorized mining and drilling locations could continue.
- Mineral operations are in compliance with all federal, state, and local government permits.
- Mineral exploration and development will not occur in areas identified as closed or withdrawn from mineral entry.

Indicators

The following indicators were used to assess the degree of impacts on mineral resources:

- The amount of land made unavailable for mineral resource activities
- The restrictions that may be placed on mineral claiming, leasing, or development activities

Withdrawal or closure of an area to mining development removes the mineral resources in that area from being able to be accessed and extracted. This represents an impact on the potential discovery, development, and use of those resources by decreasing the availability of mineral resources. Where information is available, consideration is given to the potential for mineral resources within lands withdrawn or closed. For example, an indicator of a significant impact on mineral resources would be if any of the following were to occur:

- A substantial reduction in federal leasing and development of geothermal resources in high potential areas
- Substantial withdrawals or closures of federal land to development of locatable or salable minerals in areas of high potential

In areas managed as open to mineral development, factors that affect mineral extraction and prospecting include, but are not limited to, permitting, regulatory policy, public perception and concerns, travel management, transportation, proximity to sensitive areas and sensitive noise receptors, low commodity prices, taxes, and housing and other necessitates for workers.

Nature and Type of Effects

Salable Minerals

The alternatives would affect salable mineral disposals by various limits on the amount of land available for disposal sites and the areas open with restrictions, as well as limits on operations. The value of most salable minerals is closely tied to the proximity of the source to the final place of use. Closing areas to mineral material disposal would directly impact mineral materials by removing the possibility of mineral resources in that area from being accessed and extracted. If demand for mineral materials could not be met by pits operated on federal lands, pits could be moved onto private or state lands where resources exist. If no mineral materials were to occur near closed areas, developers would have to transport them to construction sites from farther away. This would alter the location of mineral materials development and potentially increase the cost of transportation. Closing land to all forms of disposal would also impair the ability of various levels of government to use nearby materials at no cost for the benefit of public projects. The most common of such projects are the creation or maintenance of rural roads.

Managing areas as ROW avoidance or exclusion would decrease new construction (e.g., roads) and thereby decrease demand for mineral materials in those areas. This, in turn, could decrease the number of mineral material pits on federal mineral estate. In addition, new mineral material pits may not be able to be developed in areas managed as ROW avoidance or exclusion because new roads to these pits could not be constructed in exclusion areas and would be difficult to construct in avoidance areas.

Leasable Minerals

While solid leasable minerals are present within the planning area, no significant production of these minerals is underway or anticipated. Fluid leasable minerals are or may be found in commercially exploitable deposits in the planning area. New technologies, such as hydraulic fracturing, may result in additional oil and gas exploration and eventual production within the planning area; however, there is no data available as the amount of oil and gas potential based on new technology.

The impact issues for fluid minerals result from proposed management objectives and actions to protect other resources. Constraints related to the fluid mineral leasing, exploration, and development include exclusion areas, buffer zones around sensitive areas, seasonal constraints, and conditions of approval. The alternatives would affect fluid mineral development by varying the amounts of land available for leasing and the lease terms and stipulations to be applied on any given tract of land. Closing lands to development would result in reduced domestic production of the US mineral needs and higher dependence on foreign sources of those minerals, reduced economic development on the regional and local levels, loss of royalty, rentals, and pre/post-leasing fee revenues from the lands' minerals, and loss of tax revenue to all levels of government.

Management actions that prohibit or restrict surface occupancy or disturbance overlying federal fluid mineral resources would also directly impact the development of those resources by restricting the availability of mineral resources to be developed or extracted. Examples of these management actions include application of TL, NSO, and CSU stipulations as well as conditionals of approval (COAs). Surface disturbing activities could be shifted, additional protective measures would be required, and extraction delays could occur. All fluid mineral leases are subject to fluid mineral stipulations, but may be granted stipulation waivers, modifications, and exceptions based on site-specific parameters.

In areas where NSO stipulations are applied, federal fluid minerals could be leased; however, the leaseholder/operator would have to use off-site methods, such as directional drilling, to access the mineral resource. The area where directional drilling could be effectively used is limited. This means that some minerals would be inaccessible in areas where an NSO stipulation covers a large area or where no leasing is allowed on surrounding lands. Additionally, because it is not feasible to use directional drilling for wildcat wells, an NSO stipulation would preclude drilling of such wells.

Applying CSU stipulations allows some use and occupancy of the surface. While less restrictive than an NSO stipulation, a CSU stipulation allows the BLM the following actions:

- To require special operational constraints
- To shift the surface-disturbing activity associated with fluid mineral leasing more than the standard 656 feet (200 meters)
- To require additional protective measures to limit impacts on other resources or resource uses.

For example, a CSU stipulation might apply limitations on noise levels during certain times of day. While not prohibiting surface-disturbing activities, a CSU

stipulation can influence the location and level of operations within the subject area.

Areas where TL stipulations are applied would be temporarily closed to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified time frames based on seasons. Some operations would be allowed at all times (e.g., vehicle travel and maintenance); however, construction, drilling, completions, and other operations considered to be intensive would not be allowed during the restricted time frame. Most activities, however, could be initiated and completed outside of the restricted dates specified in the TL stipulation.

Applying COAs to existing leases would directly impact fluid mineral operations. This includes such standards as noise restrictions, height limitations on structures, design requirements, water development standards, and remote monitoring requirements. Additional site-specific planning (i.e., master development plans and unitization) may also be included. Applying these requirements through COAs would impact fluid mineral operations by restricting the development or extraction of mineral resources. To avoid these restrictions, operators may relocate to nearby state or private lands (where resources, geology, and topography permit), thereby decreasing the number of oil, gas, and geothermal operations on federal mineral estate.

Management actions creating ROW exclusion or avoidance areas would indirectly impact fluid mineral extraction by limiting the available means for transporting fluid minerals to processing facilities and markets, for oil and gas, or for transmitting produced geothermal-sourced electricity to the power grid. For example, new geothermal pipelines could not be built in a ROW exclusion area. Oil, gas, and geothermal operations may be moved to nearby private lands where transport and transmission is easier, thereby reducing the number of operations on federal mineral estate. Because ROW avoidance areas would allow for limited ROW development, impacts of avoidance areas would be less severe than those of ROW exclusion areas. Impacts would be mitigated where exceptions were allowed for collocation of new ROWs within existing ROWs to satisfy valid existing rights. Existing leases in areas managed as ROW avoidance or exclusion would also be impacted, as described above.

Closing areas to mineral material disposal would indirectly impact fluid minerals in the areas by reducing the amount of readily available material for road and pipeline construction. This would limit the available means for accessing fluid mineral resources and transporting those resources to processing facilities and markets.

Locatable Minerals

The alternatives would affect locatable mineral exploration and development by varying the amount of federal land under each alternative that is proposed to be withdrawn from mineral entry. Federal land which is withdrawn from mineral

entry would no longer be open to the location of mining claims and would prohibit future mineral exploration and development. Withdrawals are not applied to pre-existing mining claims but would impact future operational proposals (a notice or plan of operations) submitted for exploration or development of locatable minerals on pre-existing mining claims. Closing, segregating, or withdrawing lands to claim and subsequent development would reduce domestic production of our mineral needs and higher dependence on foreign sources of those minerals, reduced economic development on the regional and local levels, and loss of tax revenues to all levels of government that would have resulted from the development of the encompassed minerals.

Withdrawal or closing an area to mining development removes the possibility of mineral resources in that area from being accessed and extracted. This represents an impact on the potential discovery, development, and use of those resources by decreasing the availability of mineral resources on federal mineral estate.

Existing mining claims in areas withdrawn from locatable mineral entry would likely have to undergo a validity exam. If claims were found to be invalid, they could not be developed. These exams would also delay mineral extraction. Finally, operators may choose to relocate outside of the withdrawal area where there are fewer requirements.

A validity exam determines whether a valid existing right exists, which must be recognized even in a withdrawn area. In order to have a valid existing right, a claim holder must demonstrate that, as of the date of the withdrawal, the claim contained a discovery of a valuable mineral deposit and/or that the claim was used and occupied properly under the Mining Law of 1872, as amended.

Existing notices or plans of operations may also have to undergo a validity exam before acceptance (for notice) or approval (for plan of operations) of any material change to the operation. The need to perform validity exams in areas withdrawn from locatable mineral entry would also greatly increase the BLM's burden of processing mining claims, notices, and plans of operations.

Management actions creating ROW exclusion or avoidance areas would indirectly impact locatable mineral extraction by limiting the available means for accessing mineral resources and transporting locatable minerals to processing facilities and markets. For example, new roads to access a mine could not be built in a ROW exclusion area. Locatable mineral operations may be moved to nearby private lands where access is easier, thereby reducing the number of operations on federal mineral estate. Because ROW avoidance areas could allow for limited ROW development, impacts of avoidance areas would be less severe than those of ROW exclusion areas. Impacts would be mitigated where exceptions were allowed for collocation of new ROWs within existing ROWs to satisfy valid existing rights.

Designating areas as special management areas, such as ACECs and WSAs, would trigger the requirement that a plan of operation (including NEPA analysis) would be necessary for any surface-disturbing activities, including exploration related disturbance less than five acres, in those areas in accordance with 43 CFR, 3809 and 3802. The requirement for a plan of operation within a special management area would result in longer delays (typically greater than 6-months) than would be expected if the operation could be acknowledged in 15 days under an exploration notice. Additionally, mitigation measures could be required through the plan of operations approval process and the associated NEPA analysis. This would further restrict locatable mineral exploration and development activities. This would be true even when the surface disturbance proposed is on fewer than 5 acres which is the threshold under which an exploration notice would normally suffice.

Minerals: Effects from Air Quality Management

Effects Common to All Alternatives

Under all alternatives, BLM and BLM-authorized actions on BLM-administered lands would comply with Nevada Revised Statutes 445B.100 through 445B.825 and Nevada Revised Statutes 486A.010 through 486A.180, the State of California's Revised Air Resources Board standards for criteria air pollutants on California Lands, and the Clean Air Act to maintain air quality within the thresholds established by the State of Nevada Air Quality Standards, National Ambient Air Quality Standards, and California's Revised Air Resources Board for California lands.

In addition, BLM and BLM authorized activities would be limited so as not to exceed a 50 percent reduction in ground cover in High Erosion Susceptibility Areas, and OHV use will be limited to designated roads in areas of severe erosion hazard susceptibility.

These statutes, laws and standards include limitations already in effect within the planning area, and no further impacts from Air Quality Management from these implementations are expected to occur.

Effects under Alternative A

Effects under Alternative A would be the same as those described under *Effects Common to All Alternatives*.

Effects under Alternatives B, C, D, and E

Under Alternatives B through E, the regulations and limitations described under *Effects Common to All Alternatives* would be in place with the addition of implementing BMPs and mitigation measures on a case-by-case basis to minimize adverse impacts on air quality. This could include restrictions such as additional dust abatement measures and erosion control measures which may increase the cost of compliance during surface disturbing activities.

Minerals: Effects from Soil Resources

Effects Common to All Alternatives

Under all alternatives, the Navy and the BLM would not allow access to the subsurface by drilling or any other means and/or removal of any subsurface material from the Shoal Site without thorough evaluation and coordination with the Department of Energy

Effects under Alternative A

Management under Alternative A include managing soil resources to reduce soil loss from accelerated wind and water erosion by limiting BLM and BLM-authorized activities so as not to exceed a 50 percent reduction in ground cover in High Erosion Susceptibility Areas. Any proposed activities located on sensitive soils would incorporate BMPs and other mitigation measures to minimize soil erosion and maintain soil stability. This could limit placement of mineral developments and related structures. There would be no additional restrictions to locatable mineral entry, fluid mineral leasing, nonenergy mineral leasing, or mineral material disposal based on management of soil resources under Alternative A.

Effects under Alternative B

Soil resource management under Alternatives B through E would apply CSU stipulations for fluid mineral leasing on lands with slopes greater than 15 percent and less than 50 percent, NSO stipulations on slopes greater than 50 percent, and CSU stipulations on lands with severe wind or water erosion hazard ratings. These stipulations may impact fluid mineral leasing by reducing the area where fluid mineral exploration and development and associated structures could be placed.

There would not be additional restrictions to locatable mining activities or limits on mining operations based on water resource management under Alternative B.

Alternative B would not have any restrictions on nonenergy mineral leasing or mineral material disposable.

Effects under Alternative C

Restriction areas for mineral development from CSU and NSO stipulations resulting from soil management under Alternative C would be the same as those discussed under Alternative B.

Alternative C would also manage priority watersheds to protect related threatened and endangered species habitat as closed to mineral material disposals (except for government use at the Authorized Officer's discretion), closed to nonenergy solid mineral leasing, managed with NSO stipulations for fluid mineral leasing, and managed as ROW exclusion areas, limiting ROWs that could support mineral development. These limitations could restrict where

surface features associated with mineral extraction could be placed which may inhibit mineral production. Locatable mineral entry would not be restricted.

Additional soil resource management under Alternatives C, D, and E would require an erosion control plan for development on slopes between 21 percent and 39 percent. This would need to be approved by the BLM prior to construction and maintenance. Alternatives C, D, and E would prohibit surface disturbing activities on slopes greater than 40 percent, and may allow for placement alternatives if the action would not cause undue or unnecessary degradation on slopes lower than 40 percent, with an erosion control plan in place. These limitations could restrict where surface features associated with mineral extraction could be placed which may inhibit mineral production.

Effects under Alternative D
Restrictions to mineral development from soil management under Alternative D would be the same as those described under Alternative C.

Alternatives D and E would manage priority watersheds containing municipal water supply within a 1,000-foot radius of municipal well heads as closed to mineral material disposal and nonenergy mineral leasing, with NSO stipulations for fluid mineral leasing, and as ROW exclusion areas. The Authorized Officer may consider allowing surface disturbance and/or surface occupancy in priority watersheds on a case-by-case basis. These limitations could restrict where surface features associated with mineral extraction could be placed which may inhibit mineral production. Management of priority watersheds would not restrict locatable mineral entry.

Effects under Alternative E
Restrictions for mineral development from soil management under Alternative E would be the same as those described under Alternative C.

Minerals: Effects from Water Resources

Effects Common to All Alternatives
Mineral activities could be limited under all alternatives to prevent degradation of water quality beyond established standards specified in the Nevada Water Pollution Control statutes and the September 2004 memorandum of understanding between the BLM and the State of Nevada. In addition, satisfactory watershed conditions would be maintained as indicated by maintenance of riparian proper functioning conditions, Standards for Rangeland Health and Guidelines for Grazing Management (BLM version 2, 2012), and Guidelines for Grazing and Standards for Public Health and Guidelines for Recreation Management for BLM-administered lands.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Minerals: Effects from Vegetation Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There are no closures or stipulations proposed for mineral resources from vegetation management under Alternative A.

Effects under Alternative B

Riparian Areas
Alternative B would recommend, to the extent possible, pipeline crossings of streams should be constructed to withstand 100-year floods, which may affect the location of pipeline crossings and increase the cost of pipelines associated with mineral development. This would be applicable to any discretionary mineral development requiring pipelines.

Vegetation: Invasive, Nonnative Species, and Noxious Weeds
Alternatives B through E would minimize the spread of noxious weeds through the control of materials contaminated with noxious seeds or plant parts by requiring salable mineral materials obtained from BLM-administered land to have Weed Free certification from the Nevada Department of Agriculture. Existing operation would be encouraged to obtain a Weed Free certification. Construction for all discretionary minerals actions would require the use of certified weed free construction materials.

Additionally, discretionary construction activities on BLM-administered land would be required to utilize earth materials certified as Weed Free by the State of Nevada and State of California. Also, new, periodic review of, and amendment request for land use authorizations would require an additional stipulation in the authorization addressing noxious weed management. Acquisition of Weed Free materials may increase the cost of mineral extraction and construction of associated features. Acquisition of Weed Free materials would potentially improve reclamation revegetation success and reduce costs to

control invasive or noxious weeds within reclaimed areas and may provide future seed stock, which would lower future costs.

Effects under Alternative C

Riparian Areas

Under Alternative C riparian and wetland area management would preclude surface disturbing activities within 100-year floodplains, within 200 feet of riparian areas, and within 500 feet of springs which could affect the location of all discretionary mineral development actions. Riparian and wetland areas would be closed to mineral material disposal within 200 feet. NSO stipulations for fluid mineral leasing would be applied within 500 feet of riparian and wetland areas and playas, and within 100 year floodplains. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the scope of surface disturbing activities.

Alternative C would require that pipelines crossing stream channels would be constructed to withstand 100-year floods in order to prevent breakage and subsequent accidental contamination of runoff during high-flow events. This would be applicable to any discretionary mineral development actions requiring pipelines.

Invasive, Nonnative Species and Noxious Weeds

Additional management actions implemented for noxious weed management would have the same impacts on mineral resources under Alternative C as those described under Alternative B.

Effects under Alternative D

Vegetation: Riparian Areas

Riparian management under Alternative C would preclude surface disturbing activities within 200 feet of riparian areas and within 500 feet of springs which would affect all discretionary mineral development actions, and would apply a CSU stipulation for fluid mineral leasing within 200 feet of riparian and wetland areas, 100-year floodplains and on or within 500 feet of playas. Riparian areas would also be managed as ROW avoidance areas, which could limit ROWs needed to provide infrastructure to support mineral development. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the scope of any surface disturbing activities.

Alternative D would recommend that, to the extent possible, pipeline crossings of streams would be constructed to withstand 100-year floods, which may increase the cost of pipelines. In addition, pipeline construction would need to take ecological goals into account, and aim to reduce habitat fragmentation.

Invasive, Nonnative Species and Noxious Weeds
Additional management actions implemented for noxious weed management would have the same impacts on mineral resources under Alternative D as those described under Alternative B.

Effects under Alternative E

Riparian Areas
Riparian management under Alternative E would be similar to those described under Alternative D. In addition, NSO stipulations would be applied for fluid mineral leasing within 500 feet of riparian and wetland areas, 100-year floodplains, and on or within 500 feet of playas. Adjustments may be made to these buffers based upon the resource values associated with riparian/wetland areas and the scope of surface disturbing activities, including any mineral development.

As with Alternative D, Alternative E would recommend that, to the extent possible, pipeline crossings of streams should be constructed to withstand 100-year floods, which may increase the cost of pipelines. In addition, pipeline construction would need to take ecological goals into account, and aim to reduce habitat fragmentation.

Invasive, Nonnative Species and Noxious Weeds
Additional management actions implemented for noxious weed management would have the same impacts on mineral resources under Alternative E as those described under Alternative B.

Minerals: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Management objectives for fish and wildlife under Alternative A would not provide for any land use restrictions that would limit the location of mineral exploration and development beyond those specified in existing leases and permits and plan of operations.

Effects under Alternative B

Wildlife Habitat
Alternative B would implement CSU stipulations for fluid mineral leasing within 500 feet of lentic and lotic habitats and 100-foot ROW avoidance buffer around fish and wildlife priority habitat. This would limit mineral production in these areas. Alternative B would limit mineral production more than Alternative A due to additional restrictions being implemented. Wildlife habitat management

would not restrict mineral development of mineral material disposal, nonenergy leasable, or locatable mineral exploration and development.

Migratory Birds

Alternative B would manage Important Bird Areas as ROW avoidance areas and implement CSU stipulations for fluid mineral leasing.

Raptors

Alternative B would implement CSU stipulations for fluid mineral leasing within 0.25 miles of active nest sites and would manage active nest sites as ROW avoidance areas. Raptor habitat management would not affect the other mineral developments.

Effects under Alternative C

Wildlife Habitat

Alternative C would implement NSO stipulations for fluid mineral leasing within 500 feet of lentic and lotic habitats with no exceptions, modifications, or waivers. Additionally, Alternative C would manage fish and wildlife habitat as ROW exclusion areas with a 500-foot buffer and would close these areas to mineral material disposal and nonenergy mineral leasing. Alternative C would place more restrictions on mineral production within wildlife habitat than Alternative A due to additional stipulations and closures.

Migratory Birds

Alternative C would manage Important Bird Areas as ROW exclusion areas with NSO stipulations for fluid mineral leasing, and as closed to mineral material disposal. This would not affect locatable mineral entry or nonenergy mineral leasing. The BLM would place more restrictions on mineral development under Alternative C than under other alternatives through closures and surface management.

Bat Habitat

Alternative C would prohibit large-scale surface-disturbing discretionary actions within 500 feet of occupied bat caves that would apply to any surface disturbing activities.

Raptors

Alternative C would include NSO stipulations for fluid mineral leasing within 0.5 miles of active nest sites, with closure to mineral material disposal and nonenergy leasing. Alternative C would also manage nest sites as ROW exclusion areas. Alternative C would place more restrictions on mineral development than Alternative A.

Effects under Alternative D

Wildlife Habitat
Wildlife habitat management under Alternative D would be the same as those described under Alternative B.

Migratory Birds
Important Bird Area management under Alternative D would be the same as described under Alternative B.

Bat Habitat
Alternative D would prohibit large-scale surface-disturbing discretionary actions within 200 feet of bat occupied caves, which is the least restrictive buffer around caves of Alternatives that would implement them.

Raptors
Under Alternative D raptor habitat management would be the same as those described under Alternative B.

Effects under Alternative E

Wildlife Habitat
Wildlife habitat management under Alternative E would apply NSO stipulations within 500 feet of lentic and lotic habitat with some exceptions, modifications, and waivers, and would manage fish and wildlife priority habitat is ROW avoidance areas with a 100-foot buffer. This would be more restrictive than Alternative A.

Migratory Birds
Important Bird Area management under Alternative E would be the same as described under Alternative B.

Bat Habitat
Alternative E would prohibit large-scale surface-disturbing discretionary actions within 0.5 miles of bat occupied caves and within 0.25 miles of caves not known to be occupied by bats. This could affect the placement of mineral exploration and development features more than Alternative A due to the buffer where surface-disturbing activities would be prohibited.

Raptors
Raptor habitat management under Alternative E would be the same as described under Alternative C.

Minerals: Effects from Special Status Species Management
Under all alternatives, surveys for sensitive species in the project area would be required before any leasing or surface disturbance would be authorized. At the leasing stage, only a literature or existing data search is required. Discretionary mineral activities could be restricted or additional mitigations could be required if

it were determined that they affect federally listed species or habitat. For locatable minerals designating ACECs to protect sensitive species would require a plan of operations for proposals within ACEC boundaries or mineral entry may be withdrawn based on the range of alternatives. Designation ACECs would restrict fluid minerals, salable and solid minerals operations or may close areas to development to varying degrees based on the number of ACECs proposed.

Locatable mineral rights could be acquired or protective mineral withdrawals pursued within sage-grouse leks, but proposals for discretionary mineral operations would include the following requirements (with some exceptions, modifications, and waivers authorized by the BLM):

- Protect sage-grouse habitat by implementing use restrictions, stipulations, and mitigation measures incorporating protection of un-fragmented habitats, minimization of habitat loss, maintenance, and enhance or restore habitat conditions.
- On a case-by-case basis, apply no surface disturbance or NSO stipulations when locating high profile structures (e.g., buildings, storage tanks, overhead power lines) near active sage-grouse leks.

Discretionary mineral actions would be subject to required mitigation measures to include avoidance, NSO stipulations, buffer zones, seasonal restrictions, off site mitigation, use restrictions and rehabilitation to protect sensitive species habitat. The restrictions would result in less land available for mineral exploration and development activities.

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Management of special status species under Alternative A would not provide for any land use restrictions that would limit the location of mineral exploration and development.

Effects under Alternative B

Greater Sage-Grouse
Greater Sage-Grouse habitat management would manage PPMA (275,600 acres) with CSU stipulations for fluid mineral leasing, which may include restriction on construction during certain hours of the day. Additionally, the BLM would manage PPMA as ROW avoidance. The BLM would place more restrictions on mineral development under Alternative B than Alternative A.

Alternative B would also apply timing limitation stipulations to fluid mineral leasing within 0.6-mile of springs, meadows, and riparian corridors (late brood-rearing habitat) within PPMA and PGMA from May 15 to August 15 (dates can

be extended to September 15 for the Bi-State distinct population segment). During this timeframe, surface use would be prohibited. This stipulation does not apply to operations and maintenance of production facilities. Alternative B would be the only alternative to implement timing limitation for fluid mineral leasing in these areas. Additionally, fluid mineral related surface disturbing activities would be restricted within 0.6 miles of active Greater Sage-Grouse nests from approximately April 1 through June 30.

Effects under Alternative C

Greater Sage-Grouse

Alternative C would close PPMA and PGMA (414,200 acres) to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. In addition, the BLM would manage these areas as ROW exclusion areas. The BLM would place the most restrictions on mineral development of all the alternatives.

Under Alternatives C, D, and E, surface disturbing activities would be prohibited within 4 miles of active Greater Sage-Grouse nests from approximately April 1 through June 30. This would place more restrictions on discretionary mineral development activities than Alternative A.

Effects under Alternative D

Greater Sage-Grouse

Under Alternatives D and E, Greater Sage-Grouse habitat management would apply NSO stipulations for fluid mineral leasing within PPMA (275,600 acres) with no exceptions, modifications, or waivers. Alternative D would apply NSO stipulations for fluid mineral leasing within PGMA (138,600 acres) with exceptions, modifications, and waivers as outlined in **Appendix C**, and would manage PPMA and PGMA as ROW avoidance areas (414,200 acres).

Effects under Alternative E

Greater Sage-Grouse

Greater Sage-Grouse habitat management under Alternative E would be similar to those described under Alternative D. In addition to the management actions under Alternative D, Alternative E would close PPMA and PGMA to nonenergy mineral leasing and mineral material disposal.

Minerals: Effects from Cultural Resources Management

Effects Common to All Alternatives

Under all alternatives, in compliance with Section 106 of NHPA, surveys for cultural resources in the project area would be required before any surface disturbance would be authorized. Minerals activities could be restricted or additional mitigations required if it were determined that they affect cultural

sites listed on the NRHP or that have been determined to be eligible for that listing.

The rights to locatable minerals could be acquired, but proposals for locatable mineral operations within 0.25 mile of cultural sites listed on the NRHP or that have been determined to be eligible for listing may be restricted or require mitigation measures to protect cultural resources.

Effects under Alternative A

In addition to the management actions described under *Effects Common to All Alternatives*, the BLM would pursue the withdrawal of locatable minerals from the Grimes Point Archaeological District, the Sand Mountain Recreation Area, and the Cold Springs Historical Site. This would prohibit locatable mineral development in these areas.

Effects under Alternative B

Cultural resource management under Alternative B would implement more management actions that would restrict mineral development than Alternative A. However, due to Alternative A seeking the withdrawal of locatable mineral entry from various locations, Alternative B would be less restrictive of mineral development. Cultural and historic rock art sites would be protected by a 0.125-mile buffer in which surface disturbing activities and visual intrusions that adversely affect these features would be prohibited. This may offset the placement of any mineral production and associated features near these areas.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural Properties currently listed, eligible, or known but not yet formally designated for the NRHP as ROW-avoidance areas and would place CSU stipulations on fluid mineral leasing.

Alternatives B through E would follow the guidance of the Native American Graves Protection and Repatriation Act during all mineral development. Alternative B would close areas known to contain human burials to surface disturbing activities when feasible, and appropriate federal, state, and local laws would be followed when disturbance is necessary.

Effects under Alternative C

Cultural and historic rock art sites would be protected by a 1-mile buffer in which discretionary surface disturbing activities and visual intrusions that adversely affect these features would be prohibited.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural Properties currently listed, eligible, or known but not yet formally designated for the NRHP as ROW-avoidance areas, would place CSU stipulations applied on fluid mineral leasing, and would close these areas to mineral material disposal.

Under Alternative C, protection of human burials would be similar as those described under Alternative B.

Effects under Alternative D

Cultural and historic rock art sites would be protected by a 0.125-mile buffer in which surface disturbing activities and visual intrusions that adversely affect these features would be prohibited. This would be the same as Alternative B.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural listed, eligible, or known and not yet formally designated for the NRHP the same as under Alternative B.

Under Alternative D, protection of human burials would be similar as those described under Alternative B.

Effects under Alternative E

Cultural and historic rock art sites would be protected by a 0.5-mile buffer or the visual horizon in which discretionary surface disturbing activities and visual intrusions that adversely affect these features would be prohibited.

The BLM would manage NRHP-listed Properties and Districts, National Historical Landmarks, and Traditional Cultural Properties listed, eligible, or known and not yet formally designated for the NRHP as ROW-avoidance areas and would apply NSO stipulation on fluid mineral leasing.

Alternative E would prohibit BLM-Authorized activities within the Virginia City National Historic Landmark District and would close the area to nonenergy mineral leasing. Alternative E would also implement a NSO stipulation for fluid mineral leasing and would manage the district as a ROW avoidance area. This is the only alternative that would apply these land use restriction to the Virginia City National Historic Landmark under cultural resources management. Alternatives B, C, and D would manage this area as an ACEC, and Alternative A would not implement additional management actions.

Alternative E would also designate 15,900 acres as the Wyemaha Archaeological District to protect cultural resources, encompassing the Grimes Point Archaeological District ACEC. Associated land use restrictions that would apply include recommendation for withdrawal from locatable mineral entry, closure to fluid mineral leasing, and management as an ROW avoidance area. Alternative E would be the only Alternative that would designate the Wyemaha Archaeological District.

Alternative E would prohibit BLM-authorized activities within the Pistone site (3,100 acres) if they adversely affect local rock art resources. Additionally, Alternative E would manage the Pistone site as a ROW avoidance area, with closure to mineral material disposal and fluid mineral leasing, and a recommendation for withdrawal from locatable mineral entry.

Minerals: Effects from Visual Resources Management

Effects Common to All Alternatives
All of the alternatives would require identification and management of areas according to their VRM values. Activities not meeting the VRM objectives may require mitigations, as determined on a case-by-case basis. Surface use stipulations under some VRM classes could redesign, cancel, or mitigate mineral activities. In addition, the alternatives require the protection of the visual integrity of the National Historic Trails and their viewsheds.

Management of visual resources would not limit exploration or development of mineral resources, but may impose restriction on location of associated features and require mitigation based on color, line, contrast, and visual setting as required by the VRM classification. With respect to effects on minerals resources, all of the alternatives are essentially equivalent.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Minerals: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would be no restrictions on ROW development or surface use for mining activities or limits on mining operations based on cave resources characteristics management objectives or actions under Alternative A.

Effects under Alternative B
Alternative B would restrict discretionary mineral development activities around Dynamite Cave by implementing a 0.25-mile ROW avoidance area around the cave, closing the area to mineral material disposal, and applying a 500-foot CSU stipulation for fluid mineral leasing. Nonenergy mineral leasing, locatable mineral entry, and mineral material disposal would not be affected.

Alternative B would restrict mineral development around Hidden Cave by implementing a ROW avoidance area within 500 feet of the cave, managing closure of the area to mineral material disposal, and applying CSU stipulations within 500 feet of the cave for fluid mineral leasing. Nonenergy mineral leasing, locatable mineral entry, and mineral material disposal would not be affected.

Effects under Alternative C

Management under Alternative C would restrict mineral development around Dynamite Cave by implementing a 0.5-mile ROW exclusion area around the cave, closing the area to mineral material disposal and fluid mineral leasing, recommending the area for withdrawal from locatable mineral entry, and managing closure of the area to motorized travel within 500 feet of the cave.

Alternative C would restrict mineral development around Hidden Cave by managing as a ROW exclusion area within 500 feet of the cave, closing the area to fluid mineral leasing and mineral material disposal, recommending the area for withdraw from locatable mineral entry, and managing closing the area to motorized travel within 500 feet of the cave.

Effects under Alternative D

Specific management of Hidden Cave and Dynamite Cave under Alternative D would have the same effects on mineral resources as Alternative B. These measures would be more restrictive of mineral resources associated with caves than Alternative A.

Effects under Alternative E

Alternative E would restrict mineral development around Hidden Cave by implementing a ROW exclusion area within 500 feet of the cave, closing the area to fluid mineral leasing and mineral material disposal, recommending the area for withdraw from locatable mineral entry, and closing the area to motorized travel within 500 feet of the cave.

Management of Dynamite Cave under Alternative E would be the same as management of the cave under Alternative C.

Management of caves and cave resources would result in more restrictions on mineral resource development under Alternative E than under Alternative A.

Minerals: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Impacts from mineral exploration are likely to include surface disturbances related to the construction of exploration drill roads and drilling pads. New and existing large-scale mines, mine expansions, and small-scale mining operations are likely to involve access road construction, increased traffic and surface disturbances associated with various mine facilities (for example: portals, pits, waste rock dumps, ore processing, tailing facilities, heap leach pads,

administration and maintenance facilities; and storm water runoff control ponds and diversions structures).

Impacts on mining include increased operational limits and costs associated with reclamation and interim reclamation. All alternatives include provisions for implementing concurrent reclamation at all mineral operations and interim reclamation for all facilities or features that would be unused for more than one year. These provisions will reduce the amount of land disturbed at any one time, as wells as reducing erosion, loss of growth media, and siltation of nearby waterways. In addition, there would be no reduction of existing public access to BLM-administered lands due to occupancy associated with minerals activities.

The Programmatic EIS for Geothermal Leasing in the western United States (BLM and Forest Service 2008), issued in December 2008, include provisions on lands open or closed to geothermal leasing and standardized stipulations, restrictions, and mitigations for geothermal exploration, development, and production. These conditions and restrictions will apply to the lands within the planning area except where this RMP EIS determines different or additional conditions or stipulations apply to specific locations.

Effects under Alternative A

Under Alternative A, the BLM would manage 56,900 acres as closed to all mineral entry, exploration, and development, and energy development under the Classification and Multiple Use Act, the Walker Planning Area, the Carson City Urban Interface Plan, and under existing withdrawals and segregation from mineral entry that would be maintained.

Locatable Minerals

Alternative A would maintain withdrawal of 194,900 acres of federal mineral estate from locatable mineral entry. Alternative A would also replace pre-FLPMA Classification and Multiple Use Act segregations with FLPMA withdrawals which would result in withdrawing 3,700 acres of currently segregated lands from locatable mineral entry.

Fluid Minerals

Alternative A would continue to manage 839,100 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations for oil and gas leasing on an additional 700 acres with, including areas within 300 to 500 feet of water resources, and around important archaeological sites. The BLM would manage a total of 839,800 acres with restrictions for fluid mineral leasing. This would be the fewest acres of closure and surface restriction for fluid minerals of the alternatives.

Mineral Materials (Salable)

Alternative A would manage 564,200 acres as closed to mineral material disposal.

Nonenergy Leasable Minerals:
Alternative A would close 738,800 acres to nonenergy leasable minerals.

Effects under Alternative B

Locatable Minerals
Alternative B would recommend 439,600 acres for withdrawal from locatable mineral entry.

Fluid Minerals
Alternative B would manage 768,500 acres as closed to oil and gas and geothermal leasing. An additional 404,600 acres located within ACECs and areas with slopes greater than 50 percent would be managed with NSO stipulations for fluid mineral leasing. The BLM would apply CSU stipulations on 2,120,200 acres, including PPMA, some ACECs, NRHP-listed properties, within 500 feet of Dynamite and Hidden Caves or lentic and lotic habitats, additional lands with slopes greater than 50 percent, lands with severe soil, wind, or water erosion, within Important Bird Areas, and within 0.25 mile of raptor nests. Additionally, the BLM would apply timing limitations within 0.6 miles of springs, meadows, and riparian corridors within PPMA and PGMA from May 15 through August 15.

This is a total of 3,293,300 acres of restrictions for fluid minerals, which is more than Alternative A.

Mineral Materials (Salable)
Alternative B would manage 807,200 acres as closed to mineral material disposal, including Hidden and Dynamite Caves, WSAs, and within 300 feet of known human burials. Alternative B would restrict mineral material disposal within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat. This could result in restrictions for mineral material development on an additional 414,200 acres (PPMA and PGMA)

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative B would manage the more acres with restrictions on mineral materials than Alternative A.

Nonenergy Leasable Minerals:
Alternative B would manage 981,900 acres would be closed to nonenergy leasable minerals, including WSAs, areas within 300 feet of known human burials, and Washoe County. Alternative B would restrict nonenergy leasable mineral development within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat.

Assuming that PPMA and PGMA remain open or that nonenergy leasable mineral development could be mitigated to not adversely affect Greater Sage-

Grouse habitat, Alternative B would restrict more acres of closure to nonenergy leasable minerals than Alternative A.

Effects under Alternative C

Locatable Minerals

Under Alternative C, 117,500 acres would be recommended for withdrawal from locatable mineral entry, which is greater than all other Alternatives.

Fluid Minerals

Alternative C would manage 2,081,700 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations for fluid mineral leasing on 1,039,200 acres, including areas within 0.5 miles of active raptor nests. Areas managed as closed would include lands with slopes greater than 50 percent, priority watersheds containing municipal water supplies, areas within 500 feet of riparian/wetland areas and lentic and lotic habitats, Important Bird Areas, NRHP-listed properties, ACECs, the East Fork Carson River Segment 1, and BCWCAs and National Historical Trails. The BLM would apply CSU stipulations on an additional 1,242,800 acres, including lands with slopes greater than 15 percent and less than 50 percent, and lands with severe soil, wind or water erosion hazard ratings. Additionally, the BLM would implement timing limitations for big game fawning, calving, and kidding areas and big game winter ranges as discussed under Fish and Wildlife, and within 0.6 miles of springs, meadows, and riparian corridors within PGMA from May 15 to August 15.

This is a total of 4,363,700 acres of restrictions for fluid mineral leasing, which is nearly the entire planning area.

Mineral Materials (Salable)

The BLM would manage 3,004,800 acres as closed to mineral material disposal. This includes caves and cave resources, priority watersheds containing municipal water supplies, within 200 feet of riparian/wetland areas, fish and wildlife priority habitats, within 0.5 mile of active raptor nests, PPMA and PGMA, some ACECs, within 2.5 miles of NHT corridors, the East Fork Carson River Segment, within 1 mile of known human burials, the Virginia Range ERMA and BCWCAs.

Alternative C would close more acres to mineral materials than any of the other Alternatives.

Nonenergy Leasable Minerals:

Alternative C would close 2,960,800 acres to nonenergy mineral leasing, including priority watersheds containing municipal water supplies, fish and wildlife priority habitats, areas within 0.5 mile of active raptor nests, PPMA and PGMA, some ACECs, within 2.5 miles of NHT corridors, WSAs, within 0.25 mile of the East Fork Carson River Segment 1 (0.25 mile), within 1 mile of known human burials, Washoe County, and BCWCAs.

Alternative C would manage more acres as closed to nonenergy leasable minerals than any of the other alternatives.

Effects under Alternative D

Locatable Minerals

Under Alternative D 470,600 acres would be recommended for withdrawal from locatable mineral entry, which is more than any of the other alternatives.

Fluid Minerals

Alternative D would manage 737,000 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations for fluid mineral leasing on 864,800 acres. This includes the Pah Rah ACEC, lands with slopes greater than 50 percent, within 1,000 feet of municipal well heads in priority watersheds, PPMA and PGMA, the WSR East Fork Carson River Segment 1. Also, CSU stipulations would be applied to 2,071,400 acres including areas within 200 feet of riparian/wetland areas, within 500 feet of lentic and lotic habitat, lands with slopes greater than 15 percent and less than 50 percent, lands with severe soil, wind or water erosion hazard ratings, Important Bird Areas, NRHP-Listed properties, and some ACECs.

This is a total of 3,673,200 acres of restrictions for fluid mineral leasing, which is more than Alternative A but less than the other alternatives.

Mineral Materials (Salable)

Alternative D would manage 807,700 acres as closed to mineral material sales, including caves and cave resources, within 1,000 feet of municipal well heads in priority watersheds, some ACECs, WSAs, the East Fork Carson River Segment 1, and within 0.25 mile of known human burials. Alternative D would restrict nonenergy mineral material disposal within Grater Sage-Grouse PPMA and PGMA if it is determined that there would be adverse impacts on Greater-Sage Grouse or their habitat. This could result in restrictions for mineral material development on 414,200 acres.

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative D would manage more acres as closed to mineral material sales than Alternative A.

Nonenergy Leasable Minerals:

Alternative D would close 1,785,900 acres to nonenergy leasable minerals, including areas within 1,000 feet of municipal wellheads, the Virginia Range Combleaf Botanical ACEC, WSAs, within 0.25 mile of the East Fork Carson River Segment, within 300 feet of known human burial, and Washoe County.

Alternative D would restrict nonenergy leasable mineral development within PPMA and PGMA if it is determined that there would be adverse impacts on Greater Sage-Grouse or their habitat.

Assuming that PPMA and PGMA remain open or that mineral material disposal could be mitigated to not adversely affect Greater Sage-Grouse habitat, Alternative D would manage more acres as closed to mineral material sales than all of the alternatives, except for Alternative C.

Effects under Alternative E

Locatable Minerals

Alternative E would recommend 470,66 acres for withdrawal from locatable mineral entry, which is the greatest of all alternatives.

Fluid Minerals

Alternative E would manage 1,007,200 acres as closed to oil and gas and geothermal leasing. The BLM would apply NSO stipulations on 1,151,600 acres, including lands with slopes greater than 50 percent, within 1,000 feet of municipal well heads in priority watersheds, areas within 500 feet of riparian/wetland areas and lentic and lotic habitats, within 0.5 mile of raptor nests, within Greater-Sage Grouse PPMA and PGMA, NRHP-listed properties, and the WSR East Fork Carson River Segment 1. Alternative E would manage 1,844,900 acres with CSU stipulations, including lands with slopes greater than 15 percent and less than 50 percent, lands with severe soil, wind or water erosion hazard ratings, and Important Bird Areas. Additionally, the BLM would implement timing limitations for big game fawning, calving, and kidding areas and big game winter ranges as discussed under Fish and Wildlife, and within 0.6 miles of springs, meadows, and riparian corridors within PGMA from May 15 to August 15.

This is a total of 4,003,700 acres of restrictions for fluid mineral leasing, which is more than all of the alternatives, except for Alternative C.

Mineral Materials (Salable)

Alternative E would manage 1,778,700 acres as closed to mineral material disposal, including caves and cave resources, within 1,000 feet of municipal wellheads in priority watersheds, fish and wildlife priority habitat areas, within 0.5 mile of active raptor nests, within Greater Sage-Grouse PPMA and PGMA, the Ruhenstroth Paleontological ACEC, within 1 mile of high potential historic sites and high potential route segments along NHT corridors, WSAs, the East Fork Carson River Segment 1, within 300 feet of known human burials, and the Virginia Range ERMA.

Alternative E would close more acreage to mineral materials than all of the alternatives, except for Alternative C.

Nonenergy Leasable Minerals:
Alternative E would manage 1,785,900 acres as closed to nonenergy leasable minerals, including areas within 1,000 feet municipal wellheads, within 0.5 mile of active raptor nests, the Sand mountain SRMA, the Ruhenstroth Paleontological ACEC, within 1 mile of high potential historic sites and high potential route segments along NHT corridors, WSAs, within 0.25 mile of the East Fork Carson River Segment, and within 300 feet of known human burial, and Washoe County.

Alternative E would close more acres to nonenergy leasable minerals than all of the alternatives, except for Alternative C.

Minerals: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives
Avoiding duplication of roads and allowing continued public access on existing roads may result in greater levels of traffic on system roads. Under all alternatives, the primary users of system roads may be held responsible for funding or implementing road upkeep, especially where the mining-related traffic has higher level road design requirements than the BLM's.

Areas closed to OHV use may require some stipulations and/or restrictions determined on a case-by-case basis through project specific NEPA analysis. Areas closed to OHV use would be open to acquiring rights for locatable minerals, but locatable proposals for mineral operations in these areas would require special handling (submission of a plan of operation under present 3809 regulations) or have additional limitations or stipulations applied to authorizations.

Other than the conditions discussed above, there would be no restrictions under any of the alternatives to mining or limits on mining, based on transportation and access management objectives or actions.

Effects under Alternative A
Alternative A would manage 3,840,300 acres as open to cross-country travel, 6,900 acres as closed to motorized and mechanized travel, 31,800 acres as closed to motorized travel with mechanized travel limited to existing routes, and 924,300 acres as limited to existing roads for motorized travel for a total of 963,000 acres of restrictions.

Effects under Alternative B
Alternative B would manage 95,300 acres as open to cross-country travel, 4,300 acres as closed to motorized and mechanized travel, and 26,700 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,677,000 acres as limited to existing roads for motorized travel, for a total of 4,708,000 acres of restriction.

Alternative B would managed fewer acres closed to motorized and mechanized travel than Alternative A. Alternative B would manage fewer acres as closed to motorized travel, with mechanized travel limited to existing routes than Alternative A. Alternative B would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A. Overall, Alternative B would manage more acres with restrictions than Alternative A.

Effects under Alternative C

Alternative C would manage 1,300 acres as open to cross-country travel, 1,190,500 acres as closed to motorized and mechanized travel, 598,000 acres as closed to motorized travel with mechanized travel limited to existing routes, and 3,013,500 acres as limited to existing roads for motorized travel, for a total of 4,802,000 acres of restriction.

Alternative C would manage the most acres as closed to motorized and mechanized travel of all the alternatives. Alternative C would manage the most acres as closed to motorized travel with mechanized travel limited to existing routes. Alternative C would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A.

Effects under Alternative D

Alternative D would manage 22,700 acres as open to cross-country travel, 1,600 acres as closed to motorized and mechanized travel, 30,600 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,748,400 acres as limited to existing roads for motorized travel, for a total of 4,780,600 acres of restriction.

Alternative D would manage fewer acres closed to motorized and mechanized travel than Alternative A. Alternative D would manage the fewest acres as closed to motorized travel, with mechanized travel limited to existing routes of all the alternatives, and more acres as limited to existing routes for motorized and mechanized travel than all the alternatives. Overall, Alternative D would manage more acres with restrictions than Alternative A.

Effects under Alternative E

Alternative E would manage 55,700 acres as open to cross-country travel, 6,200 acres as closed to motorized and mechanized travel, 24,100 acres as closed to motorized travel with mechanized travel limited to existing routes, and 4,717,300 acres as limited to existing roads for motorized travel, for a total of 4,747,600 acres of restriction.

Alternative E would manage the fewest acres closed to motorized and mechanized travel of all the alternatives. Alternative E would manage fewer acres as closed to motorized travel, with mechanized travel limited to existing routes than Alternative A. Alternative E would manage more acres as limited to existing routes for motorized and mechanized travel than Alternative A. Alternative E would manage more acres with restrictions than Alternative A.

Minerals: Effects from Lands and Realty

Effects Common to All Alternatives

Mineral Materials

Managing areas as ROW avoidance or exclusion would decrease new construction (e.g., roads) and thereby decrease demand for mineral materials in those areas. This, in turn, could decrease the number of mineral material pits on federal mineral estate. In addition, new mineral material pits may not be able to be developed in areas managed as ROW avoidance or exclusion because new roads to these pits could not be constructed in exclusion areas and would be difficult to construct in avoidance areas.

Fluid Minerals

Management actions creating ROW exclusion or avoidance areas would indirectly impact leasable mineral extraction by limiting the available means for accessing mineral resources and transporting minerals to processing facilities and markets, and would indirectly impact fluid mineral extraction by limiting the available means for transporting fluid minerals to processing facilities and markets, for oil and gas, or for transmitting produced geothermal-sourced electricity to the power grid. For example, new geothermal pipelines could not be built in a ROW exclusion area. Oil, gas, and geothermal operations may be moved to nearby private lands where transport and transmission is easier, thereby reducing the number of operations on federal mineral estate. Because ROW avoidance areas would allow for limited ROW development, impacts of avoidance areas would be less severe than those of ROW exclusion areas. Impacts would be mitigated where exceptions were allowed for collocation of new ROWs within existing ROWs to satisfy valid existing rights. Existing leases in areas managed as ROW avoidance or exclusion would also be impacted, as described above.

Locatable Minerals

Management actions creating ROW exclusion or avoidance areas would not have a substantial effect on non-discretionary locatable minerals activities as most appurtenant rights-of-way are acknowledged or authorized under notices and plans of operation, respectively. However if ROWs are needed to supporting locatable mining operations, ROWs may not be available or special stipulations may be added that would affect ROW facility locations and costs. Locatable minerals operations would mitigate impacts to prevent unnecessary or undue degradation as necessary within ROW exclusion/avoidance areas. For example, impacts would be mitigated through collocation of new ROWs within existing ROWs.

Effects under Alternative A

Alternative A would manage 564,100 acres as ROW exclusion, and would not manage any acres as ROW avoidance. Land Use Authorizations and

management under Alternative A would restrict the least amount of land for ROW entry and development of all the alternatives.

Effects under Alternative B
Alternative B would manage 580,000 acres as ROW exclusion and 1,039,200 acres as ROW avoidance, totaling 1,195,800 acres of ROW entry restriction. This is more than Alternative A.

Effects under Alternative C
Alternative C would manage 2,675,800 acres as ROW exclusion and 369,300 acres as ROW avoidance, totaling 3,045,100 acres of ROW entry restriction. Land Use Authorizations and management under Alternative C would restrict the most amount of land for ROW entry and development of all the alternatives.

Effects under Alternative D
Alternative D would manage 564,100 acres as ROW exclusion and 1,226,100 acres as ROW avoidance, totaling 1,790,200 acres of ROW entry restriction. This is more than Alternative A.

Effects under Alternative E
Alternative E would manage 605,900 acres as ROW exclusion and 1,448,200 acres as ROW avoidance totaling 2,054,100 acres of ROW entry restrictions. This is more than Alternative A.

Minerals: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, 6 ACECs (21,800 acres) would continue to be managed. Of these, 4 ACECs would restrict locatable mineral entry, but would be open to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. Areas not proposed to be withdrawn from locatable mineral entry would require a plan of operations. Alternative A would be the least restrictive of mineral development within ACECs of all the alternatives.

The BLM would manage the Carson Wandering Skipper ACEC with restrictions on mineral withdrawal until the activity plan is complete. This would be less restrictive of mineral resources than Alternative C, which is the only other Alternative that would manage this ACEC.

The BLM would manage the Pah Rah High Basin Petroglyph ACEC with restrictions on mineral withdrawal until the activity plan is complete. Alternatives B and D would continue this withdrawal, and Alternative C and E would require additional restrictions for mineral entry within this ACEC.

Alternative A would continue the withdrawal from locatable mineral entry in the Virginia Range Williams Combleaf Botanical ACEC, as would Alternatives B through E. The BLM would place the fewest restrictions on mineral development within this ACEC.

Effects under Alternative B

Under Alternative B, 4 ACECs would continue to be managed and 9 ACECs would be proposed for designation, totaling 371,170 acres. Of these, 7 ACECs would restrict impose stipulations or closures to fluid mineral leasing, and 4 would withdraw the ACEC from locatable mineral entry. Alternative B would not have any restrictions on nonenergy or mineral material disposal. Alternative B would impose more restrictions on mineral development than Alternative A.

Alternatives B and D would manage the Black Mountain/Pistone Archaeological Site with CSU stipulations for fluid mineral leasing. These alternatives would place fewer restrictions on fluid mineral leasing than Alternative C, which would manage this site with NSO stipulations. Alternatives A and E would not manage this area as an ACEC.

Alternatives B and D would manage the Grimes Point Archaeological District with NSO stipulations for fluid mineral leasing. The BLM would place more restrictions on mineral development under these alternatives than under Alternatives C and E, which would recommend the ACEC for withdrawal from locatable mineral entry.

Alternative B would manage the Namazii Wunu Cultural ACEC with CSU stipulations for fluid mineral leasing. The BLM would place fewer restrictions on fluid mineral leasing than Alternative C, the only other alternative that would designate this ACEC.

Alternatives B and D would continue the current withdrawal from locatable mineral entry within the Pah Rah High Basin Petroglyph, similar to Alternative A. The BLM would place more restrictions on mineral development under these alternatives than under Alternatives C and E.

Alternative B would re-establish the 1,420 acre locatable mineral withdrawal on the Stewart Valley Paleontological ACEC, and would apply NSO stipulations for fluid mineral leasing throughout the ACEC. This is more restrictive than Alternative A, which would not require any mineral entry restrictions.

Alternatives B and D would manage the Tagim aša Cultural ACEC with CSU stipulations for fluid mineral leasing.

Alternatives B and E would manage the Virginia Range Williams Combleaf Botanical ACEC as closed to fluid mineral leasing, and would continue the withdrawal from locatable mineral entry. This is more restrictive than Alternative A.

Effects under Alternative C

Alternative C would continue to manage 5 ACECs and would propose the designation of an additional 18 ACECs, totaling 786,270 acres. Of these, 18 ACECs would be restricted or closed to fluid mineral leasing, 21 would be withdrawn from locatable mineral entry, 8 would be closed to nonenergy mineral leasing, and 11 would be closed to mineral material disposal. There would be 6 ACECs that would restrict any form of mineral development. ACEC management under Alternative C would result in the BLM placing the most restrictions on mineral development.

The BLM would apply NSO stipulations for fluid mineral leasing on the Black Mountain/Pistone Archaeological Site. This is more restrictive than Alternative B and D, which would manage this ACEC with CSU stipulations on fluid mineral leasing. This ACEC would not be designated under Alternatives A or E.

The Carson Wandering Skipper ACEC would continue to be withdrawn from locatable mineral entry, and would be closed to fluid mineral entry and nonenergy leasable minerals. This would be more restrictive of mineral resources than Alternative A, which is the only other Alternative that would manage this ACEC.

The Churchill Narrows Buckwheat Botanical ACEC would be recommended for withdrawal from locatable mineral entry, and would be closed to fluid mineral entry, nonenergy leasable minerals, and mineral material disposal.

The BLM would recommend the Clan Alpine Greater Sage-Grouse ACEC for withdrawal from locatable mineral entry, and manage the ACEC as closed to fluid mineral leasing, and mineral material disposal. Alternative C would be the only Alternative that would designate this ACEC.

The Desatoya Greater Sage-Grouse ACEC would be recommended for withdrawal from locatable mineral entry with 3.25 miles of active leks, and would be closed to fluid mineral leasing and mineral material disposal. Alternative C would be the only Alternative that would designate this ACEC.

The BLM would recommend the Dixie Valley Toad ACEC for withdrawal from locatable mineral entry, and would apply NSO stipulations for fluid mineral leasing. Alternative C is the only Alternative that would designate this ACEC.

Alternative C would recommend the Fox Peak Cultural site for withdrawal from locatable mineral entry.

The Greater Sand Mountain ACEC would be recommended for withdrawal from locatable mineral entry under Alternative C, which would be more restrictive than Alternative A.

Alternatives C would manage the Grimes Point Archaeological District with NSO stipulations for fluid mineral leasing, and as recommended for withdrawal from locatable mineral entry. This is more restrictive than Alternative A.

The BLM would manage the Incandescent Rocks Scenic ACEC as closed to fluid mineral entry, nonenergy mineral leasing, and mineral material disposal, as well as recommended for withdrawal from locatable mineral entry. This would be more restrictive than Alternative A.

Alternative C would manage the Lassen Red Rock Scenic ACEC as closed to fluid mineral leasing, nonenergy mineral leasing, mineral material disposal, and as recommended for withdrawal from locatable mineral entry. Alternative C is the only alternative that would designate this ACEC.

Alternative C would manage the Namazii Wunu Cultural ACEC as closed to fluid mineral leasing, nonenergy mineral leasing, mineral material disposal, and as recommended for withdrawal from locatable mineral entry. This is more restrictive than Alternative A.

Alternative C would recommend the Pah Rah High Basin Petroglyph for locatable mineral withdrawal, and would apply NSO stipulations for fluid mineral leasing. The BLM would place more restrictions on mineral development under Alternative C than under Alternative A.

The BLM would manage the Pine Nut Bi-State Sage Grouse ACEC as closed to fluid minerals and mineral material disposal, as well as recommended for withdrawal from locatable mineral entry within 3.25 miles of active lek sites. Alternative C would be the only alternative that would designate this ACEC.

The Pine Nut Mountains Williams Combleaf Botanical ACEC would be recommended for withdrawal from locatable mineral entry under Alternatives C and D. These are the only alternatives that would designate this ACEC.

Alternatives C and E would manage the Ruhenstroth Paleontological ACEC as closed to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal, as well as recommended for withdrawal from locatable mineral entry.

The Sand Springs Desert Study Area ACEC would be recommended for withdrawal from locatable mineral entry. Alternative C is the only alternative that would designate this ACEC.

Alternative C would be the only alternative that would designate the Steamboat Buckwheat Botanical ACEC. This ACEC would continue to be withdrawn from locatable mineral entry and closed to mineral material disposal.

Alternatives C and E would re-establish the 1,420 acre locatable mineral withdrawal within the Stewart Valley Paleontological ACEC, and would manage

the ACEC as closed to fluid mineral leasing. This is more restrictive than Alternative A, which would not require any mineral entry restrictions.

Alternative C would manage the Tagima asa Cultural ACEC as recommended for withdrawal from locatable mineral entry and with NSO stipulations for fluid mineral leasing.

The BLM would manage the Virginia City National Landmark Historic District ACEC as closed to nonenergy mineral leasing and mineral material disposal, as well as managed with NSO stipulations for fluid mineral leasing under Alternative C.

Alternative C would recommend the Virginia Mountains Greater Sage-Grouse ACEC for withdrawal from locatable mineral entry, and as closed to fluid mineral leasing and mineral material disposal. Alternative C is the only alternative that would designate this ACEC.

Alternative C and E would manage the Virginia Range Williams Combleaf Botanical ACEC as closed to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal, as well as continue the locatable mineral withdrawal. This would be more restrictive than Alternative A.

Effects under Alternative D

Alternative D would continue to manage 3 ACECs and would propose the designation of an additional 8 ACECs totaling 180,000 acres. Impacts on mineral development from Alternative D would be similar to Alternative B. Alternative D would restrict or close fluid mineral leasing on 2 ACECs and would withdrawal 3 ACECs from locatable mineral entry.

Alternative D would manage Black Mountain/Pistone Archaeological Site as Alternative B would.

Alternative D would manage the Grimes Point Archaeological District as Alternative B would.

The Incandescent Rocks scenic ACEC would be recommended for withdrawal from locatable mineral entry. This would be more restrictive than Alternative B, which would not have any mineral restrictions in this ACEC but less than Alternative E, which would be closed to fluid mineral leasing, and Alternative C, which would be closed to all mineral entry.

Alternative D would manage the Pah Rah High Basin Petroglyph as Alternative B would.

Alternative D would manage the Pine Nut Mountains Williams Combleaf Botanical ACEC the same as Alternative C would.

Effects under Alternative E

Alternative E would continue to manage 4 ACECs and would propose the designation of an additional 4 ACECs, a total of 82,770 acres. Alternative E would manage the 8 ACECs with restriction or closure to fluid mineral leasing and with locatable mineral withdrawal, and 2 of these ACECs as closed to nonenergy leasables and mineral material disposal as well. The BLM would place more restrictions on mineral development under Alternative E than under Alternative A.

The Churchill Narrows Buckwheat Botanical ACEC would be recommended for withdrawal from locatable mineral entry, and would be closed to fluid mineral leasing.

Alternative E would recommend the Fox Peak Cultural site for withdrawal from locatable mineral entry, and would close the ACEC from fluid mineral leasing

Alternatives E would manage the Grimes Point Archaeological District with as closed to fluid mineral leasing, and as recommended for withdrawal from locatable mineral entry.

The BLM would manage the Incandescent Rocks Scenic ACEC as closed to fluid mineral entry, and recommended for withdrawal from locatable mineral entry.

Alternative E would continue the withdrawal from locatable mineral entry at the Pah Rah High Basin Petroglyph ACEC, and close it to fluid mineral entry. Alternative E would result in the most restrictions on mineral development within this ACEC.

Similar to Alternative C, the BLM would manage Ruhenstroth Paleontological ACEC, Stewart Valley Paleontological ACEC, and Virginia Range Williams Combleaf Botanical ACEC as closed to fluid mineral leasing under Alternative E. The BLM would recommend a portion of the Stewart Valley Paleontological ACEC for withdrawal from locatable mineral entry, and the withdrawal would be maintained in the Virginia Range Williams Combleaf Botanical ACEC. Unlike Alternative C, the BLM would also recommend the Ruhenstroth ACEC for withdrawal from locatable mineral entry.

Minerals: Effects from National Trails

Effects Common to All Alternatives

National Historic Trails (NHTs) are cultural resources. Management of NHTs includes consideration of cultural, recreation, visual and natural landscape elements, values, qualities and settings, which results in restriction of development around NHTs. Under all alternatives the historical trails and associated historic sites and setting would be preserved and protected for public use and enjoyment.

Under all alternatives, the Grimes Point National Recreation Trail would not restrict mineral development or impose ROW avoidance or exclusion areas.

Effects under Alternative A

Alternative A would manage NHTs to ensure the protection of trail resources and preserve their interpretation and other public use. However, No specific management has been identified for the congressionally designated Pony Express and California NHTs.

Under Alternative A, the Grimes Point National Recreation trail was not designated with specific management identified.

Effects under Alternative B

Alternatives B through E would manage NHTs to preserve the historic and scenic values and the cultural landscapes and viewsheds associated with them.

Alternative B would manage NHTs as VRM Class II (0.25-mile buffer on either side of the centerline) and as a ROW avoidance area (0.25-mile buffer around the center line), and would mitigate for direct and indirect adverse effects on eligible, unevaluated, or high-potential segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. Additionally, new audible and atmospheric effects will not exceed current levels where feasible.

Alternative B would open the NHT corridors to mineral material sales and disposals as long as the actions are compatible with VRM classification and the historic values.

Effects under Alternative C

Alternative C would manage NHTs as VRM Class II (2.5-mile buffer on either side of the centerline) and as a ROW avoidance area (2.5-mile buffer around the center line), and would mitigate for direct and indirect adverse effects on eligible, unevaluated, or high-potential segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. Additionally, new audible and atmospheric effects will not exceed current levels along NHTs, and the BLM would seek opportunities to reduce noise levels.

Alternative C would also close the NHT corridor to nonenergy mineral leasing, mineral materials, and fluid mineral leasing within a 2.5-mile buffer.

Alternative C would also manage the designated Pony Express NHT as an ACEC (See Sand Springs Desert Study ACEC).

Effects under Alternative D

Alternative D would manage NHTs as Alternative B would.

Pony Express National Historic Trail

Alternative D would not designate the Pony Express NHT as and would not manage it as a cultural resource or an ACEC.

Effects under Alternative E

Alternative E would manage NHTs as VRM Class II (1-mile buffer on either side of the centerline) and as a ROW avoidance area (1-mile buffer around the center line), and would mitigate for direct and indirect adverse effects on eligible, unevaluated, or high-potential segments and associated sites through avoidance, project redesign, data collection, interpretation, public education, or other means. Additionally, new audible and atmospheric effects will not exceed current levels where feasible.

Alternative E would close high potential historic sites and high potential route segments along the NHT corridor to nonenergy and fluid mineral leasing and mineral material disposal within a 1-mile buffer on either side of the center line. The remainder of the NHT corridor would remain open to leasing and development as long as the actions were compatible with the historic values.

Alternative B would also manage the designated Pony Express NHT as an SRMA (See SRMAs and Cultural Resources).

Minerals: Effects from Wilderness Study Areas

Effects Common to All Alternatives

Managing acres as WSAs to maintain wilderness characteristics would restrict surface-disturbing activities. In accordance with BLM Manual #6330, Management of Wilderness Study Areas, the BLM would manage WSAs as VRM Class I, and as closed to fluid mineral leasing, nonenergy solid mineral leasing, and mineral material disposal. Additionally, WSAs are closed to fluid mineral leasing in accordance with the Federal Onshore Oil and Gas Leasing Reform Act of 1987. The existing designated WSAs and designated wilderness areas would continue to be open for rights to locatable minerals but would be managed with additional limitations or stipulations applied to operations authorizations, in accordance with BLM Manual #6330 Management of Wilderness Study Areas (BLM 2012e). The BLM would continue to manage 9 WSAs, totaling 94,200 acres, until Congress either designates these areas or releases them for other purposes.

Effects under Alternative A

Management of WSAs would be the same as those described under E*ffects Common to All Alternatives*. In addition, Alternative A would manage WSAs by limiting motorized travel to existing ways and trails. Alternative A does not provide management actions should a WSA be released by Congress.

Effects under Alternative B

Management of WSA would be the same as described for Alternative A.

If WSAs are released by Congress, the BLM would manage the land areas as VRM Class II, except for the Clan Alpine WSA, which would be managed as VRM Class III. A Class II designation would retain the existing character of the landscape, keeping the level of change to the characteristic low. Management activities may be seen, but should not attract the attention of the casual observer, and any landscape changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. While this VRM classification would influence how exploration and development would occur on the lands once a part of the WSAs, mineral development would not be prohibited.

Effects under Alternative C

Management of WSAs would be the same as those described under *Effects Common to All Alternatives*. In addition, Alternative C would manage WSAs by closing them to motorized and mechanized travel. This would restrict opportunities to explore or develop minerals within WSAs.

If WSAs are released by Congress, the BLM would manage most of the land areas as VRM Class II and all of the areas as closed to nonenergy mineral leasing, mineral material disposal, and fluid mineral leasing. The BLM would also recommend the lands for withdrawal from locatable mineral entry and manage as ROW exclusion. Alternative C would not open any land areas now managed as WSAs to mineral development should the WSA be released by Congress.

Effects under Alternative D

Management of WSA would be the same as described for Alternative A.

If WSAs are released by Congress, the BLM would manage most of the land areas as VRM Class II. The BLM would manage the Carson Iceberg area as closed to fluid mineral leasing and as a ROW avoidance area. These management actions are similar to Alternative B in that the VRM classification would retain some restriction on mineral development should WSA designation be released by Congress.

Effects under Alternative E

Management of WSA would be the same as described for Alternative A.

If WSAs are released by Congress, the BLM would manage most of the land areas as VRM Class II, and all of the areas as closed to fluid mineral leasing and as ROW avoidance areas.

The BLM would manage Carson Iceberg as VRM Class I. The BLM would manage the portion of Job Peak that overlaps with the Fox Peak Cultural ACEC (43,300 acres) as part of that ACEC.

Due to these land use restrictions and the conversion of the Carson Iceberg to an ACEC if it were released from WSA designation by Congress, Alternative D would be more restrictive of mineral development than Alternative A.

Minerals: Effects from Back Country Wildlife Conservation Areas

Effects under Alternative A
BCWCAs would not be delineated under Alternative A, so effects on mineral would not occur.

Effects under Alternative B
BCWCAs would not be delineated under Alternative B, so effects on mineral resources would not occur.

Effects under Alternative C
BCWCAs would be delineated to safeguard fish and wildlife habitat, existing dispersed non-motorized recreation opportunities, and access to back country areas. Alternative C would manage 817,800 acres as BCWCAs and would manage the areas as ROW exclusion areas except within existing ROWs, as closed to mineral material disposal and nonenergy mineral leasing, and with an NSO stipulation for fluid mineral leasing. These land use restrictions would reduce the potential for mineral exploration and development in comparison to areas without these land restrictions in place. Therefore, management of Back Country Wildlife Conservations areas under Alternative C would be more restrictive of mineral development than the other Alternatives.

Effects under Alternative D
BCWCAs would not be delineated under Alternative D, so effects on mineral resources would not occur.

Effects under Alternative E
BCWCAs would not be delineated under Alternative E, so effects on mineral resources would not occur.

Minerals: Cumulative Effects
Table 4-1 lists the past, present, and reasonably foreseeable cumulative actions for the CCD.

Invasive weeds are expected to continue to spread across the landscape. The BLM currently manages weed infestations through integrated weed management, including biological, chemical, mechanical, and educational methods. The proposed actions would require discretionary mineral developments to use certified weed free construction materials, and would require mineral material disposal developments to become certified weed free.

Management strategies and permit requirements, including implementation of mitigation measures and permit stipulations applicable to mining development to

protect or reduce impacts on sensitive resources would increase costs. Use restrictions in designated priority wildlife habitat and priority watershed areas would protect areas by limiting uses. The impacts on mineral development would vary based on the number of acres designated with use restrictions Designation of priority wildlife habitat and watersheds, sensitive species management and ACECs would restrict certain uses needed to support mining operations affecting the costs and feasibility of projects. These impacts would be limited based on location, habitat conditions, and management discretion in those areas.

Trends indicate that the number of wildfires will continue to gradually increase based on climate, conversion of habitat to areas dominated by nonnative, invasive species, and increased potential for human caused fires due to population growth and increases in recreation uses. Wildfire impacts have included burned infrastructures and affected operations. Potential impacts have been addressed through construction of strategically placed fuelbreaks and suppression priorities. The implementation of ESR on areas burned by wildfire would continue based on the number of acres burned. ESR treatments would continue to be prioritized to provide for human life and safety, soil/water stabilization, restoration of important habitat for special status species, and to deter establishment of invasive plants. Large landscape scale fuelbreaks may afford additional protection to mining facilities from wildfire.

Mineral exploration and development is expected to continue to occur for locatable minerals, fluid mineral leasing, nonenergy mineral leasing, and mineral material disposables. There are approximately 23 plans of operations for locatable mineral exploration (greater than 5 acres) or mining currently administered, 260 contracts for free-use permits for salable mineral operations, and 148 geothermal leases currently leased (BLM 2013f). The National Renewable Energy Laboratory data shows that portions of the planning area have high potential for solar energy, and Luning Solar was issued a ROW grant for a 575-acre project in July, 2010 but construction has not started. Renewable energy projects would have few known impacts on mining.

Mining reductions in feasibility of operations proposed in those areas would be affected as salable, fluids, and solid leasable minerals may not be permitted or restricted. Permit stipulations and implantation of mitigation measures have affected the design and reclamation of facilities, increasing cost of operation and reclamation. Overall the incremental impacts on minerals would be moderate with lower impacts on locatable minerals and moderate impacts applicable to salable, moderate applicable to oil and gas and moderate to high for geothermal minerals and solid minerals leasing as fewer BLM-administered lands would be available for use.

Demands for land use authorizations in the planning area are anticipated to increase in correlation with future residential and commercial development in

response to increasing population and energy demands. Over the past 10 years the CCD has average issuance of approximately 28 ROW authorizations per year, with an average of 35 applied for annually. Land tenure adjustments may improve long-term mining in areas through mining company acquisition of BLM-administered lands around mine sites.

Areas closed or limited to existing route for travel management could impact discretionary mineral development through undesirable placement of roads, or inability to create new roads for direct routes.

4.4.4 Recreation and Visitor Services

This section discusses potential impacts on recreation from proposed recreation management actions and management actions of other resources and resource uses. Existing conditions are described in **Section 3.2.4**, Recreation and Visitor Services.

Summary

Continuing current management under Alternative A would likely deprive the recreationist of desired opportunities, experiences, and outcomes, and could result in user and resource conflicts. Adverse impacts would be expected where management for popular areas such as Wilson Canyon, Hungry Valley, and Dead Camel Mountain fail to provide adequate management direction for emerging recreation trends and increased visitation. These impacts would likely become significant in localized areas over the life of the plan.

Alternative B would provide management that facilitates desired recreational experiences and activities across the decision area, especially in popular areas that currently lack structured management. However, management of some Recreation Management Areas (RMAs; e.g., management as VRM Class IV) would allow for development that could conflict with RMA objectives and outcomes. The eastern part of the decision area would be at greatest risk because its back country setting could easily be changed to middle-country in the presence of new development.

Alternative C would provide the greatest restrictions on surface-disturbing activities and thus the greatest protection for recreational activities and experiences, especially those that depend on a quiet and/or back country landscape. However, this alternative would also result in fewer new recreational facilities and services over the life of the plan and the BLM would be unable to effectively manage a long-term increase in visitation.

Implementation of Alternative D would result in impacts in the urban interface area similar to those under Alternative B. If visitation in the rest of the decision area increases substantially, the BLM would not have the management tools necessary to facilitate beneficial recreational experiences and activities over the long-term.

Alternative E identifies recreation objectives supported with management actions that limit conflicting uses. A focus on recreational facilities and services in popular areas would improve users' experiences by directing them toward areas well-suited for their preferred activity.

Table 4-19, Impacts on Special Recreation Management Areas, displays the acres of selected resource allocations, in percentages, that overlap SRMAs under each alternative. The impact of limiting surface-disturbing activities depends on the specific SRMA's management objective and desired recreational setting characteristics (e.g., frontcountry or back country) and experiences. For example, a back country recreational setting characteristic could be easily changed to middle- or frontcountry because of ROW development. In general, a higher percentage of overlap in the table below results in less surface disturbance within SRMAs and, therefore, greater protection for recreational setting characteristics and experiences. Impacts on each individual SRMA are discussed in the analysis.

Table 4-19
Impacts on Special Recreation Management Areas

Management Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Closed to Fluid Mineral Leasing	99%	28%	90%	33%	58%
Closed to Mineral Material Disposal	0%	10%	76%	0%	22%
Closed to Nonenergy Leasing	0%	38%	76%	33%	36%
ROW Exclusion	0%	0%	69%	0%	0%
ROW Avoidance	0%	10%	8%	5%	23%

Sources: BLM GIS 2014a, BLM GIS 2014b

Table 4-20, Impacts on Extensive Recreation Management Areas, displays the acres of selected resource allocations, in percentages, that overlap ERMAs under each alternative. The impact of prohibiting or limiting a particular surface-disturbing activity depends on the specific ERMA's management objective. For example, some recreational activities are easily disturbed by ROW development whereas others are more tolerant of ROW development. In general, a higher the percentage of overlap in the table below results in less surface disturbance within ERMAs and therefore greater protection for recreational activities. Impacts on each individual ERMA are discussed in the analysis.

Table 4-20
Impacts on Extensive Recreation Management Areas

Management Action	Alternative A[1]	Alternative B	Alternative C	Alternative D	Alternative E
Closed to Fluid Mineral Leasing	n/a	6%	52%	31%	12%
Closed to Mineral Material Disposal	n/a	6%	71%	4%	34%
Closed to Nonenergy Leasing	n/a	10%	71%	31%	35%
ROW Exclusion	n/a	2%	61%	4%	2%
ROW Avoidance	n/a	27%	10%	55%	40%

Sources: BLM GIS 2014a, BLM GIS 2014b
[1]There are no ERMAs designated under Alternative A.

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts recreation and visitor services:

- Substantial increases in recreation could increase user conflicts and create risks to public health and safety.
- Traditional recreational uses in the planning area will continue as populations grow, and an anticipated increase in motorized recreation, wildlife viewing, hiking, mountain biking, camping, pleasure driving, heritage appreciation, and new technology-based recreation will occur.
- The potential for resource impacts and conflicts between all types of users will increase with increasing use.
- Development and maintenance of improved facilities, especially recreation trails, will result in increased use.
- The incidence of conflicts between motorized and nonmotorized recreationists will increase with unmanaged use, especially in ERMAs where objectives target protection of a wide range of both motorized and nonmotorized activities.
- Demand for SRPs will increase.
- Shooting restrictions will restrict only target/projectile shooting within the urban interface or where public safety concerns exist. Shooting restrictions will not affect the lawful taking of game.
- Managing areas as SRMAs will lead to economic growth and improved quality of life in surrounding communities.

Indicators

The following indicators were used to assess the degree of impacts on recreation and visitor services:

- Changes to the recreation opportunities and recreation setting characteristics in SRMAs
- Impediments to defined recreation activities and the associated qualities and conditions in ERMAs
- Management actions that result in short- or long-term elimination or reduction of recreation opportunities, activities, or experiences throughout the planning area
- Management actions and allowable use restrictions that result in increased conflict between recreation users and between other resource uses and recreation

Nature and Type of Effects

Recreation experiences and the attainment of a variety of outcome-focused objectives are vulnerable to any management action that would alter the settings and opportunities in a particular area. Recreation settings are based on a variety of attributes, such as remoteness, the amount of human modification in the natural environment, evidence of other users, and restrictions and controls (see **Appendix H,** Description of Recreation Management Areas, for a description of recreation settings). Management actions that greatly alter such features could affect the capacity of a particular landscape to support appropriate recreation opportunities and corresponding outcome-focused objectives.

Impacts on recreation are generally the result of conflicts between recreational uses (e.g., motorized versus nonmotorized use), management actions related to other resources and resource uses (e.g., habitat protection/restoration and livestock grazing), and stipulations placed on resource uses. The analysis of impacts on recreation focuses on these three types of impacts and is structured under three subheadings: the decision area, SRMAs, and ERMAs, as follows:

- Management actions for each SRMA are analyzed to determine if they 1) sustain or enhance recreation objectives, 2) protect the desired recreation setting characteristics, and 3) constrain uses, including incompatible recreation activities that are detrimental to meeting recreation or other critical resource objectives (e.g., cultural or threatened and endangered species).
- Management actions for individual ERMAs are analyzed to determine whether they facilitate the visitor's ability to participate in outdoor recreation and protect the associated qualities and conditions.

- The decision area discussion provides a broader analysis of impacts on recreation arising from implementing management for other resource programs that could occur over the entire decision area, including those areas managed as SRMAs or ERMAs.

Proposed recreation management under each alternative would also impact regional recreation conditions. For example, opportunities provided, or not provided, in the decision area would affect recreation use on surrounding federal, state, and local lands.

Management of soil and water quality, vegetation, fish and wildlife, and special status species includes the application of NSO, CSU, and TL stipulations (refer to **Table 2-1** for acreages). These stipulations would improve recreation by limiting or prohibiting development that could conflict with recreational activities, experiences, and outcomes. The magnitude of impacts on recreation would be directly related to the acreage affected by NSO, CSU, and seasonal restrictions and closures under each alternative.

Temporary or permanent restrictions associated with cultural resource areas, especially when they are collocated in recreation emphasis areas, could result in closing these areas to certain recreation activities. However, if impacts could be properly mitigated by, for example, interpretive signing and stabilization to protect these sites, then visitors would be able to enjoy them over the long term.

In VRM Class I and II areas, recreation objectives would be protected by maintaining the scenic quality of those lands. VRM Class I and II designations could restrict development of recreation facilities, such as campgrounds and trails, which could alter the opportunity to enhance recreation in these areas. However, VRM Class I and II designations would protect the naturalness of the physical setting, thereby enhancing opportunities to participate in recreation in less-developed settings. VRM Classes III and IV would not likely affect the type or amount of recreation use because management would generally be consistent with the construction of facilities to support recreation; however, VRM Classes III and IV would allow more change and contrast to the natural landscape, at the expense of visitors who prefer recreating in less-developed settings.

Impacts on recreation from areas open to all classes of livestock grazing could include conflicts with unsocialized sheep guard dogs, as well as livestock trampling vegetation and manure impacts at popular recreation sites (e.g., campsites and trails). The intensity of the impact would vary with the visitor's expectation for recreating in areas where livestock grazing is present. In addition, developing livestock grazing facilities can impact the naturalness of the physical setting over the long term because features such as stock ponds and catchments contrast with the natural landscape. However, properly placed range improvements that protect and promote land health enhance the naturalness of an area by managing utilization in support of the natural

surroundings. Range improvements could help to reduce conflicts with recreationists by prohibiting animals from wandering onto roads, trails, or developed recreation sites.

On lands open to fluid mineral leasing and geophysical exploration, if developed, any additional oil and gas facilities, equipment, noise, dust, vehicles, night lighting, pipelines, and human activity would alter the recreation setting in certain areas during construction and operation. This would interfere with recreationists' goals and would influence their opportunities and activities. However, applying NSO stipulations would retain the natural character of the landscape, while maintaining recreation opportunities in those areas in the long term. Applying CSU stipulations could reduce recreation opportunities by permitting development that conflicts with desired recreation.

Minerals development and disposal would result in short- and long-term impacts during construction and operations by displacing recreation opportunities and degrading scenic qualities in the areas.

Areas managed as unsuitable for public utilities (i.e., ROW exclusion areas) would protect recreation opportunities and the natural setting. The naturalness and remoteness could change over the short term and long term by the continued presence of communication sites (regardless of whether additional facilities were allowed at each site). These qualities also could be changed by areas identified as open to development of major utility corridors, or they could be impacted by developed recreation sites and trails during construction and operation. This all would depend on the location of the corridor or development. In turn, the social and operation setting characteristics could change in these areas. Managing areas as ROW avoidance would limit development that could be incompatible with recreation in these areas.

Development of renewable energy projects could result in the loss of recreation opportunities.

Managing ACECs would restrict surface-disturbing activities in those areas and would help maintain the existing physical setting by preserving natural landscapes.

In the WSR eligibility analysis, recreation identified as an Outstandingly Remarkable Values (ORV) for the Carson River Segments 1, 2, and 3. As such, recreational boating and fishing, including ensuring sufficient flows, would be protected or enhanced as a result of protecting the recreational ORV.

Implementing management for the following resources and resource uses would have negligible or no influence on recreation and are therefore not discussed in detail: climate management, land with wilderness characteristics, socioeconomic conditions, and environmental justice.

Recreation and Visitor Services: Effects from Air Quality Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Continuing to limit OHV use in areas of severe erosion hazard susceptibility and in watersheds where OHV use is causing flood and sediment problems would limit recreational opportunities in those parts of the decision area. However, these areas provide lower-quality experiences than those on well-designed routes or more durable surfaces, so the impact on OHV recreation would continue to be minimal.

Effects under Alternative B
Implementing BMPs and mitigation measures may limit recreational opportunities in certain parts of the decision area. However, the flexibility to apply these measures on a case-by-case basis would likely reduce adverse impacts on recreation.

Effects under Alternative C
Impacts would be the same as described under Alternative B.

Effects under Alternative D
Impacts would be the same as described under Alternative B.

Effects under Alternative E
Impacts would be the same as described under Alternative B.

Recreation and Visitor Services: Effects from Soil Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Continuing to limit OHV use in areas of areas of severe erosion hazard susceptibility and in watersheds where OHV use is causing flood and sediment problems would limit recreational opportunities in those parts of the decision area. However, these areas provide lower-quality experiences than those on well-designed routes or more durable surfaces, so the impact on OHV recreation would continue to be minimal.

Effects under Alternative B
Restrictions on surface-disturbing activities on steep terrain could limit the placement of certain recreation facilities, although facilities are not often sited for areas with steep slopes. BMPs and soil restoration activities could include restrictions on travel, thereby reducing recreational access over the short- and long-term in site-specific areas.

Effects under Alternative C
Effects would be the same as described under Alternative B.

Effects under Alternative D
Effects would be the same as described under Alternative B.

Effects under Alternative E
Effects would be the same as described under Alternative B.

Recreation and Visitor Services: Effects from Water Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be a loss of OHV opportunities in certain parts of the decision area due to site-specific limitations in areas with sensitive water resources.

Effects under Alternative B
Land acquisition that improves access to streams or high-quality wildlife habitat could improve opportunities for hunting and fishing.

Effects under Alternative C
Land acquisition that improves access to streams or high-quality wildlife habitat could improve opportunities for hunting and fishing. Protective measures in priority watersheds may limit recreational access or motorized travel, but would improve opportunities for undeveloped and quiet recreation by precluding many types of surface-disturbing activities.

Effects under Alternative D
Effects would be the same as under Alternative C.

Effects under Alternative E
Effects would be the same as under Alternative C.

Recreation and Visitor Services: Effects from Vegetation Resources

Effects Common to All Alternatives
Efforts to improve vegetative communities, especially riparian areas, would improve recreational opportunities such as hunting and fishing by providing better-quality habitat for fish and game.

Vegetation treatments would alter recreational opportunities over the short- and long-term by changing the physical setting and viewshed. Over the long-term vegetation treatments would be expected to improve recreation by improving the landscape.

Effects under Alternative A
The BLM would continue to manage rangelands to improve recreational opportunities, benefiting recreation in those parts of the decision area.

Effects under Alternative B
There would be no action to manage rangelands to improve recreational opportunities and no resultant benefits to recreation. Other management actions would result in impacts similar to those described under *Effects Common to All Alternatives*.

Effects under Alternative C
Effects would be the same as described under Alternative B.

Effects under Alternative D
Effects would be the same as described under Alternative B.

Effects under Alternative E
Effects would be the same as described under Alternative B.

Recreation and Visitor Services: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
Habitat improvement projects and restrictions on surface-disturbing activities, including TL stipulations, would improve and protect wildlife habitat and improve hunting and wildlife viewing opportunities in those areas.

Effects under Alternative A
Efforts to sustain big game populations and coordinate with partners such as NDOW would continue to benefit hunting opportunities by providing adequate habitat conditions.

Effects under Alternative B
The BLM would implement several measures to protect wildlife habitat seasonally and year-round. These actions would improve hunting and wildlife viewing opportunities throughout the decision area. Closing access to caves in order to prevent transmittable diseases to bats would restrict recreational opportunities to cavers.

Effects under Alternative C
The BLM would apply the most restrictions on surface-disturbing activities under Alternative C, providing the greatest benefit to hunting and wildlife viewing.

Effects under Alternative D
Effects would be similar to those under Alternative C, but would only apply to the urban interface zone, meaning there would be reduced opportunities to

improve hunting and wildlife viewing opportunities elsewhere in the decision area.

Effects under Alternative E
Effects would be similar to those under Alternative B except that restrictions would be more stringent and thus benefits to hunting and wildlife viewing would be greater.

Recreation and Visitor Services: Effects from Special Status Species Management

Effects Common to All Alternatives
Avoiding disturbance in areas near raptors and other special status species birds during breeding seasons would seasonally reduce recreation opportunities in areas managed as closed to public access. Protection of these species would, however, benefit wildlife viewing during other times of the year.

Effects from ACEC designations related to special status species values are described in that section.

Effects under Alternative A
Fencing and temporary OHV restrictions would continue to limit recreational opportunities in certain areas. Efforts to improve special status species habitat would provide indirect benefits to hunters if the habitat were also used by game species.

Effects under Alternative B
Avoiding surface and noise disturbance to raptors and other special status species birds during breeding seasons would seasonally reduce recreation opportunities in areas managed as closed to public access. Protection of these species would, however, benefit wildlife viewing during other times of the year.

Habitat improvement projects for Greater Sage-Grouse and associated restrictions on surface-disturbing activities may limit the placement of recreational facilities but would generally improve wildlife viewing opportunities.

Closing Carson wandering skipper habitat near Winnemucca Ranch Road to motorized travel would force motorized users to go elsewhere in the decision area, but would improve wildlife viewing opportunities by eliminating disturbances and noise.

Effects under Alternative C
Prohibiting disturbance in areas near raptors and other special status species birds during breeding seasons would seasonally reduce recreation opportunities in areas managed as closed to public access. Protection of these species would, however, benefit wildlife viewing during other times of the year.

Effects from Greater Sage-Grouse and Carson wandering skipper management would be similar to those under Alternative B.

Effects under Alternative D
Effects from raptor, Greater Sage-Grouse, and Carson wandering skipper management would be similar to those under Alternative B.

Effects under Alternative E
Effects from raptor, Greater Sage-Grouse, and Carson wandering skipper management would be similar to those under Alternative B.

Recreation and Visitor Services: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Efforts to improve habitat conditions and forage would improve viewing opportunities by providing better and additional habitat for wild horses. However, herd maintenance or reduction actions could limit viewing opportunities over the long-term. Because these actions are presented in each alternative, it is anticipated that impacts on recreation would be similar under all alternatives.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Recreation and Visitor Services: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Temporary restrictions on recreation areas and routes would continue to occur as the result of natural and human-caused ignitions, fire suppression activities, and restoration actions. Recreation experiences could be enhanced over the

long-term, as settings are restored to a more desirable condition complementary to recreational activities.

Effects under Alternative B
Utilizing a full range of fire management activities (as outlined in the fire management plan) and options would result in greater flexibility to protect recreational facilities and opportunities.

Effects under Alternative C
Applying minimum impact suppression tactics would result in the potential for larger fires and greater disturbance to recreational opportunities.

Effects under Alternative D
Effects would be the same as under Alternative B.

Effects under Alternative E
Effects would be the same as under Alternative B.

Recreation and Visitor Services: Effects from Cultural Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Continuing to promote visitation and interpretation in certain areas could reduce vandalism and result in a long-term improvement of cultural resource viewing opportunities.

Effects under Alternative B
Protection of historic roads and trails would benefit recreation by reducing surface-disturbing activities that could degrade users' experiences.

Effects under Alternative C
Effects from historic road and trail management would be the same as under Alternative B, but would occur over a larger area and provide greater benefits.

Effects under Alternative D
Effects from historic road and trail management would be the same as under Alternative B.

Effects under Alternative E
Effects from historic road and trail management would be the same as under Alternative B, but would occur over a larger area and provide greater benefits.

Recreation and Visitor Services: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Under all alternatives, recreationists would continue to benefit from opportunities to engage in casual collection activities. Impacts from management actions associated with paleontological surveys would not vary by alternative. Requiring these surveys in highly sensitive areas could limit actions such as facility construction, resulting in the diminished potential for new recreation amenities in certain areas.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Recreation and Visitor Services: Effects from Visual Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The BLM would continue to manage 602,400 acres as VRM Class I and II areas where outcomes-focused objectives would be protected by maintaining the scenic quality of those lands. Managing 320,600 acres as VRM Class III would not likely affect the type or amount of recreation use in these areas because the construction of facilities to support recreation would be permitted. The 385,700 acres managed as VRM Class IV would allow the potential for development that could degrade outcomes-focused objectives due to diminished scenic quality.

Effects under Alternative B
Effects would be similar to those under Alternative A, except that the BLM would manage many SRMAs and ERMAs as VRM Class III or IV. This would allow for greater flexibility in the type and placement of facilities to support activities and experiences in these areas, but may allow for development that conflicts with back country recreation.

Effects under Alternative C

Effects would be similar to those under Alternative B, except that the BLM would manage many SRMAs and ERMAs as VRM Class II or III. This would allow for less flexibility in the type and placement of facilities to support activities and experiences in these areas, but would support back country recreation activities that benefit from a more natural-appearing landscape.

Effects under Alternative D

Effects within SRMAs and ERMAs would be similar to those under Alternative B. In the remainder of the decision area, the BLM would manage more acres as VRM Class IV, allowing the greatest flexibility in location and type of facilities. These facilities may conflict with or support recreation depending on the types of activities and their reliance on a developed or natural-appearing landscape. Generally, Alternative D would support activities outside of SRMAs and ERMAs that are compatible with a more developed landscape.

Effects under Alternative E

Effects would be similar to those under Alternative B, except that the BLM would manage many SRMAs and ERMAs as VRM Class II, III, or IV. This wider range of VRM classifications would be more closely tailored to the desired activities and experiences in each area, generally benefitting recreation.

Recreation and Visitor Services: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives

Under all alternatives, caves would continue to provide recreational value. Closure orders to protect cultural or biological (e.g., bats) resources would result in long-term loss of this type of recreational opportunity. Given that caves outside the decision area may be subject to similar restrictions, there could be a long-term loss of caving opportunities in the planning area. These restrictions would be applied on a case-by-case basis and effects would not vary across alternatives.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Recreation and Visitor Services: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Continuing to the VRM Class II area (Indian Creek Recreation Lands) that is highly visible from recreation developments as unsuitable for commercial timber harvest would protect recreation experiences by improving the opportunity for both consumptive and non-consumptive recreational enjoyment of wildlife.

Effects under Alternative B
Allowing vegetative product extraction and utilization for biomass could lead to short-term adverse impacts on recreation because there would be more disturbances to activities and experiences. Over the long-term, it may lead to improved recreational opportunities because fewer healthy forested landscapes would be available.

Effects under Alternative C
Limiting vegetative product extraction and utilization for biomass could lead to short-term benefits for recreation because there would be fewer disturbances to activities and experiences. Over the long-term, it may lead to diminished recreational opportunities because fewer healthy forested landscapes would be available.

Effects under Alternative D
Effects from biomass extraction and utilization would be similar to those under Alternative B.

Effects under Alternative E
Effects from biomass extraction and utilization would be similar to those under Alternative B.

Recreation and Visitor Services: Effects from Livestock Grazing Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Range improvements could help to reduce conflicts with recreationists by preventing animals from wandering onto roads, trails, or developed recreation sites like campgrounds. While grazing does not often conflict with desired

natural settings for recreation, trampling can degrade trail facilities when soils are wet and animals may pose a safety risk with certain activities.

Effects under Alternative B
Because the acres available and unavailable for livestock grazing would be similar to those under current management, impacts would be similar to those under Alternative A.

Effects under Alternative C
Closing additional allotments would have little impact on recreation because grazing does not often conflict with desired natural settings for recreation. However, removing livestock from areas with recreational trails and popular recreation areas may reduce the need for range improvements to help reduce conflicts between livestock and recreationalists and would improve the trail surface for users.

Effects under Alternative D
The acres managed as available and unavailable to livestock grazing and associated impacts would be similar to those under Alternative A.

Effects under Alternative E
Because the acres available and unavailable for livestock grazing would be similar to those under current management, impacts would be similar to those under Alternative A.

Recreation and Visitor Services: Effects from Geology and Mineral Management

Effects Common to All Alternatives
Maintaining existing withdrawals would benefit recreation by precluding these areas from mineral entry and associated disturbance to recreational activities.

Applying BMPs and standard operating procedures would reduce short- and long-term impacts on recreation under all alternatives.

Effects under Alternative A
If the Sand Mountain Recreation Area is withdrawn from mineral entry, it would provide a long-term benefit to recreation by limiting this type of potential conflict with recreational activities.

Continuing to manage 839,100 acres as closed to fluid mineral leasing would prohibit development and infrastructure that could conflict with desired recreation activities and experiences.

Effects under Alternative B
Effects would be similar to those under Alternative A, except that NSO and CSU stipulations would be applied to 404,600 and 2,120,200 acres respectively,

prohibiting or limiting development that may conflict with certain recreational activities and experiences.

Effects under Alternative C

Under Alternative C, the BLM would close 2,081,700 acres to fluid mineral leasing and apply 1,039,200 acres with NSO stipulations and 1,242,800 acres with CSU restrictions. These closures and use restrictions would limit mineral development would benefit many types of recreation uses and reduce potential conflicts.

Effects under Alternative D

Fluid minerals management would close 737,000 acres to fluid minerals and would apply NSO stipulations to 864,800 acres and CSU stipulations to 2,071,400 acres. Potential impacts on recreation would be greater than Alternative C but would have fewer impacts compared to Alternatives A and B as more acres would be have NSO and CSU restrictions.

Effects under Alternative E

Effects would be similar to those under Alternative B, however more acres would be closed to fluid minerals and salable minerals.

Recreation and Visitor Services: Effects from Recreation and Visitor Services

This section analyzes management actions in RMAs that affect the BLM's ability to facilitate targeted recreation opportunities, maintain desired recreation setting characteristics, and address visitor health and safety and user conflict. Therefore, the analysis necessarily discusses the impact of other resource programs' actions within RMAs, such as closure to fluid mineral leasing, VRM classification, etc., that are proposed as part of each RMA's management.

Effects Common to All Alternatives

In areas not managed as RMAs, because recreation opportunities, activities, and experiences would not purposefully be protected, recreation experiences and outcomes could be diminished by mineral materials sales, development of nonenergy leasable minerals, or other uses potentially incongruous with stated recreation objectives. Consumptive uses could also pose visitor health and safety and resource protection risks and could increase conflict among the different types of recreational users and between other resource uses and recreation.

Although no RMAs are specifically managed as closed to fluid mineral leasing or as ROW avoidance or exclusion areas, these restrictions often overlap RMAs when they are proposed to protect other resources, such as species habitat, that may be co-located with an RMA. Where these restrictions apply, they would generally benefit recreation by limiting the type of development that could interfere with recreational experiences and activities due to increased physical and visual disturbances. Because these restrictions are targeted at

protecting other resources such as water resources or fish and wildlife, they are considered an indirect effect on recreation.

All alternatives would allow recreational shooting on BLM-administered lands except where prohibited by statute or county ordinance. This would maintain existing shooting opportunities over the life of the plan.

Managing SRMAs and ERMAs would improve diverse recreational experiences in accordance with management objectives. Based on SRMA and ERMA management, potential increases in recreational use would occur.

Effects under Alternative A

Decision Area

Without objectives or actions to support recreational target shooting (i.e., development of new facilities), shooting opportunities would neither degrade or improve in the decision area. Likewise, a lack of structured management for SRPs would limit improvement of this program.

Under Alternative A, management of recreation would follow current BLM guidance and policy. Special Recreation Permits would continue to be issued on a case-by-case basis subject to site-specific NEPA evaluation. This approach would likely limit desired opportunities, experiences, and outcomes, and could result in user and resource conflicts over the long term. Adverse impacts would be expected where management for popular areas such as Wilson Canyon, Hungry Valley, and Dead Camel Mountain fails to provide adequate management direction for emerging recreation trends and increased visitation.

Indian Creek/East Fork Carson River and Walker Lake. By retaining current recreation management actions for the Indian Creek/East Fork Carson River and Walker Lake SRMAs, BLM would manage recreational experiences and visitation on a case-by-case basis. Management under alternative A may not address new and emerging issues or trends in recreational use in the long term.

No special recreation management would be provided for the rest of the decision area. This approach would likely deprive the recreationist of desired opportunities, experiences, and outcomes, and could result in user and resource conflicts. Adverse impacts would be expected where management for popular areas such as Wilson Canyon, Hungry Valley, and Dead Camel Mountain fail to provide adequate management direction for emerging recreation trends and increased visitation. These impacts would likely become significant in localized areas over the life of the plan.

Effects under Alternative B

Decision Area

SRPs would be managed to maintain a minimum setback of 0.25-mile, as appropriate, between populated areas (nearest occupied residence) unless an exception is issued by the authorized officer. The potential for conflicts between recreation permits and residents would be reduced. Commercial SRPs for shooting would not be authorized in WSAs, and within certain SRMAs and ERMAs. The rest of the decision area would be available for these SRPs and, as a result, impacts on commercial shooting activities would be minimal.

Management of the Lemmon Valley Motocross Area would continue to provide unique recreational opportunities for general, commercial, competitive motocross, and BMX uses. However, the BLM would protect resources from damage and provide for public safety by prohibiting the construction of or eliminating tracks within the motocross area that conflict; with management goals or resource objectives, do not meet industry standards, or compromise public health and safety. Users of the facility would benefit from partnerships to manage use and maintenance of the facility. If an easement is acquired through private land to secure public access to the facility, there would be long-term assurance that use could continue.

Maintaining a 0.25-mile setback to occupied residences for motorized recreation events and activities would also protect residents from noise and dust associated with SRP events.

SRMAs

Alpine. The BLM would strive to protect recreational setting characteristics that support nonmotorized recreational experiences by managing the SRMA and its three recreation management zones (RMZs) as VRM Class II and III, Impacts to the landscape setting would be allowed in accordance with VRM objectives and would protect nonmotorized setting characteristics within the SRMA. These actions would complement back- and middle-country recreational setting characteristics that are complementary to nonmotorized recreation. Allowing OHV staging at the Hangman's Bridge parking area may promote motorized use in an SRMA that is directed at supporting nonmotorized experiences. Maintaining the existing withdrawal for mineral entry in the Indian Creek Campground area would also protect areas within the Alpine SRMA from mineral development.

Dead Camel Mountain. Alternative B would manage the Dead Camel Mountain SRMA stressing multiple uses and would provide for a wide range of motorized and nonmotorized recreational opportunities. Managing the areas as open to motorized travel as VRM Class IV would allow for recreational activities and facilities that support motorized events. Providing facilities such as staging and camping areas and kiosks would be consistent with desired front-country

recreational setting characteristics. Planned motorized and nonmotorized SRP competitive events would be allowed on a first-come basis, which may limit issuance of SRPs if there are timing and location conflicts between events.

Hungry Valley. The BLM would manage the Hungry Valley SRMA as a multi-use recreational area promoting OHV based tourism, with supporting management actions designed to foster development of facilities and improve motorized access. Allowing motocross opportunities, providing for the development, maintenance and management of motocross facilities and designating the SRMA as open to cross-country travel, could lead to an increased potential for user conflict in heavily-traveled portions of the SRMA.

Sand Mountain. Eliminating the fee use designation would promote visitation and increase use overtime. The BLM would manage this SRMA for motorized and nonmotorized recreational activities while protecting sensitive resources, within three RMZs. The Dune RMZs would be open to motorized travel. The Desert Habitat RMZ would be closed to motorized travel and the Mining RMZ would limit motorized travel to existing roads and trails. The Desert Habitat RMZ would provide nonmotorized users a quiet landscape recreation experience. The other RMZs would provide motorized recreation. Managing the SRMA for VRM Class IV objectives and maintaining current facilities would maintain existing uses. If use were to grow substantially over the life of the plan, there would be an unmet need for new facilities. In the Desert Habitat RMZ, where motorized use would not be allowed, nonmotorized users would benefit from a quiet landscape. However, increased use in this RMZ may also result in an unmet need for new facilities.

Walker Lake. The proposed management actions would support the BLM's objective of managing this SRMA for developed and dispersed camping. Restricting camping to designated sites in the Sportsman's Beach RMZ and limiting motorized travel to existing roads and trails would benefit recreational experiences by preventing resource degradation that can accompany dispersed camping in sensitive areas.

Wilson Canyon. The proposed management actions would generally support BLM's objective of managing this SRMA for OHV touring and trail riding, developed site camping, and fishing and river access. However, OHV use would be limited to the West Walker River RMZ and motorized access to the river would be prohibited. This would result in reduced access to the river for those users, but river access for other users would be unaffected. The Wilson Canyon SRMA would prohibit issuance of SRPs for commercial target shooting in both RMZs restricting shooting opportunities.

ERMAs

Middlegate and Mina. Management actions for these ERMAs emphasize long distance trail riding for all- and utility terrain vehicles. Middlegate management

would include camping. Both would provide motorized recreational access and support OHV-based tourism. Proposed management would generally support the desired activities because there would be limited potential for development that could interfere with long-distance trail riding.

Mustang and 102 Ranch. The BLM would manage these ERMAs to support a variety of casual, nonmotorized activities such as bicycling, dog walking, photography, nature observation, hiking, river access, and camping areas). Management would include; providing parking areas and road maintenance. The 102 Ranch would be managed as a day use site with camping opportunities at Mustang. Based on implementation of facilities, recreational opportunities and experiences within the ERMA would be improved and the BLM would successfully facilitate the desired activities over the life of the plan.

Pah Rah. Management would emphasize mountain biking and hiking. Prohibiting overnight camping associated with SRP activities or events would potentially limit conflicts between users. Providing visitor services such as trail identification and route signage, information kiosks, and visitor use maps would inform the public about resource values and provide for public safety. Managing the ERMA as VRM Class III would likely complement opportunities for mountain biking, hiking, and environmental education because intensive development would be limited and recreational facilities could likely be constructed. Given current and forecasted use patterns, it is anticipated that user conflict would continue to not require specific management consideration.

Pine Nut. Management would provide recreational opportunities that emphasize motorized and mechanized recreation opportunities and would maintain up to 200 miles of designated, groomed loop trails for motorized use opportunities. Designation of this ERMA would provide management tools necessary to reduce conflicts to nearby residences. Improving visitor services, providing educational facilities, restricting motorized staging areas, and prohibiting mass start motorized events would direct users towards areas well-suited for motorized recreation while protecting residences from noise and dust associated with some motorized activities and events.

Reno Urban Interface. The BLM would provide additional services and facilities to maintain public access in this ERMA. As a result, recreation access would be protected and enhanced over the life of the plan. Providing visitor services such as trail identification and route signage, information kiosks, and visitor use maps would help direct OHV use away from urban interface areas. Developing new and relocating existing staging areas would reduce conflicts between OHV users near residential areas.

Salt Wells. The BLM would manage for casual use and dispersed recreation opportunities that emphasize long-distance trail riding for motorized and nonmotorized uses. Pursuing partnerships and providing additional visitor services in this area along with promoting recreational OHV based tourism

would encourage user input and stimulate local economies. Management as VRM Class IV has the potential to allow development that could reduce long distance trail riding opportunities depending on the location and extent of development.

Effects under Alternative C

Decision Area

Alternative C would prohibit commercial shooting SRPs within WSAs, certain SRMAs and within four ACECs. Areas outside of WSAs, certain SRMAs, and the four ACECs would still be available for commercial shooting SRPs.

Closing and rehabilitating the Lemmon Valley Motocross Area would eliminate a unique recreational opportunity on BLM-administered lands. Users would be forced to go elsewhere, increasing the potential for concentrated motorized travel use.

SRP management would maintain a minimum setback of 0.5-mile, as appropriate, between the nearest occupied residence unless an exception is issued by the BLM Authorized Officer. As a result, potential conflicts between and residents would be lower compared to Alternative B. This would better protect residences while reducing the area along the urban interface available to SRP events.

SRMAs

Alpine. Management would be the same as under Alternative B except that the BLM would manage the East Fork Carson River RMZ as VRM Class I. This would further limit alterations to the visual landscape, improve nonmotorized recreation experiences, and limit the feasibility to construct facilities for boat launching and other activities. Over the long-term it may reduce BLM's ability to support increased visitation and desired recreational experiences in that RMZ.

Sand Mountain. Managing this SRMA to protect sensitive species habitat and Native American values may be in conflict with the goal to provide motorized and nonmotorized recreational experiences if areas or routes in the Dune RMZ are closed to recreational use. Management as VRM Class II would be unlikely to adversely affect recreation unless there is a need for new facilities during the life of the plan. Managing the Dune RMZ, as open to motorized travel would provide access within the SRMA for motorized travel. Managing the Desert Habitat RMZ, as closed to motorized travel would restrict recreational use of the area. Having two RMZs with opposing travel management restriction could create conflicts between users.

Walker Lake. SRPs would not be authorized for organized, commercial and competitive based recreational activities. Commercial recreationists would have to seek other public lands for their recreational experiences. Prohibiting the

development of motorized and nonmotorized trails within the SRMA would protect resources but would also increase usage on existing trails. Four RMZs would be managed to limit OHV motorized travel to existing roads, routes, or trails. Resources within these areas would be protected from unrestricted motorized use. However, delineated roads, routes, or trails would be subject to repeated and possibly increased use and would reduce recreational experiences for users. VRM Class II management and trail construction would be complementary to the stated objective of managing the SRMA for recreational activities while limiting future development of facilities or expansion of developed and primitive camping areas. However, if use were to increase over the life of the plan, flexibility to accommodate additional users would be limited and desired recreational experiences may not be attained.

ERMAs

Bagley Valley. Management would provide passive recreation opportunities for backpacking, dispersed camping, fishing, and mountain biking while protecting cultural resources. Passive recreation use would be maintained through implementation of use restrictions that include closure of Bagley Valley to motorized travel, limiting mechanized travel in Bagley Valley to existing roads and trails, and prohibiting SRPs for competitive events. These actions would allow for a variety of recreational activities while reducing the potential for user conflict and would serve to protect cultural resources.

Dry Valley. Management would provide recreation opportunities for dispersed recreation including hiking, mountain biking, OHV use, horseback riding, and dispersed camping while protecting cultural resources. Limiting mechanized, horseback, and foot travel to designated routes and providing trail identification signage and kiosks would help direct users towards desirable routes and recreational opportunities and would also protect cultural resources from damage. Management as VRM Class III would limit development that could conflict with recreation.

Faye-Luther. Recreation management is for day use and would emphasize passive recreation opportunities such as hiking, biking, photography nature walks, and dog walking. Passive recreation would be maintained by prohibiting overnight camping, camp fires, and OHV use. Recreationists seeking overnight camping and motorized uses would lose opportunities in this ERMA. Creating connectivity between the Faye-Luther trail system and Tahoe Rim Trail would provide a long-term benefit to nonmotorized recreational activities in the ERMA and surrounding area.

Middlegate and Mina. Management would provide recreation opportunities for long distance trail riding for all- and utility terrain vehicles and motorcycles while protecting cultural resources. Not authorizing SRPs in these ERMAs would protect cultural resources but would limit recreation opportunities for

commercial shooting, groups engaged in long-distance trail riding, and other events requiring an SRP. These groups and organized events would have to look elsewhere for opportunities.

Mustang and 102 Ranch. Management of the ERMAs, and the resultant effects, would be similar to those under Alternative B. Limiting the Mustang ERMA to day use only would reduce opportunities for overnight camping along the river. Prohibiting SRPs would limit permitted recreation events.

Pah Rah. Management of the ERMA would include providing opportunities for casual day use activities such as mountain biking and hiking while protecting cultural resources. No SRPs would be issued within the ERMA. Fewer conflicts to casual use activities would occur and cultural resources would be protected. However, opportunities for SRP use would not be provided.

Petersen. Nonmotorized recreational activities would benefit from having the Lassen Red Rock Scenic ACEC located within the ERMA; there would be stringent protections guarding against surface-disturbing activities that would diminish recreational activities. Excluding mountain biking from Petersen Ridge would provide a nonmechanized area for hikers and equestrians seeking that type of experience, but it would reduce the amount of mountain biking opportunities in the ERMA. Recreationists that require SRPs or who seek motorized and mechanized travel opportunities in the area would have to relocate activities to other areas.

Pine Nut. Effects would be similar to those under Alternative B, except that there would be further restrictions, including not pursuing access easements, no issuance of SRPs, and delineation of two RMZs. The Front RMZ would be managed for more passive recreation. The potential for conflict between passive recreationalists and motorized use would be higher within this RMZ.

Reno Urban Interface. Under Alternative C, management would include providing for recreation activities while protecting cultural resources. Eliminating the Lemmon Valley Motocross Area would result in the long-term loss of a popular and unique recreational amenity on BLM-administered lands. Users would be forced to look elsewhere. Prohibiting commercial and competitive events and restricting OHV staging areas would protect nearby residences from dust and noise, but would further diminish motorized recreation activities over the life of the plan.

Salt Wells. Managing the ERMA would be similar to Alternative B; however, recreation opportunities would also be managed to protect cultural resources. Prohibiting SRPs for commercial, organized, or competitive events would provide protection to cultural resources, but SRP users would be forced to seek those activities elsewhere.

Singatse. Not authorizing SRPs for motorized events would limit the type of motorized recreation that could occur in the ERMA. However, commercial motorized activities and organized groups would be allowed, helping to offset the loss of SRPs.

Virginia Mountains. Management would provide diverse recreation opportunities including passive, mechanical, and motorized travel. The potential for conflict between recreationalists could occur. Prohibiting SRPs would reduce the potential conflicts between groups from SRP events.

Virginia Range. Management would include providing diverse recreation opportunities while protecting cultural, historical and natural resources. These resources would be protected from use restrictions that would close the areas to mineral material disposal and prohibit SRPs. Providing route identification and signage would help visitors better enjoy their activities in the ERMA. Closing the area to mineral material disposal would eliminate a potential source of conflict with recreational activities while prohibiting competitive SRPs would focus those events in a smaller portion of the decision area. The potential for user conflicts between recreationalists would be reduced as SRPs would not be allowed.

Effects under Alternative D

Decision Area

Effects on target shooting would be similar to those under Alternative B, except that restricting shooting during times of high fire danger would result in seasonal reduction in shooting opportunities on BLM-administered land.

Pursuing a lease for the Lemmon Valley Motocross Area with a willing partner may lead to better maintenance and facility upgrades over the life of the plan if the partner is better equipped to perform such actions. Acquiring an easement to secure access to the facility would also result in a long-term benefit to users by ensuring motocross activities could continue.

SRMAs

Alternative D proposes management of four SRMAs.

Alpine. Effects would be similar to those under Alternative B except that BLM may be better able to protect desired recreational setting characteristics and recreational experiences in the East Fork Carson River RMZ by managing the RMZ as VRM Class II. This would limit the location and development of facilities.

Dead Camel Mountain. Management as VRM Class III would place some limitations on facility development and motorized recreation, but likely not enough to prevent attainment of desired recreational setting characteristics and recreational experiences for motorcycle riding and OHV events. The BLM's objectives address other resource demands, and user conflicts result from motorcycle riding and OHV events depending on the long-term popularity of

the area. Management would provide diverse recreational opportunities with an emphasis on motorized use while addressing other resource demands and user conflicts. Opportunities for passive recreationalists would be somewhat diminished.

Hungry Valley. Effects would be similar to those under Alternative B, except that the BLM would manage the SRMA as limited to existing routes for motorized travel (with the exception of the Moon Rocks RMZ, which would be managed as open to cross-country travel). This would reduce the potential for user conflict while still providing for OHV-related recreational experiences, especially because Alternative D would manage 100 miles of groomed trails as opposed to 50 miles under Alternative B.

Wilson Canyon. Effects would be similar to those under Alternative B. In addition, allowing overnight camping in the Walker River RMZ would provide additional beneficial recreational experiences.

ERMAs

Faye-Luther. Management of the ERMA, and the resultant effects, would be the same as under Alternative C. There would be additional support for equestrian use through maintenance and management of specific trails for that use (and hiking). This would provide a long-term benefit to equestrian use in the ERMA.

Mustang and 102 Ranch. Management of the ERMAs, and the resultant effects, would be the same as those under Alternative B.

Pah Rah. Effects would be similar to those under Alternative B.

Pine Nut. Management of the ERMA, and the resultant effects, would be the same as under Alternative B.

Reno Urban Interface. Management of the ERMA, and the resultant effects, would be the same as under Alternative B.

Effects under Alternative E

Decision Area

Effects on target shooting would be similar to those under Alternative B, except that restricting shooting during times of high fire danger would result in a seasonal reduction in shooting opportunities on BLM-administered land.

Effects on the Lemmon Valley Motocross Area would be the same as under Alternative D.

Effects from SRP management would be the same as those under Alternative B.

SRMAs

This alternative proposes six SRMAs.

Alpine. Effects would be similar to those under Alternative D, except OHV staging at Hangman's Bridge parking in the East Fork Carson River RMZ would be prohibited and would support emphases on nonmotorized recreation. The potential for recreation conflicts between boaters and OHV users would be reduced.

Dead Camel Mountain. Managing the SRMA for motorcycle riding and OHV events would be consistent with proposed management actions, including open and limited motorized travel designations, VRM Class IV, and the pursuing of partnerships with motorized recreation groups and other parties. Therefore it is likely that BLM will be able to maintain desired recreational setting characteristics and recreational experiences over the life of the plan.

Hungry Valley. Effects would be similar to those under Alternative D, except that prohibiting competitive rock-crawling SRPs within the Moonrocks RMZ and at Warm Springs Mountain would reduce opportunities for a competitive rock crawling experience. This same action would enhance experiences for other motorized users and casual rock crawling because these areas would always be available for such uses.

Sand Mountain. Managing four separate RMZs within the SRMA would allow BLM to provide specific experiences for users and provide greater flexibility to retain desired recreational setting characteristics. Across all RMZs, recreational experiences would benefit from managing the SRMA as closed to fluid mineral leasing and nonenergy mineral leasing and by restricting ROW development. While nonmotorized experiences would not be prioritized, the establishment of the Desert Habitat RMZ would provide a quiet recreational experience.

Walker Lake. The BLM would emphasize nonmotorized activities and experiences under Alternative E. VRM Class III may allow for development that introduces noise and other disturbances that could conflict with a quiet, nonmotorized experience. However, the development of a trail network west of Highway 95 would provide a focused trail experience to support nonmotorized recreation. Camping would be restricted in some areas, but generally the most popular and desirable camping spots would continue to be open to that use. For these reasons it is likely that BLM could achieve its objective to manage this SRMA with a focus on nonmotorized recreation.

Wilson Canyon. Effects would be similar to those under Alternative B, except that there would be no opportunities for parking and camping on the West Walker River bank within the West Walker River RMZ. This is expected to result in a negligible adverse effect on recreation because of the availability of parking and camping options on nearby lands.

ERMAs

Bagley Valley. Management of the ERMA, and the resultant effects, would be the same as under Alternative B.

Dry Valley. Management of the ERMA, and the resultant effects, would be the same as under Alternative B. In addition, providing connectivity for OHVs between Hungry Valley SRMA and Fort Sage SRMA (BLM CA-Eagle Lake Field Office) would greatly enhance OHV opportunities in the area.

Faye-Luther. Management of the ERMA, and the resultant effects, would be the same as under Alternative C, except there would be additional support to address user conflict, providing greater benefits for all users over the life of the plan.

Middlegate and Mina. Effects would be similar to Alternative B and proposed management actions would generally support long-distance trail riding opportunities over the life of the plan.

Mustang and 102 Ranch. Management of the ERMAs, and the resultant effects, would be similar to those under Alternative B. Limiting the Mustang ERMA to day use only would reduce opportunities for overnight camping along the river.

Pah Rah. Effects would be similar to those under Alternative B, with additional options for reducing user conflict should it become an issue over the life of the plan. This would further solidify BLM's ability to facilitate desired recreational activities.

Petersen. Allowing mountain biking on Petersen Ridge would help maintain current opportunities for that activity. Because the area does not receive high levels of use, it is anticipated that user conflict would continue to not require special management consideration (improving visitor services would direct users to areas best-suited to their activities). Prohibiting motorized competitive events would enhance opportunities for nonmotorized activities by eliminating a potential source of conflict. Managing the Lassen Red Rock RMZ would provide structured management support and improve recreational activities over the long-term.

Pine Nut. Management would be similar to Alternative B, resulting in similar effects. Under Alternative E, motorized use would be focused away from the Front Country RMZ to protect nearby residences from dust and noise. Structured management support for motorized recreation in the rest of the ERMA would help offset the loss of opportunities in the Front Country RMZ.

Reno Urban Interface. Management of the ERMA, and the resultant effects, would be the same as under Alternative B.

Salt Wells. Compared to Alternative B, there would be additional services and facilities to support long distance trail riding and organized, competitive, and commercial events. This would improve opportunities for those uses over the life of the plan. Management as VRM Class III would limit the location and extent of development that could conflict with recreation.

Singatse. Management under Alternative E would support motorized recreation by providing additional facilities such as staging areas and trails. This would maintain motorized recreational activities over the life of the plan. Management as VRM Class IV may result in development that could conflict with recreation, depending on the location and extend of development.

Virginia Mountains. Management actions would be the same as under Alternative C, but an emphasis would be placed on hiking, back packing equestrian riding, nature observation, photography and camping opportunities. If motorized use does not increase dramatically over the life of the plan, there would likely continue to be few conflicts between motorized and nonmotorized activities.

Virginia Range. Emphasizing different uses in different parts of the ERMA may reduce the potential for user conflict. Providing additional facilities and services (e.g., trailheads and signage) would improve the quality of recreational opportunities for all users. Closing the area to mineral material disposal would eliminate a potential source of conflict with recreational activities.

Recreation and Visitor Services: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Comprehensive Travel and Transportation Management would limit recreation access into areas and in some cases improve access for recreational use, provide for protection of recreational areas, would promote user safety, and would serve to reduce conflicts among various uses of BLM-administered lands.

Effects under Alternative A

Under Alternative A, the BLM would continue to manage 3,840,300 acres of BLM-administered lands as unrestricted open travel management Open travel management would maintain opportunities for cross-country motorized recreation and access to recreation areas. However, route proliferation in open areas from cross-country travel could degrade other users' experiences, especially those seeking more passive recreational experiences such as hiking, and could damage or degrade valuable resources important for recreation. Alternative A would also close 6,900 acres to motorized travel. Closed areas would restrict motorized access to areas used for recreation. Travel on approximately 924,300 acres would be managed as limited to existing roads and trails. Some access restrictions to recreation areas would be implemented. Also, concentrating use to existing roads or trails would increase the potential for user conflicts stemming from increased traffic. There would continue to be few

routes designated for specific uses, resulting in lower-quality user experiences and increased potential for user conflict. While managing routes as undesignated (i.e., open to all uses) would provide a wide range of recreational opportunities throughout the decision area, the potential for user conflict and trail degradation would continue to grow as these undesignated routes receive more use.

Effects under Alternative B

Under Alternative B, the BLM would manage travel on 95,300 acres as open, 4,300 acres closed, and 4,677,000 as limited to existing routes or trails. Managing 4,677,000 acres as limited to existing routes would result in a loss of cross-country recreational OHV and mechanized opportunities in many areas, although this experience is not currently popular with mechanized users. Limiting travel to existing routes could reduce opportunities for accidents and user conflict in highly-traveled areas. Compared to Alternative A, access to recreation areas would be restricted as 95,300 acres would remain open although fewer acres would be closed to motorized travel. Alternative B would substantially increase the amount of acres limited to existing routes and trails. Limited travel management would protect important resource for recreation use but would increase the potential user conflicts and traffic.

Effects under Alternative C

Alternative C would implement the most travel management restrictions compared to the other alternatives. OHV and mechanized designations would result in the same types of impacts as under Alternative B, but the area closed to these uses (1,190,500) would increase, meaning these experiences would be confined to a smaller area. The reduction in areas open to motorized and mechanized travel may cause some users to seek similar experiences elsewhere in the planning area or adjacent lands and could lead to a decrease in visitation levels within the decision area (i.e., BLM-administered lands).

Effects under Alternative D

A similar number of acres would be limited to existing routes and trails, resulting in impacts on OHV and mechanized use similar to those under Alternative B. Alternative D would close fewer acres compared to Alternative B but would also have fewer acres available as open. This alternative has more travel management restrictions compared to Alternatives A, B, and E, but fewer than Alternative C.

Effects under Alternative E

The number of acres designated as limited to existing routes and trails would be similar to Alternative B, as would OHV and mechanized allocations, and the resultant impacts. Alternative E would close a greater number of acres than Alternative B and would manage 55,700 acres as open.

Recreation and Visitor Services: Effects from Lands and Realty

Effects Common to All Alternatives

Under all alternatives, land tenure adjustments, including acquisition and disposal of land, would benefit recreation if the adjustment considers recreational values. Acquisitions can improve public access in areas with intermingled land ownership and can facilitate increased or improved access to recreation areas, such as river access points. Acquiring private or state inholdings would improve access and user enjoyment of BLM-administered lands, especially in SRMAs, which are managed for specific recreation experiences. The acquisition of access easements can also increase recreation use across the planning area.

Under all alternatives, development of potential pipelines and electricity transmission and distribution facilities could directly impact recreation during construction through temporary loss of access or closure of facilities. Indirect impacts from development in this corridor could include changes to scenic resources over the long term due to the presence of transmission lines and other facilities, which could degrade user experiences.

Valuable recreation areas would continue to be prioritized as a land acquisition criterion. This would enhance recreational opportunities on BLM-administered land and reduce conflicts between recreationists and private landowners within the planning area.

Effects under Alternative A

The BLM would continue to manage 564,100 acres as ROW exclusion areas, protecting recreation experiences by precluding development that may restrict recreational opportunities. There would continue to be 0 acres managed as ROW avoidance areas, meaning there would be few restrictions on ROW development that may conflict with recreational opportunities in the remaining portions of the decision area.

Continuing to identify 179,700 acres for disposal could reduce opportunities for recreation, but adverse impacts would be limited because the disposal criteria account for lands with recreational values.

Effects under Alternative B

Managing 580,000 acres as ROW exclusion areas would protect recreation experiences by precluding development that may restrict recreational opportunities. Managing 1,195,800 acres as ROW avoidance areas would present the potential for development that could conflict with desired recreational opportunities.

Effects from identifying 273,500 acres for disposal would be the same as under Alternative A, but would occur over a larger area.

Effects under Alternative C
Effects from ROW avoidance and exclusion allocations would be the same as under Alternative B, except that they would occur over a larger area, thereby providing greater protection for recreational opportunities.

No lands would be identified for disposal and recreational opportunities would not be diminished by land disposal actions.

Effects under Alternative D
Effects from ROW avoidance and exclusion allocations would be the same as under Alternative B, except that they would occur over a smaller area, thereby resulting in greater risk of diminished recreational opportunities.

Effects from identifying 332,500 acres for disposal would be the same as under Alternative A, but would occur over a larger area.

Effects under Alternative E
Effects from ROW avoidance and exclusion allocations would be the same as under Alternative B, except that they would occur over a larger area, thereby providing greater protection for recreational opportunities.

Effects from identifying 267,200 acres for disposal would be the same as under Alternative A, but would occur over a larger area.

Recreation and Visitor Services: Effects from Renewable Energy

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be the potential for reduced recreational opportunities in the 905,900 acres managed as variance areas for utility-scale solar development. Solar energy-generating facilities could change the viewshed and recreational access by introducing facilities in areas previously undisturbed.

There would continue to be no areas managed as ROW avoidance for wind energy, resulting in the potential for degradation of recreational experiences and activities in a larger area than under any of the action alternatives.

Effects under Alternative B
Effects from solar variance areas would be the same as under Alternative B, but would cover 773,400 acres, meaning the effects would cover a smaller area.

Managing 1,220,200 acres as ROW avoidance areas for wind energy projects would primarily protect undeveloped and back country recreation opportunities because the ROW avoidance area would be applied to sensitive areas such as VRM Class I and II.

Effects under Alternative C
Effects from solar variance areas would be the same as under Alternative B, but would cover 578,400 acres, meaning the effects would cover a smaller area.

Managing 2,073,200 acres as ROW exclusion areas for wind energy projects would increase protections for recreation experience by precluding development that may restrict recreational opportunities.

Effects under Alternative D
Effects from solar variance areas would be the same as under Alternative B, but would cover 672,100 acres, meaning the effects would cover a smaller area.

Managing 1,228,100 acres as ROW avoidance areas for wind energy projects would result in the same type of impacts as under Alternative B, but covering a larger area.

Effects under Alternative E
Effects from solar variance areas would be the same as under Alternative B, but would cover 629,900 acres, meaning the effects would cover a smaller area.

Managing 956,900 acres as ROW avoidance areas for wind energy projects would result in the same type of impacts as under Alternative B, but covering a smaller area. Managing 629,900 acres as ROW exclusion areas for wind energy would result in the same type of impacts as under Alternative C, but over a smaller area.

Recreation and Visitor Services: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The BLM would continue to manage 6 existing ACECs (21,800 acres), protecting opportunities for quiet and undeveloped recreation in those areas at the expense of recreational OHV access.

Effects under Alternative B
The BLM would manage 13 ACECs (371,170 acres), providing additional opportunities for quiet and undeveloped recreation compared to Alternative A. Limiting motorized and mechanized travel to existing routes in the Grimes Point Archaeological District ACEC would result in a loss of cross-country recreational opportunities.

Effects under Alternative C
The BLM would manage 786,270 acres within 23 ACECs and provide additional opportunities for quiet and undeveloped recreation than under current

management. Only the Black Mountain/Pistone Archaeological District, Desatoya Greater Sage-Grouse, Incandescent Rocks Scenic, and Virginia City National Landmark Historic District ACECs would be open to year-round motorized use, resulting in a long-term loss of OHV recreational opportunities.

Effects under Alternative D

Effects on quiet recreation opportunities would be similar to those under Alternatives B and C except that 180,000 acres would be managed as ACECs. Limiting motorized and mechanized travel to existing routes in the Grimes Point Archaeological District ACEC would result in a loss of cross-country recreational opportunities.

Effects under Alternative E

Effects on quiet recreation opportunities would be similar to those under Alternatives B and C except that 82,770 acres would be managed as ACECs. Because motorized and mechanized use would not be limited in any of the ACECs under this alternative, there would be no long-term loss in those types of recreational opportunities from ACEC designation.

Recreation and Visitor Services: Effects from Back Country Byways

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Recreational use of the Fort Churchill Byway would not be expected to diminish recreation use or affect recreation settings important to user experiences. Implementing Back Country Byway corridor management plans would identify facilities and management actions necessary to preserve recreational experiences and promote desired outcomes.

Effects under Alternative B

Recommending designation of the Marietta and New Pass to Hawthorne byways would have the potential for attracting additional recreation to those byway areas. However, recreational use of the byways is not expected to diminish recreation use or affect recreation settings important to user experiences. Implementing Back Country Byway corridor management plans would identify facilities and management actions necessary to preserve recreational experiences and promote desired outcomes.

Effects under Alternative C

Effects would be the same as those under Alternative B except that there would be fewer opportunities to experience the historic mining resources along the Marietta Byway.

Effects under Alternative D

Effects would be the same as those under Alternative C.

Effects under Alternative E
Effects would be the same as those under Alternative B.

Recreation and Visitor Services: Effects from National Trails

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
National trails would be managed to preserve and protect the historical trail remains, associated historic sites and historical settings that are important as recreational settings. Management of national trails could restrict recreation access in areas in order to protect trail remnants and historical settings.

Effects under Alternative B
Managing potential trail segments for consideration in the NRHP and providing recreation opportunities consistent with historic value of the NHTs would improve recreational experiences and would increase opportunities for learning and interpretation.

Effects under Alternative C
Effects would be the same as under Alternative B.

Effects under Alternative D
Effects would be the same as under Alternative B.

Effects under Alternative E
Effects would be the same as under Alternative B.

Recreation and Visitor Services: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
In the WSR suitability analysis, recreation is identified as an ORV for Carson River Segments 1, 2, and 3, meaning recreational boating and fishing opportunities and experiences may be enhanced as a result of protecting that ORV. Recreation activities may be restricted if found to adversely impact other ORVs, the free-flowing nature, or the tentative classification of the affected segment. Only a limited number of trail crossings would be allowed in scenic and wild segments (i.e., Carson River Segments 1 and 3), reducing future potential for expanded recreation opportunities. Recreation would not be restricted in recreational segments (i.e., Carson River Segment 2), so long as ORVs are protected.

Effects under Alternative B
Stream segments would be released from interim management protection, meaning recreational boating and fishing opportunities and experiences on Carson River Segments 1, 2, and 3 would not be enhanced by long-term protection of the Recreation ORV. However, there would be fewer limitations on other recreational opportunities and experiences along this stream segment, increasing the potential for expanded recreation opportunities.

Effects under Alternative C
Effects would be the same as under Alternative A.

Effects under Alternative D
Effects would be the same as under Alternative A.

Effects under Alternative E
Effects would be the same as under Alternative A.

Recreation and Visitor Services: Effects from Wilderness Study Areas

Effects Common to All Alternatives
Opportunities for solitude or primitive and unconfined recreation and undeveloped recreation setting characteristics within WSAs would be protected under all alternatives. Primitive and back country settings, and a desirable area for nonmotorized/nonmechanized recreation, would be retained. Primitive and unconfined recreation within the WSAs also would be protected under all alternatives.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Recreation and Visitor Services: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be no BCWCAs and recreationists would not benefit from any measures to protect quiet recreation opportunities in those areas.

Effects under Alternative B
There would be no BCWCAs and recreationists would not benefit from any measures to protect quiet recreation opportunities in those areas.

Effects under Alternative C
Because many surface-disturbing activities would be limited, managing 817,800 acres as BCWCAs would provide improved opportunities for quiet recreation, including hunting and fishing.

Effects under Alternative D
There would be no BCWCAs and recreationists would not benefit from any measures to protect quiet recreation opportunities in those areas.

Effects under Alternative E
There would be no BCWCAs and recreationists would not benefit from any measures to protect quiet recreation opportunities in those areas.

Recreation and Visitor Services: Effects from Tribal Interests

Effects Common to All Alternatives
Closures or mitigation measures implemented in response to Native American tribal uses could result in site-specific short- or long-term reductions in recreation. Because closures and mitigation measures are dependent upon tribal needs and requests, effects are not expected to vary across alternatives.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Recreation and Visitor Services: Effects from Public Health and Safety

Effects Common to All Alternatives
Closures or mitigation measures implemented in response to public health and safety management could result in site-specific short- or long-term reductions in recreation.

Effects under Alternative A
Current target shooting closures in the American Flat Mill, Pine Nut Road No. 2, and Moonrocks areas would reduce safety risks and the potential for user conflict in these popular areas.

Effects under Alternative B
Current target shooting closures would continue to provide improved public safety. A focused effort on providing public safety information would likely reduce public health and safety risks across the decision area and particularly around abandoned mines, in hazardous conditions, and near areas frequently used for recreational target shooting.

Effects under Alternative C
Effects would be the same as under Alternative B.

Effects under Alternative D
Effects would be the same as under Alternative B.

Effects under Alternative E
Effects would be the same as under Alternative B.

Recreation and Visitor Services: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be no specific interpretation and environmental education actions and no opportunity for recreationists to benefit from them.

Effects under Alternative B
Increasing public knowledge, appreciation and understanding of BLM resources would benefit recreationists by providing additional information to improve the quality of their visits across the decision area.

Effects under Alternative C
The effects would be the same as described under Alternative B.

Effects under Alternative D
The effects would be the same as described under Alternative B.

Effects under Alternative E
The effects would be the same as described under Alternative B.

Recreation and Visitor Services: Cumulative Effects
The cumulative effects analysis area used to analyze cumulative impacts on recreation resources includes the planning area and all big game hunting units that intersect the planning area. Any activities that affect game populations would in turn impact the potential for realizing recreation benefits (e.g., wildlife viewing and hunting) because of the loss or gain of the number of animals. The cumulative effects analysis area also extends along major roads, trails, and rivers where management inside the planning area could impact use outside the planning area boundary.

At the broadest level, the physical, social, and operational recreation character of BLM-administered lands along the urban interface is quickly changing from natural to more developed, from less crowded to more contacts with others, and from less restrictive to more rules and regulations. These changes will impact the recreational opportunities that can be offered and the recreation experience and benefit opportunities that can be produced by land managers and partners.

Past, present, and reasonably foreseeable future actions are identified on **Table 4-1**. Population growth and growth of urban interface areas have and will increase demands for access on BLM-administered lands and demands for undeveloped dispersed recreation, including OHV use. Forest plans for nearby National Forest System lands and RMPs for adjacent BLM-administered lands have or are closing areas and routes to motorized recreation, causing users to move to BLM-administered lands in the planning area.

Increasing urban and suburban populations proximate to the planning area have greatly increased the level of recreational use on BLM-administered lands. There is a strong correlation between population growth, visitation, and recreation in large part because many new residents have moved to the area specifically because of easy access to recreation opportunities on BLM-administered lands. The expanding suburban development footprint has also placed many new neighborhoods directly next to BLM boundaries, resulting in increased trespass onto private property and resource impacts from private property owners accessing public lands from adjoining private land (e.g., social trailing).

Management of vegetation, wildlife, special status species, and wild horses and burros that implement strategies to protect or rehabilitate areas would also serve to maintain recreational experiences but could also restrict recreation access. Cumulative impacts would vary by the degree of protective management and use restrictions proposed by alternative. Management of areas with special

designations such as ACECs, WSR, or WSAs would reduce potential access for some recreationalist while providing positive recreational experiences to those seeking solitude. Increased oil, gas, and locatable and salable mineral exploration and development have altered physical settings through the construction of well pads, roads, and related infrastructure. As a result, many areas have trended away from a more natural setting and users seeking a back-country or primitive experience have been displaced. While the eastern portion of the planning area remains relatively undeveloped, high demand for oil and gas extraction could change the setting in many locations over the life of the plan.

4.4.5 Comprehensive Travel and Transportation

Because CTTM goals, objectives, and actions are largely carried out in response to the desired management of other uses and resource programs, effects from CTTM are analyzed in the appropriate resource section. For example, management actions that close or limit areas to OHV travel typically benefit soil resources. Effects of OHV management on soil resources are therefore analyzed in **Section 4.3.3**, Soil Resources. The same closures or limitations would decrease recreational OHV opportunities. Accordingly, impacts from CTTM on recreation are discussed in **Section 4.4.4**, Recreation and Visitor Services. Only those impacts resulting from actions that affect access within the study area are discussed in this section.

Summary

Impacts on CTTM are the result of changes to the management of the transportation network that change the level of access. Management that restricts travel (e.g., OHV use) reduces access for those uses. Management that expands or limits the potential for an expanded travel network (e.g., ROW restrictions) would also affect CTTM. In general, management under Alternatives A, B, D, and E include less closed areas and fewer restrictions on motorized travel. Of these, Alternative A would affect CTTM the least. Effects on CTTM would be greatest under Alternative C, which would close the largest portion of the planning area to motorized travel and result in the most restrictions on access

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on CTTM:

- The nature and types of potential impacts on CTTM from proposed actions under each alternative are based on:
    1. Numerical data gathered during the planning process
    2. BLM interdisciplinary team knowledge of the resource
    3. Input provided during the public scoping process

Where possible, this analysis uses quantitative data to describe impacts on CTTM from other resources and resource use programs. Qualitative information is also used to support quantitatively-based analysis or where numerical data does not exist. In all cases, best professional judgment is used in evaluating effects on the CTTM program.

- Demand for motorized, non-motorized, and mechanized travel on BLM-administered lands will continue to increase throughout the life of the plan.
- The potential for resource and user conflict increases as use increases and becomes more concentrated.
- Impacts on travel management result from limitations, such as wildlife stipulations, special designations, and cultural resources, as well as permitted uses, such as ROW development, livestock grazing, and mining.
- Management actions that limit new development (e.g. lands and realty ROW exclusion criteria) subsequently restrict expansion of the travel network by restricting uses that require new route construction.
- The travel designations will not affect ROW holders, permitted uses, county or state roads, or other valid existing rights. Travel closures/limitations apply only to public access.

  A travel management plan with specific route designations will be developed as part of a subsequent implementation-level planning process and is not included as part of this RMP/EIS.
- Implementation of a travel management plan would include increased public education, signing, enforcement, and resource monitoring in regard to travel management.

Indicators

The following indicators were used to assess impacts on CTTM:

- Areas designated as open, limited, or closed to motorized and/or mechanized travel
- Management actions that would limit the BLM's ability to maintain or enhance the travel network

Nature and Type of Effects

Impacts on CTTM are those that restrict or enhance the use of and access to the travel network, primarily through the management of areas as open, closed or limited to motorized or mechanized travel. For example, management actions that limit motorized travel to existing routes would restrict motorized cross-country travel opportunities. At the same time, a limited designation may

benefit mechanized and non-motorized travel in the previously open areas by reducing encounters with motorized vehicles. The area designation would also focus management attention on the existing route network and on providing quality access via those routes, thereby improving management efficiency. Areas open to motorized and/or mechanized travel would allow for cross-country travel, which would result in the least restriction on CTTM, but the greatest conflict with other resources and uses.

CTTM area designations (i.e., open, closed, or limited) can impact access and the travel network by improving or degrading access for certain types of uses and by reducing or increasing the opportunities for conflict or congestion. In areas where CTTM closures only apply to motorized travel, the closure would restrict motorized vehicle access but potentially reduce conflicts and improve accessibility for non-motorized modes. Full closure to motorized and mechanized travel would decrease access for those travel modes, while potentially reducing conflicts for pedestrian, equestrian, and other non-motorized or mechanized modes of travel.

Management of other resources can affect CTTM through actions that restrict the development or improvement of roads, trails, and other routes (e.g., via the establishment of ROW avoidance or exclusion areas) or through actions that change the quantity of BLM-administered lands in the planning area. ROW exclusion and avoidance criteria decrease accessibility by reducing the potential for future access in restricted areas. Land acquisitions can add land to the Public Lands System, providing greater public access. Disposals transfer ownership from BLM to another entity which could change the nature and type of travel opportunities on those lands. Because effects from restrictions on development are primarily the result of land use allocations (e.g., ROW avoidance and exclusion areas) under lands and realty, effects are discussed under that section only and not under other resource areas, even though the protection of the resource may be dictating the ROW allocation.

During subsequent implementation-level travel management planning, specific route closures, seasonal restrictions, or other travel-related restrictions could occur in order to protect sensitive resources (e.g., cultural, paleontological, vegetation, or wildlife) or minimize conflict with resource uses. However, implementing land use plan-level management for the following resources and resource uses would have negligible or no effect on CTTM and are therefore not discussed in detail: air quality, climate change, cultural resources, wild horses and burros, wildland fire and ecology, paleontological resources, forestry and woodland product management, WSRs, back country wildlife conservation areas, tribal interests, socioeconomic conditions, environmental justice, and facilities and transportation maintenance.

CTTM: Effects from Soil Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Soil resources management under Alternative A would include implementing site-specific road or route use restrictions in order to reduce resource damage. Impacts are expected to be short term and limited to specific areas.

Effects under Alternative B
Management under Alternative B would avoid surface disturbing activities (e.g., construction of new roadways) on slopes greater than 30 percent, or where not feasible, require an erosion control plan to maintain soil stability. These avoidance criteria would limit road construction or potentially increase road construction disturbance to avoid steep slopes, increasing costs.

Effects under Alternative C
Effects on CTTM under Alternative C would be similar to Alternative B, with the exception that effects from avoidance criteria would apply to slopes greater than 21 percent. This would result in a larger area where motorized travel would potentially be restricted.

Effects under Alternative D
Impacts on CTTM from soil resources management under Alternative D would be the same as those described under Alternative C.

Effects under Alternative E
Impacts on CTTM from soil resources management under Alternative E would be the same as those described under Alternative C.

CTTM: Effects from Water Resources

Effects under Alternative A
Alternative A would continue to restrict motorized access in riparian areas, stream channels, and through or near surface water sources where such use would degrade the quality or quantity of the water body. This would continue to result in a long-term loss of motorized travel opportunities in these areas. However, a lack of specific and up-to-date management actions under Alternative A would result in few if any additional future restrictions on travel access with negligible or no additional impacts on CTTM.

Effects under Alternatives B, C, D, and E
Because there are no proposed actions that would restrict travel, water resources management under Alternatives B though E would have no effect on CTTM.

CTTM: Effects from Vegetation Resources

Effects under Alternative A, B, D, and E
Because there are no actions that would limit or enhance access, vegetation resources management under Alternatives A, B, D, and E would continue to have no effect on CTTM.

Effects under Alternative C
BLM management for vegetation resources under Alternative C would limit new stream crossings, restrict the development of new travel routes, and relocate existing routes within 500 feet of sensitive riparian and wetland areas. Removing travel routes and preventing new construction would decrease access for motorized, mechanized, and non-motorized or mechanized travel in those areas. Effects from restrictions on stream crossings would be the same as Alternative B.

CTTM: Effects from Fish and Wildlife Management

Effects under Alternative A
Alternative A would continue to restrict motorized travel to designated routes in the Swan Lake Study area. However, because all forms of travel could continue on those designated routes, there would be little to no impact on access in that area. In the remainder of the planning area, management for fish and wildlife under Alternative A would continue to neither limit nor enhance access.

Effects under Alternative B, C, and E
Fish and wildlife management under Alternatives B, C, and E would not impact travel-related access and would, therefore, have no impact on CTTM.

Effects under Alternative D
Installation of fences along roadways under Alternative D to prevent vehicle collisions in urban interface zones would conflict with travel activities where fences obstruct or prevent the movement of vehicles. In areas where OHV travel is limited to existing routes, fencing constructed along roadways would maintain or improve motorized travel by reducing wildlife collisions, but could obstruct non-motorized access to areas next to fenced roadways.

CTTM: Effects from Special Status Species Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Emergency OHV closures to protect identified threatened, endangered and BLM special status plant populations would continue to result in short-term, localized reductions in motorized travel access.

Effects under Alternative B
Removal of fences within 1.25 miles of active sage-grouse leks under Alternative B would improve access for cross-country mechanized, pedestrian, and equestrian travel.

Effects under Alternative C
Under Alternative C, seasonal prohibitions of motorized and mechanized travel within 4 miles of leks would eliminate those travel options within those areas between March 1 and May 15 and consolidate travel to fewer areas and routes in the decision area. Effects from the removal of fences would be the same as Alternative B, but would apply to a larger area (within 2 miles leks).

Effects under Alternative D
Effects from travel closures within 4-mile sage-grouse lek buffers would be the same as Alternative C, while effects from the removal of fences within 1.25 miles of active leks would be the same as Alternative B.

Effects under Alternative E
Under Alternative E, the effects from the removal of fences would be the same as Alternative B, but would apply to a larger area (1.8 miles surrounding leks).

CTTM: Effects from Visual Resources

Effects Common to All Alternatives
Under all alternatives, the BLM would manage resource and resource uses consistent with applicable VRM class objectives. Objectives for VRM Class I and II, which respectively specify preservation and retention of existing landscape characteristics, would have a greater likelihood of limiting OHV use and future access by restricting the location and/or applying mitigation measures to the development or expansion of new travel ways. Fewer restrictions would be likely in VRM Classes III and IV.

Effects under Alternative A
Alternative A would manage 13 percent (602,400 acres) of the planning area as VRM Class I or II. Where proposed travel way development would conflict with VRM objectives in these areas, the activity would likely be approved only if re-located or designed to minimize impacts on desired visual resource conditions.

Alternative A would manage the Burbank Canyons and Red Rocks as scenic areas with travel limited to designated routes. This would continue to limit OHV travel in those areas, particularly where existing routes are designated as closed to motorized travel.

Effects under Alternative B
Similar to Alternative A, management of 13 percent (620,900 acres) of the planning area as Class I or II would affect the location and types of new travel ways allowed in those areas. In addition to designating VRM Classes I and II,

Alternative B would provide VRM Class III and IV objectives for the remainder of the planning area (4,182,400 acres). Visual resource management objectives would support OHV use and new or expanded access within these areas, particularly within VRM Class IV areas.

Effects under Alternative C

Visual resources management under Alternative C would have the greatest potential to limit access by managing 36 percent (1,715,800 acres) of the planning area as VRM Class I or II. The *Nature and Types of Effects* on access in these areas would be the same as those described under Alternative B.

Effects under Alternative D

Effects on CTTM from visual resources management under Alternative D would be similar to Alternative B, but would promote greater access by managing 42 percent (1,183,900 acres) more land as VRM Class IV.

Effects under Alternative E

Effects on CTTM from Class I and II VRM objectives would be similar to Alternative C, but would manage more acres as VRM Class III.

CTTM: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

There would continue to be no management actions that limit or enhance access and therefore no effects from caves and cave resource management on CTTM under Alternative A.

Effects under Alternatives B, D, and E

Development of public education and other outreach for Dynamite Cave under Alternatives B, D, and E intended to draw attention and increase visitation to the cave could increase congestion on routes in proximity to the cave.

Effects under Alternative C

Effects under Alternative C would be the same as Alternative B for non-motorized travel. However, to protect Dynamite and Hidden caves, the BLM would prohibit motorized travel access within 500 feet of the cave.

CTTM: Effects from Livestock Grazing Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Livestock grazing management under Alternative A could continue to directly affect CTTM where new routes are established for livestock grazing management. New routes would increase overall route density on BLM-administered lands, thereby expanding the route network.

Effects under Alternative B

Effects from Livestock Grazing Management on CTTM under Alternative B would be the same as Alternative A.

Effects under Alternative C

Alternative C would reduce the number of acres available for livestock grazing by 56 percent (2,101,300 acres) compared to Alternative A. Less livestock grazing would decrease the potential for new routes. Less travel on existing routes in previously open allotments would reduce the need to maintain those routes. If not maintained, routes in closed areas may become impassible over time for certain vehicle types.

Effects under Alternative D

Effects from Livestock Grazing Management on CTTM under Alternative D would be the same as Alternative A.

Effects under Alternative E

Effects from Livestock Grazing Management on CTTM under Alternative E would be the same as Alternative A.

CTTM: Effects from Geology and Mineral Management

Effects Common to All Alternatives

New routes associated with mineral development could temporarily expand the route network and provide more travel opportunities. However, in the long-term, routes associated with mineral development are often reclaimed. Restrictions on mineral material disposal would have localized short- and long-term impacts on CTTM where closures limit the availability of gravel to maintain road surfaces.

Effects under Alternative A

Under Alternative A, areas managed as closed to mineral development (839,100 acres) would continue to have little or no likelihood for new route development.

Effects under Alternative B

The nature of effects from Geology and Mineral Management on CTTM under Alternative B would be similar to Alternative A. Additional NSO stipulations for fluid minerals (404,600 acres) would reduce the potential for new routes in those areas.

Effects under Alternative C

Alternative C could result in a less extensive and well-maintained travel network compared to Alternative A by placing more restrictions on all types of mineral development, closing an additional 3,004,800 acres to mineral material disposal, and closing existing aggregate facilities that are incompatible with wildlife, cultural, or special designations management objectives. Allowing for temporary aggregate facilities for government access only would enable ongoing road maintenance and could offset impacts from permanent mineral material closures elsewhere.

Effects under Alternative D

The nature of effects from Geology and Mineral Management on CTTM under Alternative D would be similar to Alternative A. Additional NSO stipulations for fluid minerals (864,800 acres) would reduce the potential for new routes in those areas; however, because less areas would be closed to fluid mineral leasing there would be greater potential for new routes to access fluid mineral development sites.

Effects under Alternative E

Alternative E could result in a less extensive and well-maintained travel network compared to Alternative A by restricting mineral development, closing an additional 1,778,700 acres to mineral material disposal, and closing existing aggregate facilities that are incompatible with adjacent land uses. Temporary aggregate facilities for government access only would allow for ongoing road maintenance and could offset impacts from permanent mineral material closures elsewhere.

CTTM: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Under all alternatives, the BLM would seek to acquire easements to provide access to BLM-administered lands to meet recreation objectives. These easements would expand and improve the travel network while reducing barriers to access.

Effects under Alternative A

Alternative A specifies the construction of an interpretive trail in the Jumbo Postpile area and would maintain the 2-wheel road system in Bedell Flat and Dry Valley areas. Expansion of the trail network would expand non-motorized travel options such as pedestrian, equestrian, and cycling, while maintenance of the existing road network would preserve access in those areas.

Effects under Alternatives B, C, D, and E

Under Alternatives B through E, the BLM would manage a collection of SRMAs and ERMAs to provide and protect specific recreational opportunities and setting characteristics. Management includes objectives and actions for motorized and non-motorized travel. Effects of these management actions on

recreation are analyzed in **Section 4.4.4**, Recreation and Visitor Services. Effects on CTTM from OHV management and other travel management actions within SRMAs and ERMAs are discussed below under *CTTM: Effects from CTTM*.

CTTM: Effects from CTTM

Effects Common to All Alternatives

In addition to establishing OHV area designations under all alternatives, the BLM would also carry out an implementation-level travel management planning process to designate the types of travel allowed on individual routes within the planning area. As part of travel management planning, the BLM would inventory all existing routes and assign specific management to those routes. This process allows the BLM to more effectively manage travel within the planning area, ultimately reducing conflict with other resources and uses, including conflict among various travel modes.

Effects under Alternative A

Alternative A would continue to manage 3,840,300 acres as open to cross-country travel, would provide the greatest opportunity for cross-country OHV and mechanized travel. Of the remaining portion of the planning area, the BLM would designate 924,300 acres as limited to existing routes for motorized and mechanized travel, while 6,900 acres would be closed to motorized and mechanized travel and 31,800 acres would be closed to motorized travel with mechanized travel allowed on existing routes. Designating 3,840,300 acres of the planning area as open to all forms of travel would enable the most extensive access to BLM-administered lands. However, the continual creation of new linear travel features decreases the BLM's ability to provide comprehensive travel management planning on the existing route network. The BLM would not establish travel management areas under Alternative A to support specific resource management decisions and address public needs; accordingly, conflicts among the various types of travel modes would be greatest under Alternative A.

Effects under Alternative B

Alternative B would designate 95,300 acres as open to cross-country travel, reducing the amount of land available for cross-country OHV travel by 3,745,000 acres compared to Alternative A. Under Alternative B, there would be 2,600 fewer acres closed to motorized and mechanized travel than Alternative A and 1,400 fewer acres closed to motorized travel. For the large majority of the planning area (4,677,000 acres) under Alternative B, motorized and mechanized travel would be limited to existing roads, primitive roads, and trails.

Although more restrictive than Alternative A, compared with the other action alternatives (Alternatives C, D, and E), Alternative B would maintain the largest area for cross-country OHV and mechanized travel.

Alternative B would require seasonal routes closures in specified areas to protect sensitive wildlife (e.g., mule deer and raptors) and to minimize conflicts with the Reno Air Races. During the time period when these seasonal closures apply, motorized access to routes in the closed areas would be restricted; mechanized and other non-motorized travel would be unaffected.

Management under Alternative B would reduce or eliminate the creation of new linear travel features and concentrate BLM CTTM planning on existing routes. In addition, the BLM would establish 16 travel management areas where managed would be focused on improving transportation access and minimizing conflicts among users.

Effects under Alternative C

Under Alternative C, the BLM would place the most restrictions on travel management and provide the least overall access to BLM-administered lands in the planning area. Compared to Alternative A, management under Alternative C would increase the areas closed to motorized and mechanized travel by 591,100 acres and the area closed to motorized travel by 1,158,700 acres. In total, closed areas under Alternative C would account for 37 percent (3,612,700 acres) of the planning area. All WSAs would be closed to motorized travel.

Less than one percent (1,300 acres) would be open to cross-country motorized and mechanized travel. While the majority of the planning area (63 percent) would be managed as limited to existing roads, primitive roads, and trails (2,089,200 acres more than Alternative A), this area would be much less than the other action alternatives.

Alternative C would also require more seasonal route closures than the other alternatives. Closures would be implemented in ACECs to protect sensitive wildlife (e.g., mule deer and raptors) and to minimize conflicts with the Reno Air Races. During the time period when these seasonal closures apply, motorized access to routes in the closed areas would be restricted. Mechanized travel would be limited to existing routes.

The result of management actions under Alternative C would be less overall access for motorized and mechanized travel than the other alternatives and the possibility for more congestion on routes outside closed areas. OHV closures in SRMAs and ERMAs would impact recreation opportunities in those areas but also redistribute recreational OHV users to other areas for those activities. This would increase the potential for congestion and conflict with non-motorized users elsewhere in the planning area.

Benefits under Alternative C from the establishment of travel management areas would be the same as Alternative B.

Effects under Alternative D

Effects on CTTM under Alternative D would be similar to Alternative B, with the major exception being that there would be 76 percent less area (72,600 71,400 acres) available under Alternative D for cross-country motorized and mechanized travel. Alternative D would designate 2 percent more area (71,400 acres) as limited compared to Alternative B.

Compared to Alternative A, management under Alternative D would largely re-designate three-quarters of the planning area from an open designation to a designation of limited to existing roads, primitive roads, and trails.

Alternative D would reduce or eliminate the creation of new linear travel features and focus BLM CTTM planning efforts on the existing route network. The BLM would establish 9 travel management areas with similar benefits as described under Alternative B.

Impacts on CTTM from seasonal closures under Alternative D would be the same as Alternative B.

Effects under Alternative E

Effects on CTTM under Alternative E would be similar to Alternatives B and D. Alternative E would designate 150 percent more areas as open to cross-country motorized and mechanized travel than Alternative D, but 42 percent less than Alternative B. Similarly, Alternative E would designate more area as limited compared to Alternative B, but less area than Alternative D.

Effects from seasonal closures under Alternative E would be similar to Alternative B, except that access via mechanized travel modes would be limited to existing routes in seasonally closed areas and seasonal closures would also apply to the Petersen ERMA and Sand Mountain SRMA.

Similar to Alternatives B through D, Alternative E would reduce or eliminate the creation of new linear travel features and focus BLM CTTM planning efforts on the existing route network. The BLM would establish 10 travel management areas with similar benefits as those described under Alternative B.

CTTM: Effects from Lands and Realty

Effects Common to All Alternatives

Under all alternatives, CTTM would benefit from land tenure adjustments that increase access to BLM-administered lands. Utility corridors would continue to be the preferred locations for future linear ROW development, such as electrical transmission lines and pipelines. Corresponding expansions to the existing travel network would be expected in these areas.

Effects under Alternative A

Manage under Alternative A that prioritizes access to the Pah Rah Range, Petersen Mountains, and the Jumbo area while maintaining or increasing access to other BLM-administered lands would continue to benefit CTTM by improving overall access to the travel network. However, the lack of specific and up-to-date management actions under Alternative A would reduce the likelihood of realizing these benefits.

Under Alternative A, 179,700 acres of lands would be identified for disposal and 564,100 acres managed as ROW exclusion areas. Impacts from land disposal and ROW restrictions would reduce long-term access consistent with the description under *Nature and Types of Effects*.

Effects under Alternative B

Alternative B would identify 273,500 acres for disposal, more than Alternative A. The BLM would manage 580,000 acres as ROW exclusion and 1,195,800 acres as ROW avoidance areas. Impacts associated with reductions in long-term access from land disposal and ROW restrictions would be consistent with the description under *Nature and Types of Effects*.

Effects under Alternative C

Alternative C would have the least potential for impacts from land tenure actions because there would not be any areas identified for disposal. Alternative C would manage 2,675,800 acres as ROW exclusion areas and 369,300 acres as ROW avoidance areas, placing the most restrictions on future ROW development. Impacts associated with reductions in long-term access from ROW restrictions would be consistent with those described under *Nature and Types of Effects*.

Effects under Alternative D

Land tenure actions under Alternative D would have the greatest potential for reducing access to and across BLM-administered lands by identifying the most area for disposal of any alternative (332,500 acres) and making eligible for transfer to the BIA an additional 31,900 acres.

Because the same number of acres would be managed as ROW exclusion, effects on CTTM from ROW exclusions would be the same as Alternative A. Managing 1,226,1000 acres as ROW avoidance would have minimal effects on CTTM. Impacts associated with ROW restrictions would be consistent with the description under *Nature and Types of Effects*.

Effects under Alternative E

Effects on CTTM from land tenure actions under Alternative E would be similar to Alternative D, but would include 65,300 fewer acres identified for disposal.

Future expansion of the travel network would be restricted in 605,900 acres of ROW exclusion areas and 1,448,200 acres of ROW avoidance areas, which together account for percent of BLM administered land in the planning area.

CTTM: Effects from Renewable Energy

Effects Common to All Alternatives

Under all alternatives, national and state policies will continue to prioritize renewable energy development on BLM-administered lands. New or expanded wind and solar energy development increases the potential for new travel routes or upgrading of existing routes. These routes would benefit CTTM by providing additional access to and across BLM-administered lands. Renewable energy projects could also add vehicles to the travel network, especially during construction, with the result of added congestion and decreased access for other travel network users.

Effects under Alternative A

Alternative A would establish the fewest restrictions on wind and solar energy development and would therefore offer the greatest opportunity for an expanded route network. Alternative A would also result in the greatest potential for congestion on existing routes if new routes are not constructed to support renewable energy projects.

Effects under Alternative B

Alternative B would manage for a smaller solar variance area than Alternative A and would manage 1,220,200 acres as ROW avoidance for wind. However, of the action alternatives (Alternatives B, C, and D), Alternative B would provide the greatest opportunity for an expanded network of travel routes.

Effects under Alternative C

Alternative C would manage the fewest acres of solar variance area and most acres as wind ROW exclusion area, resulting in the fewest opportunities to expand the travel route network. Alternative C would also result in the least opportunity for added congestion from traffic associated with renewable energy projects.

Effects under Alternative D

Management of renewable energy under Alternative D would be similar to Alternative B, but with less potential for beneficial effects on CTTM due to a smaller solar variance area and larger ROW avoidance areas.

Effects under Alternative E

Management of renewable energy under Alternative E would be similar to Alternatives B and D, but with less potential for new travel routes than those alternatives due to a smaller solar variance area and larger ROW avoidance areas.

CTTM: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
To preserve and protect their relevant and important values, management under Alternative A would continue to restrict OHV use on 21,800 acres in the following ACECs: Carson Wandering Skipper ACEC, Incandescent Rocks Scenic ACEC, Pah Rah High Basin Petroglyph ACEC, Steamboat Hot Springs Geyser Basin ACEC, Stewart Valley Paleontological ACEC, and Virginia Range Williams Combleaf Botanical ACEC. ACEC management would not affect access or travel opportunities throughout the remainder of the planning area.

Effects under Alternative B
Although Alternative B would manage for more ACECs than Alternative A, only the Grimes Point Archaeological District ACEC (15,900 acres) would include specific management to restrict access for OHV travel, resulting in a smaller area where motorized access would be limited.

Effects under Alternative C
Alternative C would result in the greatest impact on the travel network by closing or restricting areas to motorized and mechanized travel. The following ACECs, which together account for 786,270 acres, would include specific CTTM restrictions for motorized and/or mechanized travel: Churchill Narrow Buckwheat Botanical ACEC, Clan Alpine Greater Sage-Grouse ACEC, Carson Wandering Skipper ACEC, Dixie Valley Toad ACEC, Fox Peak Cultural ACEC, Grimes Point Archaeological District ACEC, Lassen Red Rock Scenic ACEC, Namazii Wunu Cultural ACEC, Pah Rah High Basin Petroglyph ACEC, Pine Nut Bi-state Sage Grouse ACEC, Pine Nut Mountains Williams Combleaf Botanical ACEC, Ruhenstroth Paleontological ACEC, Greater Sand Mountain ACEC (seasonal), Sand Spring Desert Study Area ACEC, Steamboat Buckwheat Botanical ACEC, Tagim aša Cultural ACEC, Virginia Mountains Greater Sage-Grouse ACEC, and Virginia Range Williams Combleaf Botanical ACEC.

Effects under Alternatives D and E
None of the ACECs proposed under Alternatives D or E would include travel restrictions. Accordingly, access would be improved over current conditions and there would be no adverse impacts on CTTM from ACECs under these alternatives.

CTTM: Effects from Back Country Byways

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Continued management of the Fort Churchill to Wellington BLM Back Country Byway under Alternative A would maintain paved and un-paved access for passenger vehicles and other travel modes along the 33-mile route.

Effects under Alternative B
Management of the Fort Churchill, Marietta, and New Pass to Hawthorne Back Country Byways under Alternative B would maintain or enhance access within the planning area. However, designation of previously existing routes as Back Country Byways could increase vehicle traffic, create congestion along the route, and more rapidly degrade the quality of the road surface. Availability of federal funding to maintain Back Country Byways would offset impacts from increased usage.

Effects under Alternative C
Rescission of the Fort Churchill Back Country Byway under Alternative C could improve access along that route by reducing congestion; however, no Back Country Byway-related funding would be available to maintain the roadway. Establishment of the Marietta and New Pass to Hawthorne Back Country Byways would have the same effects on CTTM as Alternative B.

Effects under Alternative D
Rescission of the Fort Churchill Back Country Byway under Alternative D would have the same effects on CTTM as Alternative C. Because Alternative D would not designate the Marietta or New Pass to Hawthorne Back Country Byways, effects on CTTM for those areas would be the same as Alternative A.

Effects under Alternative E
Effects on CTTM from Back Country Byways would be the same as Alternative B.

CTTM: Effects from National Trails

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would maintain current designations for the California and Pony Express National Historic Trails and the Grimes Point National Recreation Trail. The BLM would continue to provide non-motorized pedestrian access along the trail routes. However, a lack of specific and up-to-date management actions under Alternative A for these trails would limit the BLM's ability to maintain or enhance access.

Effects under Alternatives B, C, D, and E
Under Alternatives B through E, BLM management would expand non-motorized access along the Mickey Canyon and Humboldt Sink to Dayton

segments of the California NHT and the Grimes Point NRT. Pedestrian and other non-motorized access along the Pony Express NHT could be diminished by removal of the NHT designation.

CTTM: Effects from Wilderness Study Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternatives A, B, D, and E
While Alternative A would continue to limit motorized travel to existing ways in WSAs, such a designation would result in little to no restrictions on overall access in the planning area and therefore no impact on CTTM.

Effects under Alternative C
WSAs under Alternative C would be closed to motorized and mechanized travel, thereby prohibiting access in those areas for all but pedestrian, equestrian, and other non-motorized and non-mechanized modes.

CTTM: Effects from Public Health and Safety

Effects Common to All Alternatives
Under all alternatives, BLM management would protect public health and safety by prohibiting all forms of public access on 340 acres in the Harvey's Place area. The closure would continue to be localized and have negligible effects on the BLM's overall CTTM program.

Effects Common to All Alternatives
There are no effects common to all alternatives.

CTTM: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be no Interpretation and Environmental Education management actions under Alternative A that promote or discourage access and therefore no effects Education on CTTM.

Effects under Alternatives B, C, D, and E
Increased public education and interpretive opportunities under Alternatives B through E would increase the public's familiarity with the BLM travel network, including an understanding of and respect for area and route designations. Greater awareness of and purpose for BLM management would benefit CTTM by reducing the prevalence of unauthorized travel (e.g., cross-country travel in

limited designation areas) and minimizing conflict among route users, particularly in high-use areas.

CTTM: Cumulative Effects

Past, present, and reasonably foreseeable future actions (See **Table 4-1**) and conditions within the cumulative impact analysis area that have affected and will likely continue to affect comprehensive travel and transportation management are those that improve, maintain, or impeded users' access to existing roads and trails. The BLM has and presently manages 3,840,300 acres of the planning area as open to motorized travel, while limiting motorized travel to existing routes on another 924,300 acres and closing 6,900 acres to protect sensitive resource areas. Under all alternatives, the BLM would manage areas as open, closed, or limited to motorized travel. The acreages of these areas would vary by alternative with Alternative C resulting in the largest area (1,788,500 acres) being managed as closed to motorized travel. Alternatives B, D, and E would mostly limit motorized and mechanized travel to existing routes. Managing areas as closed to motorized and (where applicable) mechanized travel, decreases access to the travel network. Management actions that would protect or improve vegetation, habitat, and watershed resources would potentially restrict motorized travel and recreational access within WSAs, ACECs, priority wildlife areas, and watersheds, Impacts would vary by alternative

Under all alternatives, unauthorized cross-country motorized travel will continue to impact CTTM. Cumulative impacts from cross-country travel include the creation of new travel routes and the need for additional management, such as enforcement, signage, and education. Unauthorized travel could result in seasonal or permanent closures of areas or designated routes. The BLM would evaluate the need for area closures and designations of travel types to specific routes as part of an implementation-level travel management planning process.

Resource use actions that avoid or exclude new ROW development would also cumulatively affect CTTM by limiting or preventing expansions to the travel network to accommodate future demand. Particularly in urban interface areas, there could be a need to add additional roads. Managing areas as avoidance or exclusion for road ROWs could create congestion on existing routes and decrease overall access. Additional mineral, renewable energy, and other ROW development is also expected to contribute to the demand for new road ROWs.

4.4.6 Lands and Realty

Summary

Management actions that impact the lands and realty program are those that change the amount of BLM-administered lands or that increase or decrease the

BLM's ability to accommodate demand for new land use authorizations (e.g., ROWs and leases). Alternative A would have the least impact on the lands and realty program by allowing for the most new ROW development (see **Table 4-21**, Acres of ROW Avoidance and Exclusion by Alternative) and identifying fewer lands for disposal than any alternative but Alternative C. Greater restrictions on land use authorizations under Alternative B would impact lands and realty more than Alternative A. The identification of more lands for disposal under Alternative B could reduce the amount of BLM-administered lands compared to Alternative A, but land tenure adjustments can also increase management efficiency and benefit the lands and realty program. Alternative C would manage the largest portion of the planning area as ROW exclusion and would not designate any lands for disposal, resulting in the greatest restrictions on land uses and eliminate opportunities to dispose of lands that could be difficult to manage. Alternative D would impact lands and realty similarly to Alternative A, but would allow for more lands disposal and would result in more limitations on land use authorizations by managing a small (2 percent) part of the planning area within a ROW avoidance area. Land disposals would be most likely to occur under Alternative E; however, management of one third of the planning area as ROW avoidance or exclusion criteria could diminish the BLM's ability to meet future ROW demand in those areas.

Table 4-21
Acres of ROW Avoidance and Exclusion by Alternative

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
ROW Avoidance	0	1,195,800	369,300	1,226,100	1,448,200
ROW Exclusion	564,100	580,000	2,675,800	564,100	605,900

Source: BLM 2014

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on lands and realty:

- The nature and types of potential impacts on lands and realty from proposed actions under each alternative are based on:
    1. Numerical data gathered during the planning process
    2. BLM interdisciplinary team knowledge of the resource
    3. Input provided during the public scoping process

  Where possible, this analysis uses quantitative data to describe impacts on lands and realty from other resources and resource use programs. Qualitative information is also used to support

quantitatively-based analysis or where numerical data does not exist. In all cases, best professional judgment is used in evaluating effects on the lands and realty program.

- Land acquisition by the BLM ensures the effective administration of BLM lands and serves the public interest by consolidating land patterns, improving resource management, maintaining access to BLM-administered lands, and supporting community development on adjacent non-BLM administered lands.
- Disposal of BLM-administered lands improves the effectiveness of BLM land management when disposed lands have little or no resource value and disposal would consolidate land patterns, improvement resource management on retained lands, and allow for community and/or agricultural development on adjacent non-BLM administered lands.
- All land not specifically identified for disposal is classified for retention.
- Retaining access to BLM-administered lands for public use and administrative purposes will continue to be a priority of the lands and realty program.
- Trespass limits the effectiveness of BLM land management, but must be addressed on a case-by-case basis to resolve properly.
- The BLM will continue to periodically review existing withdrawals and may recommend revocation of certain withdrawals consistent with the FLPMA. Any recommendation to revoke withdrawal lands should be for the purpose of protecting resources while minimizing impacts on public use.
- To ensure consistent management, the BLM will manage revoked, relinquished, or expired withdrawal lands in a manner consistent with adjacent or nearby lands.
- Where not specifically excluded, the BLM will continue to review and authorize land uses that meet the public need. Specific mitigation criteria such as collocation and low-impact design techniques can minimize adverse impacts on other resources.
- All future utility corridor and ROW proposals on BLM administered lands will be consistent with Regional and County Master Plans, Nevada State Statutes, and the Westwide Energy Corridor Programmatic EIS (including settlement agreement).
- Stipulations may be applied for ROW approval at the project level and are outlined in **Appendix I**, Land and Realty Authorizations Right-of-Way Stipulations.

Indicators

The following indicators were used to assess the degree of impacts on lands and realty in the planning area:

- Acres of BLM-administered lands identified for acquisition, retention, or disposal.
- Acres affected by land withdrawals.
- Acres of BLM-administered surface ownership affected by ROW restrictions (i.e., avoidance or exclusion areas).

Nature and Type of Effects

Effects on the lands and realty program result from land tenure actions that change the land ownership pattern or land authorization actions that affect the number and types of allowable uses. Land tenure actions such as disposal, acquisition, or exchange that create more contiguous areas of BLM-administered lands improve the efficiency of BLM management. Land authorization actions allowing the placement of new ROWs and leases maintain the BLM's ability to accommodate new development such as roads, electrical transmission infrastructure, and communication sites.

Land acquisitions allow the BLM to acquire lands to protect sensitive resources, maintain public values, and improve overall resource management. Land acquisitions improve management efficiency when the acquired lands result in a more consolidated land use pattern and are easily accessible. Lands acquired to protect or improve resource values, such as threatened, endangered, or BLM-sensitive species habitat; riparian areas; wetlands; recreation areas; visually sensitive areas; and cultural resource sites, but that do not result in a more contiguous land pattern can result in decrease management efficiency and increased management costs. Retention of noncontiguous parcels also complicates access, decreases BLM management efficiency, and increases management costs.

Similar to acquisitions, land disposal can result in more contiguous land ownership patterns and increase BLM management efficiency. The BLM lands and realty program would be impacted by disposals that do not consolidate land ownership, do not maintain access to other BLM-administered lands, or decrease the BLM's ability to carry out its multiple-use mandate under the FLPMA.

Restrictions on land use authorizations, such as ROW exclusion and avoidance areas, impact the BLM lands and realty program by limiting or prohibiting use authorizations. A ROW exclusion area is one that is not available for a new ROW under any conditions. In ROW avoidance areas, ROW applications could be submitted, but a project proposed in these areas would be subject to additional requirements. Examples of the additional requirements are resource surveys and reports, construction and reclamation engineering, long-term

monitoring, special design features, special siting requirements, timing limitations, and rerouting. Such requirements could restrict project location, delay availability, limit future access, or increase the cost of energy supply or communications service availability (by delaying or restricting construction of pipelines, transmission lines, communication infrastructure, or renewable energy projects). As a result of special surveys and reports, alternative routes may need to be identified and selected.

Unless specific management is proposed for renewable energy ROWs, the management of areas as ROW exclusion and avoidance areas would decrease the BLM's ability to accommodate new wind and solar energy development. Impacts on industrial-scale solar energy development would be less than on wind due to lower solar energy potential in the planning area (NREL 2008).

Collocation of infrastructure in existing ROWs and disturbed areas reduces land use conflicts and additional land disturbance. Collocation policies also clarify the preferred locations for utilities and simplify processing on BLM-administered lands. However, collocating can limit development options. In addition, collocation may not always be feasible, such as in the situation where the safety clearances needed by previously constructed energy transmission infrastructure are such that no further room is available within the footprint of the existing ROW.

Resource management planning can involve closing areas to motorized travel. Area closures could make certain areas impractical for some types of land uses, such as transmission lines, where access is necessary to serve the land use.

BLM management actions such as limitation on surface disturbance and management as ROW exclusion areas for ACECs, National Historic Trails, and WSR segments would limit the nature and types of lands and realty actions allowed in those areas. Specific impacts include a decrease in the availability of BLM-administered lands for ROW development, leases, and certain temporary activities that may affect the unique resource values, historic or scenic properties, or outstanding and remarkable values, respectively, of those areas.

Proposed management for the following resources would have no impacts on lands and realty and are therefore not discussed in further detail below: air quality, wild horses and burros, wildland fire ecology and management, paleontological resources, forestry and woodland product management, Back Country Byways, public health and safety, and interpretation and education.

Lands and Realty: Effects from Climate Management

Effects Common to All Alternatives

Under all alternatives, national- and state-level policies would continue to promote the use of BLM-administered lands for low-carbon energy sources. Continued emphasis on wind, solar, geothermal and other renewable energy

sources would be expected to increase the number of ROW applications received.

Effects under Alternative A
There would continue to be no climate management under Alternative A and therefore no effects on the lands and realty program.

Effects under Alternative B
Management under Alternative E to reduce human-caused ecosystem stressors and promote habitat connectivity could result in some ROW application being modified or denied if they conflict with these objectives.

Effects under Alternative C
Effects under Alternative C would be similar to Alternative B, but could result in greater restrictions on certain ROWs, particularly in PPMAs.

Effects under Alternative D
Effects under Alternative C would be the same as Alternative B.

Effects under Alternative E
Effects under Alternative C would be the same as Alternative C.

Lands and Realty: Effects from Soil Resources

Effects Common to All Alternatives
Under all alternatives, BLM management would require that activities on sensitive soils develop BMPs or other mitigation measures to reduce impacts on those soils. As appropriate, BMPs and mitigation measures would be added requirements to ROW grants to reduce impacts.

Effects under Alternative A
Because the management of soil resources would not restrict or enhance the BLM's ability to meet lands and realty objectives, there would be no effects from soil resource management under Alternative A.

Effects under Alternative B
Alternative B would avoid new surface disturbing activities on slopes greater than 30 percent, reducing future feasibility of ROW development in those areas unless a project could develop an acceptable erosion control strategy.

Effects under Alternative C
Alternative C would avoid new surface disturbing activities on slopes between 21 percent and 39 percent, which would reduce the feasibility of ROW - development in those areas. Surface disturbance would be prohibited on slopes greater than 40 percent. This would reduce or eliminate future ROW development in those areas unless the project could develop an acceptable erosion control strategy.

Effects under Alternative D
Effects on lands and realty from soil resources management under Alternative D would be the same as Alternative C.

Effects under Alternative E
Effects on lands and realty from soil resources management under Alternative E would be the same as Alternative C.

Lands and Realty: Effects from Water Resources

Effects Common to All Alternatives
For all alternatives, authorized uses would be required to comply with all applicable state water quality standards. Certain lands and realty objectives and/or actions could be supported or restricted by state water law.

Effects under Alternative A
Because the management of water resources would not restrict or enhance the BLM's ability to meet lands and realty objectives, there would be no effects under Alternative A.

Effects under Alternative B
Under Alternative B, the BLM would pursue the acquisition of lands to gain access to water resources. Effects from land tenure adjustments under Alternative B would be consistent with the *Nature and Types of Effects*.

Effects under Alternative C
Effects on land tenure from water resources under Alternative C would be the same as Alternative B. Alternative C would prohibit surface disturbing activities in source water protection zones. This would eliminate the potential for new ROW development in those areas.

Effects under Alternative D
Effects on land tenure from water resources under Alternative D would be the same as Alternative B. Alternative C would avoid surface disturbing activities in source water protection zones. This would reduce the potential for new ROW development in those areas.

Effects under Alternative E
Effects on the lands and realty program from the management of water resources under Alternative E would be the same as Alternative B.

Lands and Realty: Effects from Vegetation Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A

There would continue to be no vegetation resources management actions that would restrict or enhance the BLM's ability to meet lands and realty objectives under Alternative A, therefore there would be no effects under Alternative A.

Effects under Alternative B

Alternative B would prioritize the acquisition of riparian areas and other key surface water system areas. This would have effects similar to those described in the *Nature and Types of Effects* for land tenure adjustments.

Alternative B would decrease opportunities for new ROW development at stream crossings and potentially affect periodic review of ROWs by requiring existing ROW holders to develop weed management plans, inclusive of annual surveys. New travel-related ROWs would be avoided within and next to sensitive riparian or wetland areas.

Where riparian areas are in nonattainment status for PFC, requirements under Alternative B for fencing around riparian areas could increase the number of new ROW applications for fences in those areas.

Effects under Alternative C

Effects from the management of water resources on the lands and realty land tenure program would be similar to Alternative B and consistent with the *Nature and Types of Effects*.

Alternative C would affect the placement of new ROWs by excluding all types of ROWs within 200-feet of riparian and wetland areas, avoiding new travel-related ROWs within a minimum 500-foot buffer surrounding sensitive riparian or wetland areas, and precluding surface disturbance in floodplains and near springs or public water sources. Collectively, these restrictions would limit the BLM's ability to accommodate future demand for these types of ROWs.

Similar restrictions on mineral development near sensitive water resources would indirectly impact the lands and realty program by decreasing the demand for ROWs to serve new mineral development in these areas.

Effects from new fencing-related ROWs and requirements for weed management plans would be the same as Alternative B.

Effects under Alternative D

Effects from the management of water resources on the lands and realty land tenure program would be similar to Alternative B and consistent with the *Nature and Types of Effects*.

Alternative D would limit the placement of new ROWs by avoiding all types of ROWs within riparian and wetland areas and precluding surface disturbance within 200 feet of riparian and wetland areas and within 500 feet of springs.

Collectively, these restrictions would limit the BLM's ability to accommodate future ROW demand in these areas.

Direct effects from new fencing-related ROWs and requirements for weed management plans and indirect effects from restrictions on mineral development would be similar to, but slightly less restrictive than Alternative C.

Effects under Alternative E

Direct effects on lands and realty from vegetation resources management would be the same as Alternative B. Indirect effects from limitations on mineral development would be the same as Alternative C.

Lands and Realty: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Under all alternatives, BLM management for fish and wildlife would result in new or modified fencing ROW applications to allow for wildlife passage. New or modified ROW applications for water troughs for access by wildlife would also be expected. Where there is the potential for impacts on wildlife, development restrictions such as timing limitations and buffers could reduce the BLM's ability to accommodate new ROW demand in certain areas.

Effects under Alternative A

Because there would continue to be no fish and wildlife management actions that would restrict or promote lands and realty objectives, there would be no effects under Alternative A.

Effects under Alternative B

Alternative B would manage migratory waterfowl pathways, raptor nests, and bat habitats as ROW avoidance to protect fish and wildlife. This would affect future ROW development. Additional requirements to maintain habitat connectivity and mitigate disturbance from new surface disturbing activities could limit new ROWs, particularly linear ROWs such as transmission lines, pipelines, and roadways.

Current ROW holders would be required to add markings to fences, towers, and other vertical structures to prevent bird collisions. These requirements would impact the lands and realty program where the requirement would conflict with the terms and conditions of the existing ROW authorization.

Effects under Alternative C

Alternative C would prevent new fencing and exclude new ROWs within priority habitats and migratory waterfowl pathways or near raptor nests and bat habitats. This would result in the greatest impacts on future ROW development. Additional requirements to maintain habitat connectivity and mitigate disturbance from new surface disturbing activities would have effects similar to Alternative B.

Effects on current ROW holders from bird collision mitigation requirements would be the same as Alternative B.

Alternative C would indirectly impact lands and realty by placing NSO stipulations on fluid mineral development and prohibiting mineral material disposal and nonenergy leasing within proximity to migratory bird pathways and within 0.5 miles of raptor and bat nesting sites. Reduced fluid mineral development would reduce the demand for new road, pipeline, transmission line, and other ROWs typically needed to support mineral development.

Effects under Alternative D

Effects on lands and realty from fish and wildlife management under Alternative D would be similar to Alternative B, but would include the potential for additional ROW demand in the urban interface areas for fences or other structures to prevent vehicle collisions with wildlife.

Effects under Alternative E

Alternative E would limit future ROW development by avoiding new ROWs within big game habitats, migratory bird pathways and nesting sites, within 0.25 mile of bat habitats (0.5 mile for large scale ROWs), and by prohibiting new ROWs within 0.5 mile of raptor nest sites. Additional requirements to maintain habitat connectivity and mitigate disturbance from new surface disturbing activities would have effects similar to Alternative B.

Effects on current ROW holders from bird collision mitigation requirements would be the same as Alternative B.

Indirect impacts on lands and realty from restrictions on mineral development would be similar to Alternative C.

Lands and Realty: Effects from Special Status Species Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A would require fencing to protect threatened or endangered plant populations. This could increase the demand for future fencing-related ROWs. Limits on land disposals in threatened or endangered plant species habitats would affect lands and realty where those limitations conflict with BLM land tenure objectives.

Effects under Alternative B

Alternative B would avoid ROW development in PPMA (275,600 acres). This would limit the potential for new ROW development in those areas. Prohibitions on structures 8 feet or taller within 1.8 miles of active lek sites would limit the placement of new electrical transmission lines, communication

towers, metrological towers, and other infrastructure in those buffer areas. Alternative B would also restrict new ROWs for fence construction and could require removal of existing fences within proximity of lek sites in PPMA. Timing restrictions for surface disturbing activities within PPMA could also make certain types of ROW development impractical or infeasible in Greater Sage-Grouse habitat.

Requirements under Alternative B to retain and acquire lands in PPMA would affect the lands and realty land tenure program where those limitations conflict with other BLM land tenure objectives.

Effects under Alternative C

Alternative C would result in the greatest impacts on the lands and realty program by managing PPMA and PGMA (414,200 acres) as ROW exclusions areas. Greater Sage-Grouse management would eliminate the potential for new ROW development on 414,200 acres of the planning area. Removing ROW opportunities in these areas could redistribute the demand for new ROWs to adjacent federal and non-federal lands throughout the planning area.

Prohibitions on tall structures and fences would have the same effects as Alternative B, but also apply to PGMA. Alternative B would also restrict new ROWs for fence construction and could require removal of existing fences within proximity of lek sites in PPMA. Timing restrictions for surface disturbing activities would have similar impacts as Alternative B, but would also apply to PGMA.

Requirements under Alternative B to retain and acquire lands in PPMA and PGMA would affect the lands and realty land tenure program where those limitations conflict with other BLM land tenure objectives.

Closure of PPMA and PGMA to fluid and nonenergy mineral leasing, mineral material disposal, and livestock grazing would indirectly affect lands and realty by reducing ROW demand (e.g., roads, transmission lines, pipelines, and water infrastructure) associated with those land uses.

Effects under Alternative D

Alternative D would manage PPMA and PGMA (414,200 acres) as ROW avoidance. This would decrease demand for new ROW in those areas but indirectly increase demand elsewhere in the planning area. Other direct effects on lands and realty from special status species management would be the same as Alternative B.

Application of an NSO stipulation for fluid mineral development under Alternative D would decrease the likelihood for new ROW applications associated with fluid mineral development.

Effects under Alternative E

Direct effects on lands and realty from special status species management under Alternative E would be the same as Alternative D. Indirect effects from restrictions on mineral development would be similar to Alternative C, but with the exception that NSO stipulations for fluid minerals under Alternative E could lead to minimal future ROW demand.

Lands and Realty: Effects from Cultural Resources Management

Effects Common to All Alternatives

Under all alternatives, the BLM would seek to resolve conflicts with cultural resources from human-caused deterioration. Should a conflict involve an element of the lands and realty program, resolution of the conflict could affect the BLM's ability to meet certain lands and realty program objectives.

Effects under Alternative A

Cultural resources management actions would impact ROW proposals based on site-specific NEPA analysis and development of mitigation measures to protect cultural resources. Operations may be required to re-locate facilities to avoid cultural resources impacts increasing costs and project feasibility. Land tenure adjustments may not be allowed if sensitive cultural resources are present.

Effects under Alternative B

Management of cultural resources under Alternative B would result in localized reductions in new ROW development opportunities by managing a 0.25-mile buffer around historic trails and all historic properties, districts, landmarks, and TCPs as ROW avoidance areas. Avoiding ROW development in these areas could reduce overall demand or shift future ROWs to adjacent areas.

Effects under Alternative C

Alternative C would result in the greatest impacts on the lands and realty program by managing historic properties and districts, landmarks, and TCPs as ROW exclusion and a 2.5-mile buffer around historic trails as ROW avoidance. Restrictions or prohibitions on ROW development could reduce overall demand in restricted areas or shift future ROWs to adjacent areas.

Effects under Alternative D

Effects on lands and realty from cultural resources management under Alternative D would be the same as Alternative B.

Effects under Alternative E

Management of cultural resources under Alternative B would reduce ROW development opportunities by managing a 1 mile buffer around historic trails, the Virginia City National Historic Landmark and other historic properties, landmarks, districts, and TCPs, the 15,900 acre Wyemaha Archaeological District, and the 3,100-acre Pistone site as a ROW avoidance areas. Avoiding ROW development in these areas could reduce demand in the restricted areas

or shift future ROWs to adjacent areas. Limitations and closures for mineral development in these areas would further reduce the demand for new or expanded ROWs.

Lands and Realty: Effects from Visual Resources Management

Effects Common to All Alternatives

Under all alternatives, the BLM would manage resource and resource uses consistent with applicable VRM class objectives. Objectives for VRM Class I and II, which respectively specify preservation and retention of existing landscape characteristics, would have a greater likelihood of limiting the location and/or applying mitigation measures to ROWs and other land use authorizations. Fewer restrictions would be likely in VRM Classes III and IV.

Effects under Alternative A

Alternative A would continue to manage 602,400 acres of the planning area as VRM Class I or II. New ROW development, particularly those for high-visibility features such as transmission lines and roadways, would conflict with VRM objectives in these areas and likely be approved only if re-located or designed to minimize impacts on desired visual resource conditions.

Effects under Alternative B

Similar to Alternative A, managing 620,900 acres of the planning area as Class I or II would affect the location and types of land use authorizations allowed in those areas. In addition to designating VRM Classes I and II, Alternative B would provide VRM Class III and IV objectives for the remainder of the planning area (4,182,100 acres). Visual resource management objectives would support new or expanded ROW development within these areas, particularly within VRM Class IV areas.

Effects under Alternative C

Visual resources management under Alternative C would have the greatest potential to affect lands and realty by managing 1,715,800 acres of the planning area as VRM Class I or II. Effects on lands and realty in these areas would be the same as those described under Alternative A.

Effects under Alternative D

Effects from visual resources management under Alternative D would be similar to Alternative B, but would result in an increased potential for new ROWs by managing 3,986,900 acres as VRM Class IV.

Effects under Alternative E

Effects on lands and realty from Class I and II VRM objectives would be the similar to Alternative C, but would limit ROW development across (1,383,900 acres compared to Alternative C.

Lands and Realty: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be no proposed actions that would restrict or promote lands and realty actions and therefore no effects from caves and cave resources management on lands and realty under Alternative A.

Effects under Alternative B
Management to protect Dynamite and Hidden caves would avoid ROW development within 0.25 miles of Dynamite Cave and 500 feet of Hidden Cave, subsequently limiting the BLM's ability to accommodate future ROW demand in those areas. Improved public education and other outreach for Dynamite Cave that would draw attention and increase visitation to the cave could increase future need for new road ROWs, thereby amplifying the effects from management as ROW avoidance.

Effects under Alternative C
Management to protect Dynamite and Hidden caves would prohibit ROW development within 0.5 miles of Dynamite Cave and 500 feet of Hidden Cave, subsequently eliminating the BLM's ability to accommodate future ROW demand in those areas. Improved public education and other outreach for Dynamite Cave that would draw attention and increase visitation to the cave could increase future need for new road ROWs thereby amplifying the effects of ROW exclusions.

Effects under Alternative D
Limitations on the BLM's ability to accommodate demand for future ROWs near caves and cave resources under Alternative D would lead to the same effects as Alternative B.

Effects under Alternative E
Prohibitions on the BLM's ability to accommodate demand for future ROWs near caves and cave resources under Alternative D would have the same effects as Alternative C.

Lands and Realty: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Under all alternatives, livestock grazing management would promote the removal of retired grazing infrastructure, which could lead to the expiration of existing ROWs associated with that infrastructure.

Effects under Alternative A

Alternative A would continue to pursue land exchanges with the Southern Pacific Railroad and private owners to consolidate BLM-administered lands in the White Hills and Olinghouse allotments. This would improve the efficiency of the BLM lands and realty program where exchanges are successful. Livestock grazing would continue under current levels and be allowed throughout 99 percent (4,796,600 acres) of the planning area. Continued grazing levels would maintain the current demand for range infrastructure-related ROWs. Lands and realty actions would continue to be evaluated for compatibility with livestock grazing management.

Effects under Alternative B

Under Alternative B, 99 percent (4,797,200 acres) of the planning area would be available for livestock grazing and managed at existing use levels. This management would maintain the current demand for range infrastructure-related ROWs and need to evaluate lands and realty actions to minimize conflicts with livestock grazing management.

Effects under Alternative C

Alternative C would reduce the portion of the planning area available for livestock grazing to 2,101,300 acres and reduce AUMs by 110,500 acres. Fewer acres available for livestock grazing would reduce demand for range infrastructure-related ROWs and decrease the need to evaluate lands and realty actions for potential conflicts with livestock grazing management.

Effects under Alternative D

Effects from Livestock Grazing Management on lands and realty under Alternative D would be the similar to Alternative B.

Effects under Alternative E

Effects from Livestock Grazing Management on Lands and Realty under Alternative E would be the similar to Alternative B.

Lands and Realty: Effects from Geology and Mineral Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, demand for new ROWs to support mineral development would continue to affect the lands and realty program. The BLM would continue to recommend 3,700 acres for locatable mineral withdrawal and manage 839,100 acres as closed to fluid mineral leasing. Continued restrictions on mineral development in these areas would indirectly affect the lands and realty program by reducing the demand for roads, transmission lines, pipelines, and other ROWs normally required to support mineral development.

Effects under Alternative B

The nature of effects from Geology and Mineral Management on lands and realty under Alternative B would be similar to Alternative A. Additional NSO stipulations for fluid minerals (404,600 acres) would reduce the demand for new ROWs in those areas.

Effects under Alternative C

Alternative C would decrease ROW demand from mineral development more than any other alternative by placing the most restrictions on all types of mineral development. Compared to Alternative A, there would be 1,242,600 more acres closed and 1,038,500 more acres under NSO stipulations for fluid mineral leasing, over 2 million more acres closed to mineral materials, and over 2 million less acres open to nonenergy leasable minerals.

Effects under Alternative D

The nature of effects from Geology and Mineral Management on lands and realty under Alternative D would be similar to Alternative A. Additional NSO stipulations for fluid minerals (864,800 acres) would reduce the demand for new ROWs in those areas; however, because less areas would be closed to fluid mineral leasing there would be slightly greater demand for ROWs associated with fluid mineral development activities.

Effects under Alternative E

Compared to Alternative A, management under Alternative E would decrease ROW demand from mineral development by closing 168,100 acre) and applying NSO stipulations to 1,151,600 more acres for fluid mineral leasing, closing 1,214,500 more acres to mineral materials, and allowing nonenergy leasable mineral development on 1,047,100 less acres.

Lands and Realty: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Under all alternatives, the BLM would continue to manage recreation and visitor services to minimize conflicts with other resources and resources uses. There would be little to no effects on the lands and realty program where proposed lands and realty actions would complement Recreation and Visitor Services management objectives. Where lands and realty actions have the potential to conflict with recreation objectives (e.g., within RMAs) resolution of these conflicts could affect the location, type, or extent of individual lands and realty decisions.

Effects under Alternatives A, B, C, and D

Under Alternatives A, B, C, and D, there would be no recreation and visitor services management actions that limit or increase demand for ROWs or affect land tenure and therefore no effects on lands and realty.

Effects under Alternative E

In all areas outside the Sand Mountain SRMA, effects from recreation and visitor services management on lands and realty would be the same as Alternative A. Within the Sand Mountain SRMA, new ROW authorizations would be restricted to existing ROW corridors and therefore limit, but not preclude, the placement of new ROWs in that area.

Lands and Realty: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A would continue to manage 80 percent (3,840,300 acres) of the planning area as open to cross-country motorized and mechanized travel with the majority of the remaining area limited to existing routes. While allowing unrestricted cross-country travel would provide unlimited access to ROW and lease locations for construction and maintenance activities, it also raises the potential for disruption or conflict with existing ROWs (e.g., pipelines and transmission lines) and lease sites (e.g., communication infrastructure).

CTTM management under Alternative A would also close 31,800 acres to motorized travel. Because opportunities for motorized access would be eliminated in these areas, there would be limited to no potential for new ROWs or leases.

Effects under Alternative B

Alternative B would limit motorized travel to existing roads and trails throughout 97 percent (4,677,000 acres) of the planning area. Limiting motorized travel to existing routes would maintain access opportunities for future ROWs and leases and therefore have little or no effect on lands and realty. Compared to Alternative A, Alternative B would manage 3,745,000 fewer acres (78 percent) as open to motorized and mechanized travel. This would decrease the potential for conflict with authorized land uses. CTTM management under Alternative B would close 7,700 fewer acres to motorized travel compared to Alternative A. This would maintain future ROW and lease demand in those areas.

Effects under Alternative C

Alternative C would manage the most areas (1,788,500 acres) as closed to motorized travel thereby restricting opportunities to access new ROWs in those areas. In all but 1,300 acres of the remaining portion of the planning area, travel would be limited to existing routes with benefits from reduced conflict similar to those described under Alternative A.

Effects under Alternative D

CTTM under Alternative D would have similar effects on lands and realty as Alternative B by limiting motorized travel to existing routes throughout 99 percent (4,748,400 acres) of the planning area, while closing less than one percent (32,200 acres) to motorized travel.

Effects under Alternative E

Alternative E would have the least effects on lands and realty from CTTM area closures by managing the smallest portion of the planning area (30,300 acres) as closed to motorized travel. Compared to Alternative A, CTTM under Alternative E would provide more opportunities to access to future ROWs. The nature and type of effects from managing 98 percent (4,717,300 acres) of the planning area as limited to existing routes would be the same as Alternative B. Seasonal closures to motorized travel.

Lands and Realty: Effects from Lands and Realty

Effects Common to All Alternatives

Under all alternatives, the BLM would pursue land tenure adjustments that consolidate lands patterns, improve resource management efficiency, maintain community values, and support community development on adjacent private lands. When carried out in this fashion, land tenure adjustments benefit all resource programs and public use of BLM-administered lands. The BLM would also review withdrawals on a case-by-case basis with particular emphasis on revoking Reclamation Newlands lands. Revocation of Reclamation or other withdrawals would increase the BLM's land management obligations, but would have the potential to improve management efficiency.

As a means to minimize land disturbance from future infrastructure development, the BLM would continue to manage 440,000 acres of utility corridors and encourage their use for transmission lines 60kV or larger. Corridors can provide the BLM and public with greater certainty as to the location of future infrastructure, but could discourage future ROW development if development within the corridors is not practical.

Effects under Alternative A

Under Alternative A, the BLM would continue to pursue land use adjustments that would improve management efficiency or that would benefit other resource or resource use programs. Alternative A would continue to recommend 4 percent (179,700 acres) of the planning area for disposal. This would affect the lands and realty program as described in the *Nature and Types of Effects*.

Within 100-yr floodplains, Alternative A would manage all lands for retention. While retention could help preserve water resources it could reduce land management efficiency, especially if parcels are noncontiguous and/or better

managed by another entity. Limitations on new development in these areas would limit the potential for land use authorizations.

Additional land tenure actions under Alternative A would have the potential to improve management efficiency and reduce the potential for future conflicts by consolidating and acquiring lands in the Pine Nut Mountains and Jumbo allotments and disposing of lands near residential areas.

Alternative A would eliminate future ROW development potential on 12 percent (564,100 acres) of the planning area by managing those areas as ROW exclusion areas. While there would be no ROW avoidance areas, Alternative A would limit land use authorizations in high erosion susceptibility areas.

Requirements to collocate communication infrastructure within selected existing lease sites and preferred locations would limit opportunities to expand the communication network to cover additional areas outside current lease sites. However, collocation criteria would have the potential to streamline permitting of new communication infrastructure within existing sites.

Effects under Alternative B

Compared to Alternative A, management under Alternative B would prevent land tenure adjustments that result in a net gain of BLM-administered, but would also seek to acquire lands in PPMA and Washoe County. Alternative B would identify 34 percent (93,700 acres) more land for disposal compared to Alternative A.

Alternative B would manage 580,000 acres as ROW exclusion with effects similar to those under Alternative A and described in the *Nature and Types of Effects*. Management under Alternative B would avoid new ROW development on 1,195,800 acres. Compared to Alternative A, which has no ROW avoidance criteria, Alternative B would result in more limitations on future ROW development. Alternative B would affect the location and extent of future ROW development by emphasizing reuse of existing ROWs on disturbed areas, encouraging collocation and consolidation of ROWs in priority wildlife habitats, and applying standard operating procedures and BMPs for authorizations to mitigate disturbance in select areas.

Effects on the location and extent of new communication infrastructure would be similar to Alternative A, with the exception that Alternative B would allow new development when collocation is not feasible.

Effects under Alternative C

Management under Alternative C would have the greatest potential to increase the amount of BLM-administered lands by not identifying any lands for disposal and seeking acquisition of lands within PPMA and PGMA and within Washoe County. Lands would be acquired only if the acquisition would enhance

resource values and provide for conversation/preservation of habitat and cultural resources.

Management under Alternative C would limit the BLM's ability to meet future ROW demand by managing 2,675,800 acres as a ROW exclusion area. Prohibitions on new ROW development would apply to 2,675,800 acres. Management of an additional 369,300 acres as ROW avoidance would affect lands and realty by limiting the location, extent, and types of new ROW development in those areas. Compared to Alternative A, which has no ROW avoidance criteria, Alternative C would result in more limitations on future ROW development. Alternative C would further affect the location and extent of future ROW development by emphasizing reuse of existing ROWs on disturbed areas, encouraging collocation and consolidation of ROWs in priority wildlife habitats.

Effects on communication leases would be the same as Alternative B.

Effects under Alternative D

Alternative D would have the greatest potential to decrease the amount of BLM-administered lands by identifying 332,500 acres of land for disposal and 31,870 acres for transfer.

Land acquisitions proposed under Alternative D would have similar effects as Alternative B, with the exception that under Alternative D, the BLM would also seek to acquire lands within PGMA.

Exclusions on new ROW development under Alternative D would have the same effects on the lands and realty program as Alternative A. Management of 1,226,100 acres as ROW avoidance would limit the location and type of ROWs in those areas and would decrease the BLM's ability to accommodate new ROW demand in those areas compared to Alternative A. Within urban interface zones, the use of standard operating procedures, BMPs and other design and location requirements would have similar effects as Alternative B in other areas to mitigate disturbance.

Effects on communication leases would be the same as Alternative B.

Effects under Alternative E

Effects on lands and realty from land tenure actions under Alternative E would be similar to Alternative D and would have the potential to reduce the amount of BLM-administered land in the planning area compared to Alternative A. Under Alternative E, the BLM would identify 267,200 acres of land for disposal, which is 35 percent more than Alternative A. An additional 30,670 acres would be identified for transfer with effects similar to those described for disposed lands.

Alternative E would allow the BLM to meet future ROW demand on 57 percent of the planning area. Of the acres, Alternative E would prohibit future ROWs on 605,900 acres and avoid ROWs on 1,448,200 acres. Management that would affect the location and extent of future ROW development from collocation and reuse of existing ROW requirements would have similar effects as Alternative B.

Effects on communication leases would be the same as Alternative B.

Lands and Realty: Effects from Renewable Energy

Effects Common to All Alternatives

Under all alternatives, national priority would continue to prioritize BLM-administered lands for new renewable energy development. This would lead to continued or increased demand for wind and solar energy ROWs.

Effects under Alternative A

The potential for new wind and solar energy development would be highest under Alternative A. The BLM would manage 905,900 acres as solar variance areas for utility-scale development and no acres as wind ROW avoidance areas. Under Alternative A, renewable energy would continue to place a demand on the BLM lands and realty program for new energy ROWs.

Effects under Alternative B

Alternative B would manage 17 percent less acres than Alternative A as solar variance areas for utility-scale development and would avoid wind energy ROWs on 1,220,200 acres. Compared to Alternative A, demand for new wind and solar ROWs would be reduced.

Effects under Alternative C

Alternative C would manage the smallest portion of the planning area (578,400 acres) as solar variance areas for utility-scale development and would place the greatest restrictions on wind energy development by managing 2,073,200 acres as wind energy ROW exclusion areas including the Virginia City National Historic Landmark District ACEC. Compared to Alternative A, the BLM lands and realty program would process fewer applications for new wind and solar energy ROWs.

Effects under Alternative D

Alternative D would manage 233,800 fewer acres than Alternative A as solar variance areas for utility-scale solar development and would avoid wind energy ROWs on 1,228,100 acres. Compared to Alternative A, the demand for new wind and solar ROWs would be reduced.

Effects under Alternative E

Alternative E would manage 276,000 fewer acres than Alternative A as solar variance areas for utility-scale solar development and would avoid wind energy

ROWs on 956,900 acres and would exclude wind energy ROWs on 629,900 acres, including the Virginia City National Historic Landmark District ACEC. Compared to Alternative A, the smaller solar variance areas and larger wind avoidance areas under Alternative E would reduce demand for those types of ROWs.

Lands and Realty: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Because the management of ACECs under all alternatives would be to protect relevant and important resource values, ACEC management priorities would directly and indirectly affect the lands and realty program's ability to carry out land tenure actions or accommodate new ROW demand where those actions would affect the relevant and important values for which the ACEC was designated.

Effects under Alternative A

Alternative A would continue to manage 6 ACECs totaling 21,800 acres. Of these, only the 470-acre Virginia Range Williams Combleaf Botanical ACEC would include management actions that could directly affect the lands and realty program. Land acquisitions would have the potential to consolidate fragmented land holdings within the ACEC and improve BLM land management efficiency in those areas. Noncontiguous lands acquired for habitat protection would decrease BLM management efficiency.

Effects under Alternative B

Alternative B would designate 345,600 more acres of ACECs than Alternative A. ACEC management would directly affect new ROW development potential by excluding new ROWs within the 15,900-acre Stewart Valley Paleontological ACEC, 43,300 acres of the Fox Peak Cultural ACEC, 10,300 acres of the Namazii Wunu Cultural ACEC, and 2,500 acres of the Tagima aša Cultural ACEC. Additionally, Alternative B would avoid ROWs on 278,000 acres in the following ACECs:

- Black Mountain/Pistone Archaeological District ACEC
- Churchill Narrows Buckwheat Botanical ACEC
- Fox Peak Cultural ACEC
- Greater Sand Mountain ACEC
- Grimes Point Archaeological District ACEC
- Incandescent Rocks Scenic ACEC
- Namazii Wunu Cultural ACEC
- Pah Rah Basin Petroglyph ACEC
- Ruhenstroth Paleontological ACEC

- Tagim aša Cultural ACEC
- Virginia City National Landmark Historical District ACEC

Compared to Alternative A, greater restrictions on ROW development from ACEC management under Alternative B would limit ROW development potential in those areas and could redirect the demand for future development to adjacent areas.

Effects under Alternative C

ACEC management under Alternative C would have the greatest effects on the lands and realty program by prohibiting or restricting new ROWs within ACEC boundaries. Alternative C would designate 16 percent (786,270 acres) of the planning area as ACECs. This would result in 764,470 more acres of ACECs than Alternative A.

Managing the following ACECs as ROW exclusion areas would eliminate ROW development potential on 644,500 acres:

- Black Mountain/Pistone Archaeological District ACEC
- Carson wandering skipper ACEC
- Churchill Narrows Buckwheat Botanical ACEC
- Clan Alpine Greater Sage-Grouse ACEC (for linear types of ROWs only)
- Desatoya Greater Sage-Grouse ACEC
- Dixie Valley Toad ACEC
- Fox Peak Cultural ACEC
- Greater Sand Mountain ACEC
- Grimes Point Archaeological District ACEC
- Incandescent Rock Scenic ACEC
- Lassen Red Rocks Scenic ACEC
- Namazii Wunu Cultural ACEC
- Pah Rah Basin Petroglyph ACEC
- Pine Nut Bi-State Sage Grouse ACEC
- Pine Nut Mountains Williams Combleaf Botanical ACEC
- Ruhenstroth Paleontological ACEC
- Sand Springs Desert Study Area ACEC
- Stewart Valley Paleontological ACEC
- Tagim aša Cultural ACEC

- Virginia Mountains Greater Sage-Grouse ACEC

Within the following ACECs proposed under Alternative C, new ROWs would be avoided (42,600 acres):

- Churchill Narrows Buckweat Botanical ACEC
- Fox Peak Cultural ACEC
- Greater Sand Mountain ACEC
- Grimes Point Archaeological District ACEC
- Stewart Valley Paleontological ACEC
- Virginia City National Landmark Historic District ACEC

For the Sand Mountain ACEC, where new ROWs would be restricted to existing corridors, the lands and realty program could only accommodate new ROW demand if the proposed development would not conflict with existing infrastructure in the corridor.

Direct Impacts from restrictions on new land use authorizations under Alternative C would be consistent with those discussed within the *Nature and Types of Effects*. Greater restrictions on ROW development from ACEC management under Alternative C could also indirectly affect non-ACEC lands by redirecting the demand for future development to those adjacent areas.

Effects under Alternative D

Alternative D would designate 11 ACECs that would cover 180,000 acres of the planning area. Management of these ACECs would result in more limitations on ROW development compared to Alternative A. The following ACECs would manage a total of 113,500 acres as ROW avoidance areas:

- Black Mountain/Pistone Archaeological District ACEC
- Grimes Point Archaeological District ACEC
- Incandescent Rocks Scenic ACEC
- Pah Rah High Basin Petroglyph ACEC
- Ruhenstroth Paleontological ACEC
- Tagim aša Cultural ACEC

Impacts from avoiding new land use authorizations under Alternative D would be consistent with those discussed within the *Nature and Types of Effects*.

Effects under Alternative E

Alternative E would manage for three more ACECs than Alternative A for a total of 82,800 acres of ACECs. Management of these ACECs would result in more limitations on future ROW development compared to Alternative A,

including by eliminating new ROW development potential on 67,100 acres within the following ACECs:

- Fox Peak Cultural ACEC (Job Peak WSA portion only)
- Pah Rah Basin Petroglyph ACEC
- Ruhenstroth Paleontological ACEC
- Stewart Valley Paleontological ACEC

Management of the 2,100-acre Grimes Point Archaeological District ACEC would reduce the likelihood of new ROWs within that ACEC boundary.

Impacts from excluding or avoiding new land use authorizations under Alternative E would be consistent with those discussed within the *Nature and Types of Effects*.

Lands and Realty: Effects from National Trails Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be no specific management for National Trails under Alternative A and therefore no effects on lands and realty.

Effects under Alternative B
Alternative B would result in more NHT-related restrictions on new land use authorizations than Alternative A by managing 38,200 acres (0.25 miles on either side) associated with the California NHT and Pony Express NHT as ROW avoidance areas. Alternative B would manage an additional 1,000 acres associated with the Pony Express NHT as ROW exclusion areas. Further restrictions on noise could limit the types of uses permitted within proximity to those trails.

Effects under Alternative C
Alternative C would result in the most NHT-related restrictions on new land use authorizations by managing 257,400 acres (2.5 miles on either side) associated with the Pony Express and California NHTs as ROW avoidance and 238,500 acres as ROW exclusion. Further restrictions on noise could limit the types of uses permitted within proximity to those trails.

Effects under Alternative D
Effects from NHT management on lands and realty under Alternative D would be the same as Alternative B.

Effects under Alternative E
Alternative E would result in more NHT-related restrictions on new land use authorizations than Alternative A by managing 172,500 acres (1 mile on either side) associated with the California NHT and Pony Express NHT as ROW avoidance areas and 6,600 acres associated with the Pony Express NHT as ROW exclusion areas. Further restrictions on noise could limit the types of uses permitted within proximity to those trails.

Lands and Realty: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage three segments of the East Fork Carson River as eligible for inclusion in the NWSRS; however, because Alternative A would not specify any actions for those WSRs, there would be no impacts on lands and realty.

Effects under Alternative B
Because no river segments would be listed as eligible for inclusion in the NWSRS under Alternative B, there would be no impacts on lands and realty.

Effects under Alternative C
Alternative C would identify three segments of the East Fork Carson River as eligible for inclusion in the NWSRS. Compared to Alternative A, WSR management would result in greater restrictions on lands and realty by managing segment 1 as ROW exclusion and segments 2 and 3 as ROW avoidance. Effects from limiting and excluding ROW development include those described within the *Nature and Types of Effects*.

Effects under Alternatives D and E
Effects from WSR management on lands and realty under Alternatives D and E would be the same as Alternative B.

Lands and Realty: Effects from Wilderness Study Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternatives A, B, and D
BLM management of WSAs, which protect naturalness and preserve opportunities for solitude and primitive recreation, would exclude those areas from any future permanent ROW development or other land use that would result in surface disturbance. If released from WSA consideration, areas would be open to ROW development. Limitations on other surface disturbing

activities (e.g., mineral development and OHV use) in these areas would indirectly reduce or eliminate demand for new ROWs to support those uses.

Effects under Alternatives C and E
Alternatives C and E would manage WSAs as ROW exclusion areas with no opportunities for the lands and realty program to meet any future ROW demand in those areas. If released from consideration as WSAs, the Carson Iceberg, Clan Alpine, and Desatoya Mountains areas would continue to be managed as ROW exclusion areas with the same effects as those described within the *Nature and Types of Effects*. Limitations on other surface disturbing activities (e.g., mineral development and OHV use) in these areas would indirectly reduce or eliminate demand for new ROWs to support those uses.

Lands and Realty: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A, B, D, and E
There would be no BCWCAs under Alternatives A, B, D, or E and therefore no effects on lands and realty.

Effects under Alternative C
Under Alternative C, the BLM would manage 17 percent (817,800 acres) of the planning areas as BCWCAs, within which new ROW development would be excluded unless development could be placed within existing ROWs. Compared to Alternative A, prohibitions on new ROWs in BCWCAs would reduce the ability of the BLM to accommodate demand in those areas and could redirect demand to adjacent areas.

Lands and Realty: Effects from Tribal Interests

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A, B, and D
There would be no effects from Tribal Interests on lands and realty under Alternatives A, B, or D.

Effects under Alternative C
Alternative C would avoid new ROWs within a 1-mile radius of a burial site. This would reduce the ability of the BLM to accommodate future ROW demand in those areas.

Effects under Alternative E
Effects on lands and realty from Tribal Interests under Alternative E would be the same as Alternative C.

Lands and Realty: Cumulative Effects

Cumulative impacts on lands and realty are the result of past, present, and reasonably foreseeable future actions within and next to the planning area that increase or decrease demand for land tenure actions and land use authorizations (See **Table 4-1**). Demand for land tenure adjustments and land use authorizations have traditionally been high within the planning area, mainly as a result of urbanization, fluid mineral development, and renewable energy development. As urban areas such as Reno/Sparks, Carson City, Minden/Gardnerville, Fernley, Fallon, and Dayton continue to grow, public lands will continue to be considered as a source of geothermal, wind, biomass, and solar energy as well as areas of potential future urban development. Concurrent management of public lands to protect sensitive biological, historical, cultural, and visual resources would continue to limit the locations where new authorizations could be approved and where lands would be retained or disposed.

Urbanization in the planning area contributes to cumulative effects on lands and realty by increasing pressures on public lands for future urban development (i.e., via disposal or transfer), ROWs, leases, and public uses under the R&PP Act. In addition to community-level demands that seek the use of public lands for open space and flood protection, expanding urban footprints are increasing the demand for land tenure adjustments to accommodate future urban growth. Although there has been a 29,300 acre net increase in the amount BLM-administered lands in the planning area since 2001, land disposals and transfers to support urban growth are expected in the future. Land acquisitions and transfers to protect sensitive resource areas, such as riparian areas, sensitive species habitat, and isolated parcels in ACECs and other special management areas may offset any disposals or result in a net increase in BLM-administered lands.

Fluid mineral (mainly geothermal) development has occurred, is occurring, and will continue to occur on both federal and nonfederal mineral estate lands within the planning area. These actions have and will continue to place demands on the BLM lands and realty program through ROW applications for transmission lines, roads, and pipelines. There are currently 148 geothermal leases in the planning area with an active geothermal power production of 183 MW (BLM 2013f). Exploration drilling on these leases is expected to increase future geothermal energy production and therefore the need for additional land use authorizations.

The potential for renewable energy development in the planning area has traditionally contributed to the number of ROW applications received. The prospect of profitable wind energy development projects led to 39 applications being received in the planning area since 2002; and while most applications led to testing and monitoring projects, all but three have been allowed to expire by

the applicants. Only one utility-scale wind development project has a pending status.

The National Renewable Energy Laboratory data (NREL 2013) shows that portions of the planning area also have moderate to high potential for solar energy, particularly in the southern portion of the planning area. Since 2002, there have been two applications for solar development. Luning Solar near Hawthorne was issued a ROW grant for a 575-acre project in July, 2010 but construction has not started.

As the demand for renewable sources of energy increases, as many as four new wind and solar development projects are expected in the planning area. These projects would require ROWs and numerous supporting land use authorizations and would therefore cumulatively affect the lands and realty program.

CTTM actions that would close areas to motorized travel could impact ROW development where closures would restrict access to a potential ROW location. In areas open to motorized travel and livestock grazing, there would continue to be the potential for conflicts with existing and proposed ROWs, communication leases, and other authorized land uses.

The incremental effects from the demands on lands and realty would vary by alternative due to varying levels of management to protect biological, cultural, and visual resources. In general, Alternatives A and B specify fewer ROW avoidance or exclusion areas to protect sensitive species, wildlife habitats, and cultural resources. Under these alternatives, lands and realty actions would be expected to increase. Alternative C is the most restrictive and would have the greatest potential to incrementally decrease lands and realty actions over time. Alternatives D and Alternative E, which take more balanced approaches to resource and resource use management, would have incrementally less effects on lands and realty.

Of all the resource programs addressed under Alternatives B through E, Special Status Species has the greatest potential to affect future lands and realty activity, particularly under Alternative C. Cumulative effects from GRSG conservation measures within the planning area and on BLM-administered lands throughout the Great Basin would have the potential to reduce or eliminate certain types of ROW development and require land tenure actions to increase the amount of GRSG habitat in public ownership. Closures of areas to mineral development, renewable energy, road development, and grazing would further reduce demand for land use authorizations.

4.4.7 Renewable Energy

Summary

Management actions that impact renewable energy (i.e., solar, wind and biomass) are those that increase or decrease the amount of public land available to accommodate demand for new renewable energy development. Effects on renewable energy are greatest in areas of high renewable energy resource potential. For example, excluding wind energy ROWs in an area of high wind resource potential would result in a greater impact on renewable energy than the same management in an area of low wind resource potential.

Alternative A would have the least impact on renewable energy by allowing for wind and solar energy development on the largest areas with moderate to high resource potential. For Alternatives B through E, because proposed management would result in little to no change in the availability of moderate to high resource potential areas for future development, effects on renewable energy under those alternatives would be similar or the same across those alternatives. For example, the total areas of Class 5, 6 and 7 wind power classification areas within ROW avoidance areas across Alternatives B through E would be the same, resulting in the same limitations on wind energy development in those areas across alternatives. For solar energy development, Alternative C would be the most restrictive of all the alternatives by managing the smallest area of good and moderate solar resource potential within a solar variance area. The size of solar variance areas under Alternatives B, D, and E would result in similar opportunities for new utility-scale solar development, with Alternative B managing the largest areas of good and moderate solar resource potential within solar variance areas and Alternative E managing the least.

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on renewable energy:

- The nature and types of potential impacts on renewable energy from proposed actions under each alternative are based on:
    1. Numerical data gathered during the planning process, particularly data related to wind and solar resource potential
    2. Reasonable Foreseeable Development assumptions for wind, solar, and biomass
    3. BLM interdisciplinary team knowledge of the resource
    4. Input provided during the public scoping process

Where possible, this analysis uses quantitative data to describe impacts on renewable energy from other resources and resource use programs. Qualitative information is also used to support quantitatively-based analysis or where numerical data does not exist. In all cases, best professional judgment is used in evaluating effects.

- National- and state-level policies will continue to encourage renewable energy development on public lands, which will subsequently maintain or increase demand for new solar, wind, and biomass energy projects within the planning area.
- Within solar variance areas, as identified in the BLM Solar PEIS (BLM 2012l), the probability of future utility-scale solar energy development is greater than in areas outside variance boundaries.
- Unless specific management is proposed for renewable energy ROWs, the management of areas as ROW exclusion and avoidance areas would decrease the BLM's ability to accommodate new wind and solar energy development. However, only in areas where renewable energy resource potential exists would there be a quantifiable impact on renewable energy.
- All future renewable energy ROW proposals on BLM administered lands will be consistent with Regional and County Master Plans, Nevada State Statutes, and the BLM Solar (BLM 2012l) and Wind PEIS (BLM 2005b) documents.

Indicators

The following indicators were used to assess the degree of impacts on renewable energy in the planning area:

- Management actions (e.g., ROW avoidance or exclusion areas), particularly in relation to renewable energy potential that would increase or decrease the BLM's ability to accommodate future renewable energy demand.

Nature and Type of Effects

Impacts on renewable energy occur as a result of restrictions on the location, type, or extent of renewable energy development, such as ROW exclusion and avoidance areas. The degree of impacts on renewable energy in avoidance and exclusion areas would be dependent on the resource potential in those areas. A ROW exclusion area is one that is not available for a new ROW under any conditions. Impacts on renewable energy would be greatest where high resource potential coincides with a ROW exclusion area. In ROW avoidance areas, ROW applications for new renewable energy development could be submitted, but a project proposed in these areas would be subject to additional requirements. Examples of the additional requirements are resource surveys and reports, construction and reclamation engineering, long-term monitoring,

special design features, special siting requirements, timing limitations, and rerouting. Such requirements could affect the project scope, delay or reduce energy availability, limit future access, and increase project costs. As a result of special surveys and reports, alternative development locations may need to be identified and selected.

Proposed management for the following resources would have no impacts on renewable energy and are therefore not discussed in further detail below: air quality, wild horses and burros, wildland fire ecology and management, paleontological resources, forestry and woodland product management, livestock grazing, geology and minerals management, Back Country Byways, public health and safety, and interpretation and education.

Renewable Energy: Effects from Climate Management

Effects Common to All Alternatives
Under all alternatives, national- and state-level policies would continue to encourage the use of public lands for low- or no-carbon energy sources. Continued emphasis on wind, solar, biomass and other renewable energy sources would be expected to increase the number of renewable energy ROW applications received.

Effects under Alternative A
There would continue to be no climate management under Alternative A and therefore no effects on the lands and realty program.

Effects under Alternative B
Management under Alternative B to reduce human-caused ecosystem stressors and promote habitat connectivity could result in some renewable energy ROW applications being modified or denied if they conflict with these objectives.

Effects under Alternative C
Effects under Alternative C would be similar to Alternative B, but could result in greater restrictions, particularly in PPMAs.

Effects under Alternative D
Effects under Alternative C would be the same as Alternative B.

Effects under Alternative E
Effects under Alternative E would be the same as Alternative C.

Renewable Energy: Effects from Soil Resources

Effects Common to All Alternatives
Under all alternatives, BLM management would require that activities on sensitive soils develop BMPs or other mitigation measures to reduce impacts on

those soils. These requirements could affect feasibility of wind energy ROWs and increase development costs.

Effects under Alternative A
Because the management of soil resources would not restrict or enhance the BLM's ability to meet renewable energy objectives, there would be no effects from soil resources management under Alternative A.

Effects under Alternative B
Alternative B would avoid new surface disturbing activities on slopes greater than 30 percent, This would reduce the potential for future renewable energy ROW development in those areas unless the project could develop an acceptable erosion control strategy. Because higher wind resource potential is located in mountainous terrain and solar development requires a continuously flat surface, the potential for impacts would be greatest for wind energy development and negligible or none for solar development.

Effects under Alternative C
Alternative C would avoid new surface disturbing activities on slopes between 21 percent and 39 percent and prohibit development on slopes greater than 40 percent. This would have the potential to reduce or eliminate future renewable energy development in those areas unless the project could develop an acceptable erosion control strategy. Because higher wind resource potential is located in mountainous terrain and solar development requires a continuously flat surface, the potential for impacts would be greatest for wind energy development and negligible or none for solar development.

Effects under Alternative D
Effects on renewable energy from soil resources management under Alternative D would be the same as Alternative C.

Effects under Alternative E
Effects on renewable energy from soil resources management under Alternative E would be the same as Alternative C.

Renewable Energy: Effects from Water Resources

Effects Common to All Alternatives
For all alternatives, renewable energy projects would be required to comply with all applicable state water quality standards. Certain renewable energy development projects could be supported or restricted by state water law.

Effects under Alternative A
Because the management of water resources would not restrict or enhance the BLM's ability to meet renewable energy demand, there would be no effects under Alternative A.

Effects under Alternative B
Effects on renewable energy from water resources management under Alternative B would be the same as Alternative A.

Effects under Alternative C
Alternative C would prohibit surface disturbing activities in source water protection zones. This would eliminate the potential for siting new renewable energy development in those areas.

Effects under Alternative D
Effects on renewable energy development from the management of water resources under Alternative D would be the same as Alternative C.

Effects under Alternative E
Effects on renewable energy development from the management of water resources under Alternative E would be the same as Alternative B.

Renewable Energy: Effects from Vegetation Resources

Effects Common to All Alternatives
All alternatives would require renewable energy operations to have a noxious weed program in place to manage and treat invasive plants and noxious weeds.

Effects under Alternative A
There would continue to be no vegetation resources management actions under Alternative A that would restrict or enhance the BLM's ability to meet renewable energy development demands, and therefore no effects.

Effects under Alternative B
Effects on renewable energy development from the management of vegetation resources under Alternative B would be the same as Alternative A.

Effects under Alternative C
Alternative C would affect the placement of new renewable energy ROWs by excluding all types of ROWs within 200-feet of riparian and wetland areas and precluding surface disturbance in floodplains and near springs or public water sources. Collectively, these restrictions would limit the BLM's ability to accommodate future demand for renewable energy ROWs in those areas. Alternative C could be particularly impactful for solar energy projects, which, because they require a continual water source, are often located near existing water resources.

Effects under Alternative D
Alternative D would limit the placement of new renewable energy ROWs within riparian and wetland areas and precluding surface disturbance within 200 feet of riparian and wetland areas and within 500 feet of springs. Effects would be similar to those described for Alternative C.

Effects under Alternative E
Direct effects on renewable energy development from vegetation resources management would be the same as Alternative A.

Renewable Energy: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Because there would continue to be no fish and wildlife management actions that would restrict or promote lands and realty objectives, there would be no effects under Alternative A.

Effects under Alternative B
Alternative B would reduce the potential for future renewable energy development in migratory waterfowl pathways, raptor nests, and bat habitats. Additional requirements to maintain habitat connectivity and mitigate disturbance from new surface disturbing activities could indirectly affect renewable energy development by limiting linear ROWs, such as transmission lines, needed to support renewable energy projects.

Effects under Alternative C
Alternative C would lead to the greatest potential for impacts on future renewable energy development by excluding new ROWs within priority habitats and migratory waterfowl pathways or near raptor nests and bat habitats. Additional requirements to maintain habitat connectivity and mitigate disturbance from new surface disturbing activities would have effects similar to Alternative B.

Effects under Alternative D
Effects on lands and realty from fish and wildlife management under Alternative D would be similar to Alternative B.

Effects under Alternative E
Alternative E would have the potential to limit future renewable energy development by avoiding new ROWs within big game habitats, migratory bird pathways and nesting sites, within 0.25 miles of bat habitats (0.5 miles for large scale ROWs), and by prohibiting new ROWs within 0.5 miles of raptor nest sites. Additional requirements to maintain habitat connectivity and mitigate disturbance from new surface disturbing activities would lead to potential effects similar to Alternative B.

Renewable Energy: Effects from Special Status Species Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A

There would continue to be no special status species management actions under Alternative A that would restrict or enhance the BLM's ability to meet renewable energy development demands and therefore no effects.

Effects under Alternative B

Alternative B would avoid ROW development in PPMA (275,600 acres). This would limit the potential for new renewable energy development in those areas. Prohibitions on structures 8 feet or taller within 1.8 miles of active lek sites would limit the placement of new wind turbines and associated infrastructure, such as transmission lines, in those buffer areas. Timing restrictions for surface disturbing activities within PPMA could also make renewable energy development impractical or infeasible in Greater Sage-Grouse habitat.

Effects under Alternative C

Alternative C would result in the greatest potential for impacts on renewable energy development by managing PPMA and PGMA (414,200 acres) as a ROW exclusion area. Eliminating development opportunities in these areas could redistribute demand to adjacent federal and non-federal lands throughout the planning area.

Prohibitions on tall structures and timing restrictions for surface disturbing activities would have the same potential for effects as Alternative B, but also apply to PGMA.

Effects under Alternative D

Alternative D would manage the 414,200 acres within PPMA and PGMA as ROW avoidance. This would decrease the prospect of renewable energy development in those areas, while potentially indirectly increasing demand elsewhere in the planning area. The potential for other direct effects on lands and realty from special status species management would be the same as Alternative B.

Effects under Alternative E

The potential for direct effects on lands and realty from special status species management under Alternative E would be the same as Alternative D.

Renewable Energy: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Proposed fuels treatments under all alternatives, including removal of vegetation, could provide a consistent feedstock supply to support new biomass energy development.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Renewable Energy: Effects from Cultural Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Because there would continue to be are no cultural resources management actions that would restrict or promote renewable energy development, there would be no effects under Alternative A.

Effects under Alternative B
Management of cultural resources under Alternative B would have the potential to result in localized reductions in new renewable energy development opportunities by managing a 0.25-mile buffer around historic trails and all historic properties, districts, landmarks, and TCPs as ROW avoidance areas. Avoiding ROW development in these areas could reduce development opportunities or shift future development proposals to adjacent federal and non-federal lands depending on resource potential.

Effects under Alternative C
Alternative C would result in the greatest potential for impacts on renewable energy development by managing historic properties and districts, landmarks, and TCPs as ROW exclusion and a 2.5-mile buffer around historic trails as ROW avoidance. Restrictions or prohibitions on ROW development could reduce development opportunities or shift future development to adjacent areas depending on resource potential.

Effects under Alternative D
Effects on renewable energy from cultural resources management under Alternative D would be the same as Alternative B.

Effects under Alternative E
Management of cultural resources under Alternative B would decrease the amount of land available for renewable energy development by managing a 1 mile buffer around historic trails, historic properties, landmarks, districts, and

TCPs, the 15,900 acre Wyemaha Archaeological District, and the 3,100-acre Pistone site as ROW avoidance areas. Avoiding ROW development in these areas could reduce demand in the restricted areas or shift future ROWs to adjacent areas.

Alternative E would also exclude new wind energy ROWs within the Virginia City National Historic Landmark District. Prohibitions on wind energy would eliminate future wind energy development potential within the District and could shift future development to adjacent federal and non-federal areas depending on resource potential.

Renewable Energy: Effects from Visual Resources Management

Effects Common to All Alternatives

Under all alternatives, the BLM would manage resource and resource uses consistent with applicable VRM class objectives. Objectives for VRM Class I and II, which respectively specify preservation and retention of existing landscape characteristics, would have a greater likelihood of limiting the location and/or applying mitigation measures to renewable energy development projects. Fewer restrictions would be likely in VRM Classes III and IV.

Effects under Alternative A

Alternative A would continue to manage 13 percent (602,400 acres) of the planning area as VRM Class I or II. New renewable energy development, particularly wind and solar energy projects, would conflict with VRM objectives in these areas and likely be approved only if re-located to VRM Class III or IV areas.

Effects under Alternative B

Similar to Alternative A, management of 13 percent (620,900 acres) of the planning area as VRM Class I or II would affect the location and types of renewable energy development allowed in those areas. In addition to designating VRM Classes I and II, Alternative B would provide VRM Class III and IV objectives for the remainder of the planning area (4,182,400 acres). Visual resource management objectives would support new renewable energy development within these areas, particularly within VRM Class IV areas.

Effects under Alternative C

Visual resources management under Alternative C would have the greatest potential to limit renewable energy development by managing 1,715,800 acres VRM Class I or II. Effects on renewable energy development in these areas would be the same as those described under Alternative A.

Effects under Alternative D

Effects from visual resources management under Alternative D would be similar to Alternative B, but could lead to more renewable energy development by managing 3,986,900 acres as VRM Class IV.

Effects under Alternative E
Effects on renewable energy from Class I and II VRM objectives would be similar to Alternative B, but approximately 475,000 more acres would be managed as VRM Class II, resulting in more restrictions on renewable energy development.

Renewable Energy: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be no proposed actions that would restrict or promote renewable energy development and therefore no effects from caves and cave resources management under Alternative A.

Effects under Alternative B
Management to protect Dynamite and Hidden Caves would avoid new renewable energy development within 0.25 miles of Dynamite Cave and 500 feet of Hidden Cave, subsequently limiting the BLM's ability to accommodate future demand in those areas.

Effects under Alternative C
Management to protect Dynamite and Hidden caves would prohibit ROW development within 0.5 miles of Dynamite Cave and 500 feet of Hidden Cave, subsequently eliminating the BLM's ability to accommodate future renewable energy development demand in those areas.

Effects under Alternative D
Limitations on the BLM's ability to accommodate future renewable energy demand near caves and cave resources under Alternative D would lead to the same effects as Alternative B.

Effects under Alternative E
Prohibitions on the BLM's ability to accommodate demand for future renewable energy development near caves and cave resources under Alternative D would have the same effects as Alternative C.

Renewable Energy: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Forestry and Woodland Product Management under Alternative A would continue to allow for the sale of standing green pinyon and juniper as well as dead standing and down fuel woods. These forest products would continue to

have the potential to support localized biomass energy production. Because of high costs to transport wood products, any new biomass energy facilities would likely be located within close proximity to the biomass resource.

Effects under Alternative B

Forestry and Woodland Product Management under Alternative B would allow for the extraction and utilization of vegetative products to supply biomass facilities. Because of high costs to transport wood products, any new biomass energy facilities would likely be located within close proximity to the biomass resource.

Effects under Alternative C

Alternative C would not support vegetation extraction for public or biomass energy use. This would eliminate opportunities for new biomass energy production in the planning area.

Effects under Alternative D

Alternative D would result in the development of a utilization plan for vegetation products. This could allow for new biomass facilities if the plan specifies extraction and utilization levels adequate to support biomass energy development.

Effects under Alternative E

Forestry and Woodland Product Management under Alternative E would allow for the extraction and utilization of vegetative products to supply small-scale (less than 3 megawatt) biomass facilities. Because of high costs to transport wood products, any new biomass energy facilities would likely be located within close proximity to the biomass resource.

Renewable Energy: Effects from Livestock Grazing Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Management under Alternative A would allow livestock grazing to continue under current levels throughout 99 percent (4,796,600 acres) of the planning area. There would continue to be 905,400 acres (99 percent) of solar variance areas proposed under Alternative A overlapping open allotments. This would maintain the potential for conflict between livestock and future solar development within those variance areas.

Effects under Alternative B

Effects on renewable energy under Alternative B would be similar to Alternative A, but would apply to a smaller (773,400 acres) variance area.

Effects under Alternative C

Alternative C would reduce the portion of the planning area available for livestock grazing by 2,695,300 acres and reduce AUMs by 110,500 acres. Of the 578,400 acres of solar variance areas under Alternative C, 330,110 acres would be within open allotment areas. Compared to Alternative A, management under Alternative C would reduce the potential for renewable energy development projects to conflict with livestock grazing management.

Effects under Alternative D

Of the acres of solar variance areas under Alternative D, 672,100 acres would be within open grazing allotment areas, therefore effects would be the same as Alternative A, but apply to a smaller area.

Effects under Alternative E

Effects on renewable energy under Alternative E would be the same as Alternative D, except that Alternative E would manage 629,400 acres of solar variance areas.

Renewable Energy: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Under all alternatives, the BLM would continue to manage recreation and visitor services to minimize conflicts with other resources and resources uses. There would be little to no effects on renewable energy where proposed development would not conflict with Recreation and Visitor Services management objectives. Where renewable energy development would have the potential to conflict with recreation objectives (e.g., within RMAs) resolution of these conflicts could affect the location and/or extent of renewable energy development proposals.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Renewable Energy: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would continue to manage 80 percent (3,840,300 acres) of the planning area as open to cross-country motorized and mechanized travel with the majority of the remaining area limited to existing routes. While allowing unrestricted cross-country travel would provide unlimited access to future renewable energy project sites for construction and maintenance activities, it also raises the potential for disruption or conflict.

CTTM management under Alternative A would also close 38,700 acres to motorized travel. Because opportunities for motorized access would be eliminated in these areas, there would be limited to no potential for new or expanded renewable energy development in these areas.

Effects under Alternative B
Alternative B would limit motorized travel to existing roads and trails throughout 97 percent (4,677,000 acres) of the planning area. Limiting motorized travel to existing routes would maintain access opportunities for future renewable energy ROWs and therefore have little or no effect on renewable energy. Compared to Alternative A, Alternative B would manage 3,745,000 fewer acres (78 percent) as open to motorized and mechanized travel. This would decrease the potential for conflict with renewable energy projects. Alternative B would close 7,700 less acres to motorized travel compared to Alternative A. This would maintain future renewable energy ROW opportunities in those areas.

Effects under Alternative C
Alternative C would manage the most areas (1,788,500 acres) as closed to motorized travel thereby restricting opportunities to access new renewable energy ROWs in those areas. In all but 1,300 acres of the remaining portion of the planning area, travel would be limited to existing routes with benefits from reduced conflict with renewable energy similar to those described under Alternative A.

Effects under Alternative D
CTTM under Alternative D would have similar effects on renewable energy as Alternative B by limiting motorized travel to existing routes throughout 99 percent (4,748,400 acres) of the planning area, while closing less than one percent (32,200 acres) to motorized travel.

Effects under Alternative E

Alternative E would have the least effects on renewable energy from CTTM area closures by managing the smallest portion of the planning area (30,300 acres) as closed to motorized travel. Compared to Alternative A, CTTM under Alternative E would provide more opportunities to access to future renewable energy ROWs. The nature and type of effects from managing 98 percent (4,717,300 acres) of the planning area as limited to existing routes would be the same as Alternative B.

Renewable Energy: Effects from Lands and Realty

Effects Common to All Alternatives

As a means to minimize land disturbance from future infrastructure development, the BLM would continue to manage 440,000 acres of utility corridors and encourage their use for transmission lines 60kV or larger. Corridors can provide potential renewable energy developers with greater certainty as to the location of future infrastructure and would increase the likelihood of renewable energy projects being sited next to these corridors.

Effects under Alternative A

Alternative A would continue to recommend 4 percent (179,700 acres) of the planning area for disposal. This would eliminate opportunities for the BLM to accommodate renewable energy development on disposed lands.

Alternative A would also exclude ROW development potential on 12 percent (564,100 acres) of the planning area. However, none of these acres have development potential for solar energy development. All areas with high solar potential and having a wind power classification of 3 or higher would continue to be open to new renewable energy ROW development and therefore unaffected by lands and realty.

Management under Alternative A that would limit ROW development in high erosion susceptibility areas, could also continue to affect renewable energy development opportunities in those areas.

Effects under Alternative B

The potential for effects from land tenure decisions on renewable energy opportunities would be greater under Alternative B, which would recommend 32 percent (93,800 acres) more land for disposal compared to Alternative A.

The management of 580,000 acres as ROW exclusion areas under Alternative B would have the same effects on wind and solar development potential as those under Alternative A and described in the *Nature and Types of Effects*. However, management under Alternative B would also avoid new ROW development on 1,195,800 acres. Within the avoidance areas, 149,400 acres would have good solar resource potential and 6,600 would have moderate potential. There would also be 68,800 acres with a wind power classification of 3 or higher. Compared

to Alternative A, which has no ROW avoidance criteria, Alternative B would result in more limitations on future renewable energy development.

Effects from restrictions on land use authorizations in high erosion susceptibility areas would be the same as Alternative A.

Effects under Alternative C

Management under Alternative C would have the greatest potential to increase the amount of BLM-administered public lands. However, because acquisitions would only be pursued to enhance resource values and provide for conversation/preservation of habitat and cultural resources, it would be unlikely that those lands would be available for renewable energy development.

Management under Alternative C would limit the BLM's ability to approve future renewable energy ROWs by managing 2,675,800 acres as a ROW exclusion area and 369,300 acres as a ROW avoidance area. Prohibitions and limitations on new ROW development would apply to more of the planning area than under Alternative A.

Alternative C would result in the greatest impact on future renewable energy development by excluding or avoiding renewable energy development over the greatest number of acres with moderate to high solar and wind resource potential. Within the exclusion areas, 513,500 acres would have good solar resource potential and 61,400 acres would have moderate potential. There would also be 68,800 acres of land with a wind power classification of 3 or higher excluded from development under Alternative C.

Alternative C would also avoid new ROWs on 113,000 acres of good solar resource potential and 700 acres of moderate potential.

Indirectly, ROW exclusion and avoidance criteria under Alternative C would also limit or eliminate opportunities for new transmission infrastructure needed for renewable energy projects. Fewer transmission line ROWs would further diminish renewable energy development opportunities under Alternative C.

Effects under Alternative D

Alternative D would have the greatest potential to decrease the net amount of BLM-administered public lands by identifying 332,500 acres of land for disposal and 31,870 acres for transfer. If disposed of or transferred, the BLM would no longer have the jurisdiction to approve renewable energy development on those lands.

Management that would avoid or exclude new ROW development in certain areas under Alternative D would have the same effects on wind and solar energy development as Alternative B.

Avoiding ROWs would decrease renewable energy development opportunities, including on 68,800 acres with a wind power classification of 3 or higher, 18,500 acres with moderate and 588,200 acres with high solar energy potential. The BLM's ability to accommodate wind and solar energy demand in these moderate to high potential areas would be reduced compared to Alternative A.

Effects under Alternative E

The potential for effects from land tenure decisions on renewable energy under Alternative E would be similar to Alternative D and would have the potential to reduce the amount of BLM-administered land in the planning area compared to Alternative A. Under Alternative E, the BLM would identify 267,200 acres of land for disposal, which is 49 percent more than Alternative A. An additional 30,670 acres would be identified for transfer with effects similar to those described for disposed lands.

Alternative E would prohibit future ROWs on 605,900 acres and avoid ROWs on 1,448,200 acres. Although similar in size, management of avoidance area criteria would affect renewable energy development more than exclusion due to broader underlying wind and solar resource potential in avoidance areas. Where ROWs are avoided under Alternative E, 252,900 acres would have good solar resource potential and 34,100 acres would have moderate potential. There would also be 65,500 acres of land with a wind power classification of 3 or higher. ROW exclusions would apply to 600 acres of good or moderate solar potential and 2,100 acres with a wind power classification of 3. Accordingly, effects on renewable energy would consist mainly of those described in the *Nature and Types of Effects* from ROW avoidance, rather than ROW exclusion.

Renewable Energy: Effects from Renewable Energy

Effects Common to All Alternatives

Under all alternatives, national and state policies would continue to encourage renewable energy development on BLM-administered public lands. This would lead to continued or increased demand for wind and solar energy ROWs.

Effects under Alternative A

The potential for new wind and solar energy development would be highest under Alternative A. The BLM would manage 905,900 acres as solar variance areas for utility-scale development and no acres as wind ROW avoidance areas. Within solar variance areas, 736,900 acres would have moderate or high solar resource potential. Under Alternative A, the BLM would continue to be able to accommodate demand for new wind, solar, and biomass energy development.

Effects under Alternative B

Alternative B would manage 11 percent less acres than Alternative A as variance areas for utility-scale solar development and would avoid wind energy ROWs on 1,220,200 acres. While Alternative B would manage a smaller solar variance area, areas of moderate or high resource potential would account for 684,600

acres of the solar variance area compared to Alternative A. Wind energy ROW avoidance areas would limit wind energy development potential across 68,800 acres of land with a wind power classification of 3 or higher. Therefore, Alternative B would restrict the BLM's ability to accommodate new wind energy development demand compared to Alternative A.

Effects under Alternative C

Alternative C would manage the smallest portion of the planning area (578,400 acres) as variance areas for utility-scale solar development and would place the greatest restrictions on wind energy development by managing 2,073,200 acres as wind energy ROW avoidance areas and excluding wind energy ROWs in the Virginia City National Historic Landmark District ACEC. These actions would exclude wind energy development on 68,800 acres with a wind power classification of 3 or higher. Compared to Alternative A, renewable energy development potential in the planning area would be reduced under Alternative C.

Effects under Alternative D

Alternative D would manage 233,800 fewer acres than Alternative A as solar variance areas for utility-scale solar development and would avoid wind energy ROWs on 1,228,100 acres. Effects of renewable energy management on renewable resource potential and subsequent development opportunities would be similar to Alternative B, except with fewer acres of good or moderate solar potential in solar variance areas.

Effects under Alternative E

Alternative E would manage 276,000 fewer acres than Alternative A as solar variance areas for utility-scale solar development and would avoid wind energy ROWs on 629,900 acres of the planning area. Effects of renewable energy management on wind energy resource potential and subsequent development opportunities would the same as Alternative C. For solar energy development potential, effects would be similar to Alternative C, except Alternative E would have 37,700 more acres of good or moderate solar potential in solar variance areas and therefore greater opportunities for solar energy development in those areas.

Renewable Energy: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Because the management of ACECs under all alternatives would be to protect relevant and important resource values, ACEC management priorities would directly and indirectly affect new renewable energy development where those actions would diminish the relevant and important values for which the ACEC was designated.

Effects under Alternative A

There would continue to be no proposed actions that would restrict renewable energy development and therefore no effects from ACEC management under Alternative A. Under Alternative A, the BLM would continue to manage four ACECs. Management of the Steamboat ACEC would not allow renewable energy development within the ACEC boundary.

Effects under Alternative B

Alternative B would designate 345,600 more acres of ACECs than Alternative A. ACEC management would have the potential to affect new renewable energy development by excluding new ROWs within the 15,900-acre Stewart Valley Paleontological ACEC, 43,300 acres of the Fox Peak Cultural ACEC, 10,300 acres of the Namazii Wunu Cultural ACEC, and 2,500 acres of the Tagima aša Cultural ACEC. Additionally, Alternative B would avoid ROWs on 269,800 acres in the following ACECs:

- Black Mountain/Pistone Archaeological District ACEC
- Churchill Narrows Buckwheat Botanical ACEC
- Fox Peak Cultural ACEC
- Greater Sand Mountain ACEC
- Grimes Point Archaeological District ACEC
- Incandescent Rocks Scenic ACEC
- Namazii Wunu Cultural ACEC
- Pah Rah Basin Petroglyph ACEC
- Ruhenstroth Paleontological ACEC
- Tagim aša Cultural ACEC
- Virginia City National Landmark Historical District ACEC

Compared to Alternative A, greater restrictions on ROW development from ACEC management under Alternative B would limit wind, solar, and biomass development opportunities in those areas and could redirect future development to adjacent federal and non-federal areas.

Effects under Alternative C

ACEC management under Alternative C would have the greatest potential to reduce the amount of renewable energy development by prohibiting or restricting new ROWs within ACEC boundaries. Alternative C would manage 786,270 acres as ACECs. This would result in 764,470 more acres of ACECs than Alternative A.

Managing the following ACECs as ROW exclusion areas would eliminate ROW development potential on 644,500 acres:

- Black Mountain/Pistone Archaeological District ACEC
- Carson wandering skipper ACEC
- Churchill Narrows Buckwheat Botanical ACEC
- Clan Alpine Greater Sage-Grouse ACEC (for linear types of ROWs only)
- Desatoya Greater Sage-Grouse ACEC
- Dixie Valley Toad ACEC
- Fox Peak Cultural ACEC
- Greater Sand Mountain ACEC
- Grimes Point Archaeological District ACEC
- Incandescent Rock Scenic ACEC
- Lassen Red Rocks Scenic ACEC
- Namazii Wunu Cultural ACEC
- Pah Rah Basin Petroglyph ACEC
- Pine Nut Bi-State Sage Grouse ACEC
- Pine Nut Mountains Williams Combleaf Botanical ACEC
- Ruhenstroth Paleontological ACEC
- Sand Springs Desert Study Area ACEC
- Stewart Valley Paleontological ACEC
- Tagim aša Cultural ACEC
- Virginia Mountains Greater Sage-Grouse ACEC

Within the following ACECs proposed under Alternative C, new ROWs would be avoided (42,600 acres):

- Churchill Narrows Buckweat Botanical ACEC
- Fox Peak Cultural ACEC
- Greater Sand Mountain ACEC
- Grimes Point Archaeological District ACEC
- Stewart Valley Paleontological ACEC
- Virginia City National Landmark Historic District ACEC

Direct impacts from restrictions on new land use authorizations under Alternative C would be consistent with those discussed within the *Nature and Types of Effects*.

Indirectly, ROW exclusion and avoidance criteria under Alternative C within ACECs would also limit or eliminate opportunities for new transmission infrastructure needed for renewable energy projects. Reduced potential for transmission line ROWs could further diminish renewable energy development opportunities within and next to ACECs under Alternative C. Greater restrictions on ROW development from ACEC management under Alternative C could also indirectly affect non-ACEC lands by redirecting the demand for future development to those adjacent areas.

Effects under Alternative D

Alternative D would designate 11 ACECs that would cover 180,000 acres of the planning area. Management of these ACECs would result in more limitations on ROW development compared to Alternative A. The following ACECs, totaling 107,000 acres, would be managed as ROW avoidance areas:

- Black Mountain/Pistone Archaeological District ACEC
- Grimes Point Archaeological District ACEC
- Incandescent Rocks Scenic ACEC
- Pah Rah High Basin Petroglyph ACEC
- Ruhenstroth Paleontological ACEC
- Tagim aša Cultural ACEC

Direct and indirect impacts from avoiding new renewable energy ROWs under Alternative D would be greater than Alternative A and consistent with those discussed within the *Nature and Types of Effects*.

Effects under Alternative E

Alternative E would manage for three more ACECs than Alternative A for a total of 82,800 acres of ACECs. Management of these ACECs would decrease the potential for future renewable energy development compared to Alternative A, including by eliminating new development potential on 66,800 acres within the following ACECs:

- Fox Peak Cultural ACEC (Job Peak WSA portion only)
- Pah Rah Basin Petroglyph ACEC
- Ruhenstroth Paleontological ACEC
- Stewart Valley Paleontological ACEC

Management of the 2,100-acre Grimes Point Archaeological District ACEC as a ROW avoidance area would reduce the likelihood of new wind, solar, or biomass development within that ACEC boundary.

Direct and indirect impacts from avoiding new renewable energy ROWs under Alternative E would be greater than Alternative A and consistent with those discussed within the *Nature and Types of Effects*.

Renewable Energy: Effects from National Trails Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There would continue to be no specific management for National Trails under Alternative A and therefore no effects on renewable energy.

Effects under Alternative B
Alternative B would decrease the amount of area available for renewable energy development compared to Alternative A by managing 39,200 acres (0.25 miles on either side) associated with the California NHT and Pony Express NHT as ROW avoidance areas, and an additional 1,000 acres associated with the Pony Express NHT as ROW exclusion areas. Further restrictions on noise could limit the types of renewable energy projects (e.g., wind) permitted within proximity to those trails.

Effects under Alternative C
National Historic Trails management under Alternative C would result in the greatest reduction in area available to renewable energy development by managing 257,400 acres (2.5 miles on either side) associated with the Pony Express and California NHTs as ROW avoidance, and 238,500 acres as ROW exclusion areas. Further restrictions on noise could limit wind energy development within proximity to those trails.

Effects under Alternative D
Effects from NHT management on renewable energy under Alternative D would be the same as Alternative B.

Effects under Alternative E
Alternative E would decrease the amount of area available for renewable energy development compared to Alternative A by managing 172,500 acres (1 mile on either side) associated with the California NHT and Pony Express NHT as ROW avoidance areas, and 25,400 acres as ROW exclusion areas. Further restrictions on noise could limit wind energy development within proximity to those trails.

Renewable Energy: Effects from Wild and Scenic Rivers Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage three segments of the East Fork Carson River as eligible for inclusion in the NWSRS; however, because Alternative A would not specify any actions for those WSRs, there would be no impacts on renewable energy.

Effects under Alternative B
Because no river segments would be listed as eligible for inclusion in the NWSRS under Alternative B, there would be no impacts on renewable energy.

Effects under Alternative C
Alternative C would identify three segments of the East Fork Carson River as eligible for inclusion in the NWSRS. Compared to Alternative A, WSR management would decrease the amount of area available for renewable energy development by managing segment 1 as ROW exclusion and segments 2 and 3 as ROW avoidance. Direct and indirect effects from limiting and excluding ROWs include those described within the *Nature and Types of Effects*.

Effects under Alternatives D and E
Effects from WSR management on renewable energy under Alternatives D and E would be the same as Alternative B.

Renewable Energy: Effects from Wilderness Study Areas Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternatives A, B, and D
BLM management of WSAs, which protect naturalness and preserve opportunities for solitude and primitive recreation, would exclude those areas from any future renewable energy development. If released from WSA consideration, areas would be open to development.

Effects under Alternatives C and E
The BLM would manage WSAs under Alternatives C and E as ROW exclusion areas with no opportunities for the BLM to accommodate renewable energy demand in those areas. If released from consideration as WSAs, the Carson Iceberg, Clan Alpine, and Desatoya Mountains areas would continue to be managed as ROW exclusion areas with the same effects as those described within the *Nature and Types of Effects*.

Renewable Energy: Effects from Back Country Wildlife Conservation Areas Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A, B, D, and E
There would be no BCWCAs under Alternatives A, B, D, or E and therefore no effects on renewable energy.

Effects under Alternative C
Under Alternative C, the BLM would manage 17 percent (817,800 acres) of the planning areas as BCWCAs, within which new renewable energy development would be excluded. Compared to Alternative A, excluding new ROWs in BCWCAs under Alternative C would reduce the BLM's ability to accommodate renewable energy demand in those areas and could redirect development to adjacent federal and non-federal areas.

Renewable Energy: Effects from Tribal Interests Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A, B, and D
There would be no effects from tribal interests on renewable energy under Alternatives A, B, or D. Renewable energy development may impact traditional use areas important to the tribes. The degree of impacts would be dependent on the location of proposals with respect to use areas. In sensitive areas, renewable energy operations would be required to relocate facilities to protect values.

Effects under Alternative C
Alternative C would avoid new ROWs within a 1 mile radius of a burial site, would reduce the ability of the BLM to accommodate future renewable energy demand in those areas.

Effects under Alternative E
Effects on renewable energy from Tribal Interests under Alternative E would be the same as Alternative C.

Renewable Energy: Cumulative Effects
Cumulative impacts on renewable energy are the result of past, present, and reasonably foreseeable future actions within and next to the planning area that increase or decrease the BLM's ability to accommodate demand for wind, solar, and biomass energy development. National- and state-level policies (e.g., Nevada's renewable energy portfolio standard) combined with existing resource potential in the district have and will continue to encourage renewable energy development. Concurrent management of public lands to protect sensitive biological, historical, cultural, and visual resources would continue to limit the locations where development could be occur.

Within the planning area, there are 20,100 acres of superb (Class 7) wind resource areas and an additional 845,900 acres with wind potential of fair to

outstanding (Class 3 to 6). The prospect of profitable wind energy development projects led to 39 applications being received in the planning area since 2002; and while most applications led to testing and monitoring projects, all but three have been allowed to expire by the applicants. Only one utility-scale wind development project has a pending status.

The National Renewable Energy Laboratory data (NREL 2013) shows that 1,365,900 acres of the planning area also have moderate to high potential for solar energy, particularly in the southern portion of the planning area. Since 2002, there have been two applications for solar development. Luning Solar near Hawthorne was issued a ROW grant for a 575-acre project in July, 2010 but construction has not started.

The demand for renewable sources of energy increases may lead to as many as four new wind and solar development projects in the planning area over the next 20 years. Even though demand may be high, areas of high resource potential would continue to be prohibitive for development due to terrain, distance from transmission infrastructure, and costs.

There has traditionally been less interest (compared to wind, solar, and geothermal) in using biomass as an energy source. Fuels treatment projects that would reduce the threat of wild fire and restore sagebrush ecosystems for the Greater Sage-Grouse would increase the supply of pinyon and juniper materials. Where management allows the sale of these woody materials, up to two small-scale biomass facilities could arise.

The incremental effects on renewable energy would vary by alternative due to varying levels of management to protect biological, cultural, and visual resources. In general, Alternatives A and B specify fewer ROW avoidance or exclusion areas to protect sensitive species, wildlife habitats, and cultural resources. Under these alternatives, the potential for renewable energy development would be expected to increase. Alternative C is the most restrictive and would have the greatest potential to incrementally decrease renewable energy development over time. Alternatives D and Alternative E, which take more balanced approaches to resource and resource use management, would have incrementally less effects on wind, solar, and biomass development.

Management strategies and permit requirements, including implementation of mitigation measures and permit stipulations applicable to renewable energy development to protect or reduce impacts on sensitive resources would increase costs. Use restrictions in designated priority wildlife habitat and priority watershed areas to protect those areas would limit renewable energy development. Cumulative impacts on renewable energy development would vary by alternative based on the number of acres designated with use restrictions Designation of priority wildlife habitat and watersheds, sensitive species management and ACECs would restrict renewable energy development

and the supporting uses (e.g., roads and transmission lines) needed to support development activities thereby affecting the costs and feasibility of projects. These impacts would be limited based on location, habitat conditions, and management discretion in those areas.

Of all the resource programs addressed under Alternatives B through E, Special Status Species has the greatest potential to affect future renewable energy development. Cumulative effects from GRSG conservation measures within the planning area and on BLM-administered lands throughout the Great Basin would have the potential to reduce or eliminate certain types of ROW development. Closures of areas to ROWs could make renewable energy development in the planning area cost prohibitive or impractical.

Geothermal development will also indirectly affect the long-term expansion of wind and solar development in the planning area. The State of Nevada considers the energy produced from geothermal resources as part of its renewable energy portfolio. Compared to wind and solar, geothermal is often preferred by power companies because it offers a more consistent power output, which can be used in conjunction with traditional carbon-based resources (e.g., coal and natural gas) as a base load energy source. Continued exploration and development of geothermal resources in the planning area may indirectly inhibit future wind and solar energy development.

4.5 SPECIAL DESIGNATIONS

This section is a description of the impacts on special designation areas in the planning area and follows the order of topics addressed in **Chapter 2**:

- Areas of Critical Environmental Concern
- Back Country byways
- BCWCAs
- National Trails
- WSRs
- WSAs

4.5.1 Areas of Critical Environmental Concern

ACECs are BLM-administered lands where special management attention is needed to protect the following relevant and important values of the area from irreparable damage: historical, cultural, paleontological, and scenic values, fish and wildlife resources, or other natural processes or systems. This section discusses impacts on potential ACECs and the BLM's ability to protect relevant and important values from proposed management of other resources and resource uses. Existing conditions are described in **Section 3.4.1**, Areas of Critical Environmental Concern.

The BLM held interdisciplinary team meetings to discuss 18 new ACEC nominations and the effectiveness of 6 existing ACECs. The results of those meetings were used in this analysis and are described in the Areas of Critical Environmental Concern Report on the Application of the Relevance and Importance Criteria (BLM 2013b).

Methods of Analysis

Direct impacts on ACECs are considered to be those that either impair or enhance the values for which the ACEC was proposed for designation. As such, relevance and importance criteria were analyzed for each potential ACEC. The BLM also analyzed impacts on these values from either the ACEC designation or where an ACEC is not proposed for designation, the management actions for other resources. All impacts discussed are direct, though some may not occur immediately after implementation of management actions.

The analysis in this section focuses on specific threats to the relevant and important values identified for each ACEC. A nature and type of effects discussion is also included at the beginning of each individual ACEC. Because ACECs are analyzed individually, no summary section is provided for this resource topic.

Assumptions

The following assumptions were used to assess the impacts on ACECs:

- Although management actions for most resources and resource uses have district office-wide application, ACEC management prescriptions will apply only to those lands within each specific ACEC.
- Permitted activities will not be allowed to impair the relevant and important values for which the ACECs are designated. The exception is locatable minerals; until withdrawn from mineral entry, a mining claim can be filed, and subsequent mining could have an impact.
- ACEC designation provides protection and focused management for relevant values beyond that provided through general management of the parent resource (e.g., the cultural resource ACECs will receive greater recognition and protection than the general management action regarding cultural resources; the Endangered Species Act protects threatened and endangered plants, whereas an ACEC for special status plants will offer greater protection of ecosystem processes for plants and focused management).
- Special management prescribed within ACECs is included in other resource and resource use management decisions (e.g., travel restrictions within ACECs are brought forward in travel

management and will be recognized during future travel management planning).

- Any designated ACEC that falls within a WSA will be managed according to BLM Manual 6330, Management of Wilderness Study Areas (BLM 2012e), unless the ACEC management is more restrictive. Because activities within WSAs must meet the nonimpairment criterion, which generally restricts new surface-disturbance, a WSA will generally protect relevant and important values. A WSA also will have a beneficial effect on overlapping potential ACECs. If Congress releases a WSA from further consideration, the special management in designated ACECs will be designed to protect and enhance the relevant and important values.

Indicators

Impacts on ACECs would occur from management actions that would protect or impair relevant and important ACEC values, including "important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes" (BLM Manual 1613, Areas of Critical Environmental Concern [BLM 1988]). The relevant and important values for each proposed ACEC are identified in the Areas of Critical Environmental Concern Report on the Application of the Relevance and Importance Criteria (BLM 2013b).

Black Mountain/Pistone Archaeological District

The Black Mountain/Pistone Archaeological District is a potential 3,400-acre ACEC with identified relevant and important cultural resource values. No immediate threats to this resource have been identified; however, the cumulative impacts from development in the Yerington area and increased use of OHVs for back country exploration greatly increase the potential for the loss of integrity. Because of an increase in drought and accumulation of medium-heavy fuels, wildfire poses a major risk to the resource (e.g., from rock spalling).

Recreation, including travel, within the potential ACEC could impact its values by damaging or destroying the cultural artifacts. Impacts would be reduced where travel is restricted or closed.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The potential Black Mountain/Pistone Archaeological District ACEC is not designated. There are few restrictions on OHV use, and cross-country travel is permitted within this area. Unrestricted access to the area could impact the integrity of the site. The impacts of wildfire would continue as described above.

Effects under Alternative B

The potential Black Mountain/Pistone Archaeological District ACEC would be designated (3,400 acres). Travel would be limited to designated routes, which would minimize the risk of damaging or destroying artifacts by keeping motorized and mechanized travel on routes. In addition, surface-disturbing activities would be prohibited within 0.125-mile of the rock art sites in the area, providing additional protection from surface disturbance. Cultural resources would not be a priority for hazardous fuels reduction projects; thus, the risk of wildfire would persist under Alternative B, in a fashion similar to Alternative A.

Effects under Alternative C

The potential Black Mountain/Pistone Archaeological District ACEC would be designated (3,400 acres). The area would be closed to motorized travel, which would minimize the risk of damaging or destroying artifacts by not allowing this type of use. Limiting mechanized travel to designated routes would minimize the risk of damaging or destroying artifacts by keeping this type of travel on routes. In addition, surface-disturbing activities would be prohibited within 1 mile of the rock art sites in the area, providing additional protection from surface disturbance. Alternative C would also emphasize hazardous fuels reduction projects where there were negative impacts of wildfire on cultural resources, among others. This could help minimize fuel buildup that can damage the archaeological resources in the area.

Effects under Alternative D

A portion of the potential Black Mountain/Pistone Archaeological District ACEC would be designated (3,100 acres). However, in the entire potential ACEC (3,400 acres), travel would be limited to designated routes; impacts would be the same as those described under Alternative B. In addition, surface-disturbing activities would be prohibited within 0.125-mile of the rock art sites in the area, resulting in the same impacts as those described under Alternative B. Cultural resources would not be a priority for hazardous fuels reduction projects; thus, the risk of wildfire would persist under Alternative D in a fashion similar to Alternative A.

Effects under Alternative E

The potential Black Mountain/Pistone Archaeological District ACEC would not be designated. However, a portion of the potential ACEC (3,100 acres) would receive specific management associated with the Pistone site to protect the rock art resources. Travel would be limited to designated routes, which would minimize the risk of damaging or destroying artifacts by keep motorized and mechanized travel on routes. In addition, surface-disturbing activities would be prohibited within 0.5-mile of the rock art sites in the area, resulting in the same impacts as those described under Alternative B but over a larger area. Alternative E would also emphasize hazardous fuels reduction projects where there were negative impacts of wildfire on cultural resources, among others. This could help minimize fuel buildup that can damage archaeological resources.

Carson Wandering Skipper

The Carson Wandering Skipper ACEC is currently a designated 330-acre ACEC, with identified relevant and important biological resource values. The area provides habitat for the Carson wandering skipper, a federally endangered butterfly that occupies grassland habitat on alkaline substrate. Major threats to the Carson Wandering Skipper ACEC are livestock grazing, invasive species, ROWs, OHV use, and recreation. Expanding residential and commercial development, which also threatens the ACEC, is discussed under the cumulative analysis.

Livestock grazing can impact Carson Wandering Skipper habitat by removing nectar sources and the larval host plant (*Distichlis spicata*). Livestock trampling can also destroy larvae hibernating during the winter. Invasive species can infest a site to the degree that native species are outcompeted in disturbed areas. Loss of native species reduces nectar sources and the larval host plant. Location of ROWs and recreational OHV use can similarly impact the habitat.

Effects Common to All Alternatives

The highest quality Carson wandering skipper habitat on BLM-administered land is within a portion of the existing ACEC. This area is fenced and would remain so under all alternatives, so the impacts from surface-disturbing activities would be minimal unless the fence was to cease functioning properly.

Having a small population isolated from other populations makes the Carson wandering skippers within and around the ACEC vulnerable to local extinction from random natural or human-caused events.

Under all alternatives, the species would receive some protection via ESA and Section 7 consultation. While actions may be permitted by the BLM and USFWS that "adversely affect" the species, mitigation and conservation measures would be incorporated into any take permit issued by the USFWS in order to reduce the amount of take.

Effects under Alternative A

The Carson Wandering Skipper ACEC (330 acres) would be managed under Alternative A. The area would be managed as available to livestock grazing and ROW location. While the highest quality habitat in the ACEC is fenced from grazing, impacts from ROW development would remove vegetation and disturb important habitat. Implementation of BMPs and mitigation measures would reduce adverse impacts. Impacts described above are possible in the surrounding areas outside of the fenced area. OHV travel is limited to existing routes, which helps minimize impacts of such use.

Fencing around the highest quality habitat helps to minimize spread of invasive species from livestock grazing and OHVs, though invasive species can still spread to these areas and the unfenced areas. Impacts of invasive species are as

described above. Because the area would be managed as an ACEC, this area should be a higher priority for treatment.

The BLM would consider acquisition of lands identified as habitat for the Carson Wandering Skipper within the ACEC boundary. Because is the area would be managed as an ACEC, acquisition would be more of a priority in the area. Acquisition of such lands would consolidate ownership of the species' habitat and improve its manageability.

Effects under Alternative B

The potential Carson Wandering Skipper ACEC would not be designated; however, the 330-acre area would not be available for grazing and would be managed as closed to motorized travel. Making the area unavailable for grazing would eliminate its threat to the species on BLM-administered land. Fencing the perimeter of the closed area, which would serve to keep livestock out, would also keep OHVs out and could result in the improvement of habitat beyond what is currently fenced.

Fencing the potential ACEC would help to minimize spread of invasive species from livestock grazing and OHVs, though invasive species can still spread to these areas and the unfenced areas. Impacts of invasive species would be as described above. Because the ACEC would not be designated, this area may be a lower priority for treatment.

The area would be open to ROW location; impacts would be the same as under Alternative A.

The potential ACEC would be within the proposed Reno Urban Interface ERMA. While recreation may be highlighted in the ERMA, it is more likely that recreation would be monitored in the area, as opposed to areas not designated as recreation management areas; thus, recreational impacts on the species could be identified and mitigated earlier on.

Because the ACEC would not be designated under Alternative B, it is likely that acquisition of lands with identified Carson Wandering Skipper habitat would be less of a priority than under Alternative A.

Effects under Alternative C

The potential Carson Wandering Skipper ACEC would be designated (330 acres). It would not be available for grazing and would be closed to motorized travel and fluid mineral leasing, resulting in impacts similar to those described under Alternative B. The ACEC would also be managed as a ROW exclusion area, eliminating the threat of habitat loss and species mortality. The impacts of invasive species would be similar to those described under Alternative A but over a larger area as the whole ACEC would exclude grazing, and OHVs reducing the potential establishment and spread of invasive plants.

The ACEC would be within the proposed Reno Urban Interface ERMA. Recreational impacts would be similar to those described under Alternative B.

The BLM would consider acquisition of lands identified as habitat for the Carson Wandering Skipper. Impacts would be the same as described under Alternative A.

Effects under Alternative D

The potential Carson Wandering Skipper ACEC would not be designated. Impacts would be similar to those described under Alternative B, except that the ACEC would also overlap a ROW avoidance area. ROWs could be developed in the area under certain conditions. For this reason, development activities and placement of facilities would take into account the species' needs at the project level in order to minimize impacts.

The potential ACEC would be within the proposed Reno Urban Interface ERMA. Recreational impacts would be the same as those described under Alternative B.

Effects under Alternative E

The potential Carson Wandering Skipper ACEC would not be designated; however, the 330-acre area would not be available for grazing, reducing the threat of habitat loss and species mortality from livestock grazing. This could result in the improvement of additional habitat outside of the already fenced area. Impacts from invasive species would be similar to those described for Alternative A but over a larger area as the whole potential ACEC would be fenced. Because the ACEC would not be designated, this area may be a lower priority for treatment.

The area would also overlap a ROW avoidance area. ROW development could occur in the area under certain conditions. For this reason, development activities and placement of facilities would take into account the species' needs at the project level in order to minimize impacts. Travel management planning would limit vehicle travel to designated routes within the potential ACEC and no new routes would be authorized. By restricting travel to existing routes and not constructing new routes, trampling of skipper larvae or their habitat should be eliminated.

The potential ACEC would be within the proposed Reno Urban Interface ERMA. Recreational impacts would be the same as those described under Alternative B.

Churchill Narrows Buckwheat Botanical

This area is a potential 6,600-acre ACEC, with identified relevant and important biological resource values. It provides habitat for the Churchill Narrows buckwheat (*Eriogonum diatomaceum*), an endemic plant. The USFWS identified it as a candidate species, the State of Nevada listed it as critically endangered, and

the BLM designated it a special status species. Major threats to the Churchill Narrows Buckwheat Botanical Potential ACEC are mining (locatable minerals and mineral materials), livestock grazing, invasive species spread, and OHV use.

Livestock grazing infrastructure and improper livestock grazing could damage the relevant and important values by consuming or damaging the Churchill Narrows buckwheat, compacting soils, and destroying important microtopography that influences water movement and precipitation accumulation. Livestock can also introduce and spread invasive species, which could out-compete the buckwheat and provide a source of fine fuel, which may lead to destructive fire within the habitat. OHV use can similarly impact the buckwheat.

Mineral development could impact ACEC values by removing diatomaceous earth upon which the plant depends; flattening, destroying, or removing the buckwheat; or by spreading weeds. Mining would also result in soil compaction, changing the microtopography. The microtopography influences soil formation processes and soil saturation, which affect the plant's ability to survive. Closures to mineral materials disposal within the potential ACEC would help protect the buckwheat by eliminating surface-disturbance associated with mineral development.

Petitioning to withdraw the area from locatable mineral entry would help protect the buckwheat if the area is formally withdrawn. Withdrawal would limit the impacts of locatable minerals development on the withdrawn portions of the ACEC. Specific impacts of locatable minerals development on Churchill Narrows buckwheat are of the same nature and type as impacts of mineral material development.

OHV use could impact ACEC values by disturbing soils and removing diatomaceous earth upon which the plant depends; flattening, destroying, or removing the buckwheat; or by spreading weeds. Restricting motorized travel within the potential ACEC would help protect the buckwheat by eliminating surface-disturbance.

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The potential Churchill Narrows Buckwheat Botanical ACEC is not designated. The area would be available for grazing and open to mineral material disposal, locatable mineral entry, and cross-country travel. Impacts as described above could be experienced throughout the potential ACEC.

Effects under Alternative B
The entire 6,600 acres of the potential Churchill Narrows Buckwheat Botanical ACEC would be designated. Approximately 3,600 acres would overlap the

Namazii Wunu Cultural ACEC. The area would be available for livestock grazing and open to mineral material disposal, and locatable mineral entry. Impacts of such development would be the same as under Alternative A. However, because the ACEC would be designated under this alternative, the BLM would likely monitor the area more than under nondesignation (Alternative A); thus, impacts could be caught and mitigated earlier. Travel would be limited to designated routes, which would minimize the risk of damaging or destroying the buckwheat by keeping motorized and mechanized travel on routes.

Effects under Alternative C

The entire 6,600-acre potential Churchill Narrows Buckwheat Botanical ACEC would be designated. Approximately 3,600 acres would overlap the Namazii Wunu Cultural ACEC. The Churchill Narrows Buckwheat Botanical ACEC would be closed to motorized and mechanized travel and mineral material disposal. This would eliminate potential impacts from these uses.

The portion of the ACEC that overlaps the Namazii Wunu Cultural ACEC would be unavailable to livestock grazing, thereby reducing potential impacts from livestock grazing in the area. The remaining portion of the ACEC would be available for livestock grazing; impacts in this area would be the same as under Alternative A. However, because the ACEC would be designated under this alternative, the BLM would likely monitor the area more than under nondesignation (Alternative A); thus, impacts could be caught and mitigated earlier. The ACEC would also be open for locatable mineral entry; impacts would be the same as described for Alternative B.

Under Alternative C, a portion of the ACEC (1,800 acres) would overlap the Singatse ERMA. Dispersed motorized opportunities would be highlighted in the ERMA; however, because the ACEC would be closed to motorized travel, OHV recreation in the ACEC is unlikely to impact the buckwheat in the area of overlap.

Effects under Alternative D

The entire 6,600-acre potential Churchill Narrows Buckwheat Botanical ACEC would be designated. Management for the ACEC would be the same as under Alternative B, so impacts would also be the same.

Effects under Alternative E

The entire 6,600-acre potential Churchill Narrows Buckwheat Botanical ACEC would be designated. The area would be available for livestock grazing and 5,300 acres would be open to mineral material disposal. 1,300 acres of the ACEC would be closed to mineral material disposal due to overlap with the California National Historic Trail. Impacts of such development would be the same as described under Alternative A. However, because the ACEC would be designated under this alternative, the BLM would likely monitor the area more than under nondesignation (Alternative A); thus, impacts could be caught and mitigated earlier. The ACEC would be proposed for withdrawal from locatable

mineral entry. Withdrawal would limit the impacts of locatable minerals development.

Travel would be limited to designated routes which would minimize the risk of damaging or destroying the buckwheat by keeping motorized and mechanized travel on routes.

An 1,800-acre portion of the ACEC would overlap the Singatse ERMA. Management within this overlap would complement management within the Singatse ERMA. In cases where there may be conflicting management objectives, the ACEC management would take precedence over ERMA management. Recreation may be highlighted in the ERMA; however, it is more likely that recreation would be monitored in the area, as opposed to areas not designated as recreation management areas. Therefore, recreational impacts on the buckwheat could be identified and mitigated earlier.

Clan Alpine Greater Sage-Grouse, Desatoya Greater Sage-Grouse, Virginia Mountain Greater Sage-Grouse, and Pine Nut Bi-State Sage Grouse

These are potential ACECs with identified relevant and important biological resource values. The potential ACECs for Greater Sage-Grouse (Clan Alpine [98,400 acres], Desatoya [105,100 acres], and Virginia Mountain [109,200 acres]), a candidate for listing under the ESA, are within PPMAs that provide lekking, nesting, brood-rearing, and/or wintering habitat for the species. The Pine Nut Bi-State Sage Grouse potential ACEC (100,400 acres) provides summer and winter habitat for breeding and brood rearing for the bi-state sage grouse, a species proposed for listing under the ESA as threatened. Major threats to the potential ACECs are conifer encroachment into sagebrush or riparian habitats, wildfire, grazing, OHV use, invasive species, infrastructure, geothermal development, and urbanization (see chart below for specifics).

Threat	**Clan Alpine Greater Sage-Grouse**	**Desatoya Greater Sage-Grouse**	**Virginia Mountain Greater Sage-Grouse**	**Pine Nut Bi-state Sage Grouse**
Conifer encroachment	✓	✓	✓	✓
Wildfire	✓	✓	✓	✓
Grazing	✓	✓	✓	✓
Invasive species	✓	✓	✓	✓
Infrastructure			✓	
Geothermal development			✓	
Urbanization			✓	
OHV use				✓

Because the potential ACECs for Sage-Grouse cover their habitat area and not smaller areas within the habitat area, impacts are the same as those described in

Section 4.3.6, Special Status Species. No separate analysis is included here. The exception is that the potential Clan Alpine Greater Sage-Grouse ACECs would be recommended for withdrawal under Alternative C and the potential Pine Nut Bi-state Sage Grouse and Virginia Mountain Greater Sage-Grouse ACECs would be recommended for withdrawal within 3.25 miles of active leks in the ACECs. If the withdrawals were processed, it would limit the impact of locatable mineral development on sage-grouse habitat. This would be particularly important in the potential Virginia Mountain Greater Sage-Grouse ACEC, where infrastructure and urbanization are threats to the species.

Dixie Valley Toad

The Dixie Valley Toad is a potential 410-acre ACEC with identified relevant and important biological resource values. The area provides habitat for the Dixie Valley toad, a subspecies of western toad (*Anaxyrus boreas boreas*). It is listed by the State of Nevada as S2 (imperiled due to rarity or other demonstrable factors) and is listed by the BLM as sensitive.

Monitoring data does not indicate that the subspecies is undergoing any population or habitat stresses that would threaten it. Recent NDOW, Navy, BLM, and USFWS surveys over the last three to four years indicate a thriving and healthy population. As long as the spring supplying water to the meadow remains and the breeding areas are intact, the population should remain viable. The spring is on Navy-owned land next to the meadows; the breeding habitat is on BLM-administered lands. The ponds in the northern part of the area are not natural since they were created by placing dykes, but the springs represent a rare perennial water source on a desert playa. The toad breeds in the northern and southern part of the potential ACEC. Egg masses are laid in shallow (a few inches) of water covering up salt grass.

Challenges presented for managing the area include mixed land ownership, existing ROWs, split-estate mineral rights, and patented lands.

Effects Common to All Alternatives

A transmission line and roads associated with geothermal leases are within and next to the potential ACEC. The infrastructure associated with the geothermal activity does not appear to be affecting the species' habitat. However, if additional developments damage the meadows where the species breeds or the spring source is compromised, the species could be affected.

Effects under Alternative A

Lands within the potential ACEC boundary would be open to fluid mineral leasing and ROW location, so geophysical exploration is occurring. If new leases are purchased and developed, the habitat could be damaged where the species Dixie Valley Toad breeds.

Effects under Alternative B

The potential Dixie Valley Toad ACEC would not be designated. Management would be similar to that under Alternative A, so impacts also would be similar. Approximately 200 acres of the potential ACEC would be covered by a CSU stipulation for fluid mineral leases. This would allow fluid mineral leasing, with certain operational or locational constraints imposed by the BLM. The CSU stipulation relies on project design, siting, and implementation of appropriate mitigation measures and monitoring protocols to ensure that resources are adequately safeguarded. Application of the CSU stipulation across a portion of the potential ACEC would mitigate impacts from fluid mineral development. However, the stipulation would not be targeted to protect the Dixie Valley toad. If the BLM Authorized Officer were to except, modify, or waive the restriction, impacts could occur.

Effects under Alternative C

The potential Dixie Valley Toad ACEC (410 acres) would be designated. It would be open to fluid mineral leasing but would be covered by an NSO stipulation. The stipulation would require that surface occupancy be located outside of the ACEC area, so the breeding habitat would be protected from potential new energy development. The ACEC would also be a ROW exclusion area, so no new ROWs could be developed. This would eliminate the potential for impacts from new ROW location. Compared to Alternative A, designating the ACEC under this alternative would provide the most protection to the Dixie Valley toad and its habitat.

Effects under Alternative D

The potential Dixie Valley Toad ACEC would not be designated. Management would be similar to Alternative B, so impacts also would be similar. However, under Alternative D, approximately 29 percent of the potential ACEC would overlap a ROW avoidance area. ROWs could be developed in the area under certain conditions; however, development activities and placement of facilities should take into account the species' needs at the project level to minimize impacts.

Effects under Alternative E

The potential Dixie Valley Toad ACEC would not be designated. Management would be similar to that under Alternative B, so impacts also would be similar. However, under Alternative E, approximately 29 percent of the potential ACEC would overlap a ROW avoidance area. ROWs could be developed in the area under certain conditions; however, development activities and placement of facilities should take into account the species' needs at the project level to minimize impacts. In addition, approximately half of the potential ACEC would be covered by an NSO stipulation for fluid mineral leasing. The stipulation would protect the Dixie Valley toad habitat by precluding surface occupancy in the area of overlap; however, the stipulation would not be targeted to protect

the Dixie Valley toad. If the BLM Authorized Officer were to except, modify, or waive the restriction, impacts could occur.

Fox Peak Cultural

Fox Peak Cultural is a potential 49,000-acre ACEC with identified relevant and important cultural resources for its significance to local tribes. Mining and ROWs may pose a threat to the visual landscape and setting in the future; however, currently the area is not identified as suitable for transmission lines, nor does it display suitable material for mineral extraction. Limited recreation does not pose a significant threat.

Effects Common to All Alternatives

A 43,300-acre portion of the potential Fox Peak Cultural ACEC overlaps the Job Peak WSA. This WSA is managed as VRM Class I and would be closed to new permanent disturbances that do not meet the nonimpairment standard. As long as the WSA exists, it is unlikely that the relevant and important values would be impacted in the area of overlap, which is 88 percent of the potential ACEC.

Effects under Alternative A

The potential Fox Peak Cultural ACEC is not designated. Outside of the WSA overlap, the area would be open to fluid mineral leasing, mineral material disposal, nonenergy mineral leasing, and ROW location. If these activities are permitted, cultural resources could be potentially damaged. However, requirements under the NHPA Section 106 process and implementation of site-specific mitigation measures would reduce impact potential. The area's significance for traditional purposes would also be affected. The area outside of the WSA also does not have a VRM class assigned to it. Impacts on visual settings would be analyzed under site-specific NEPA planning. Site-specific mitigation measures would be developed to reduce visual impacts. Impacts on the sacred or religious traditional use areas would be dependent on the type of use proposed and project size.

Effects under Alternative B

A 48,400-acre portion of the potential Fox Peak Cultural ACEC would be designated, and 600 acres would not be designated. Outside of the WSA overlap, the area would be open to fluid mineral leasing, subject either to an NSO or CSU stipulation. The NSO stipulation would protect the cultural value by precluding surface occupancy in the area of overlap. The CSU stipulation relies on project design, siting, and implementation of appropriate mitigation measures and monitoring protocols. This is to ensure that resources are adequately safeguarded. Application of the CSU stipulation across a portion of the potential ACEC would mitigate impacts from fluid mineral development, but the stipulation would not eliminate all impacts. In both cases with the NSO and CSU, the stipulations would not be targeted to protect the cultural resource

value. If the BLM Authorized Officer were to except, modify, or waive the restriction, impacts could occur.

The area outside of the WSA overlap would also be mostly closed to mineral material disposal and nonenergy mineral leasing. The BLM would continue to manage 25 acres as open to mineral material disposal and nonenergy leasable minerals. Impacts would be similar to Alternative A, except that fewer acres would be available for disturbance.

Outside of the WSA, 5,700 acres would overlap a ROW avoidance area. ROW development could occur in the area under certain conditions; however, development activities and placement of facilities should take into account the cultural resources at the project level to minimize impacts.

Outside of the WSA, the ACEC, including the 600 acres that would not be designated under Alternative B, would be managed as VRM Class IV. Major modifications to the landscape could be allowed; because of this, it is possible for activities to be permitted that would affect the visual quality of the area and, in turn, impact the sacred or religious traditional use of the identified resources.

Effects under Alternative C

A 48,400-acre portion of the potential Fox Peak Cultural ACEC would be designated; 600 acres would not be designated. Outside the WSA and lands with wilderness characteristics overlaps, 900 acres would be open to fluid mineral leasing, and 4,900 acres would be closed. Of the 900 acres open to fluid mineral leasing, 100 would be subject to CSU stipulations. Impacts would be similar as described under Alternative B for the area of overlap, except that more acres would be closed to disturbance.

Only 4,900 acres of the ACEC outside the WSA overlap would be closed to mineral material disposal and nonenergy mineral leasing. This would leave the remaining 900 acres open to such activity. Impacts would be the same as under Alternative A if these activities were permitted in the open areas.

Outside the WSA, 4,200 acres would overlap a ROW exclusion area. This would preclude impacts from ROW development in the area. Also outside the WSA, the ACEC, including the 600 acres that would not be designated under this alternative, would be managed as VRM Class I and II. This would allow low levels of landscape modifications in order to retain the existing character of the landscape. It also would help maintain the scenic integrity of the area by not allowing development that does not meet the VRM Class II objective, such as aboveground mining activities. In this way, viewsheds for traditional uses would be protected from most surface-disturbing activities.

Effects under Alternative D

A 48,400-acre portion of the potential Fox Peak Cultural ACEC would be designated; 600 acres would not be designated. Outside of the WSA, the ACEC

(including the 600 acres that would be undesignated under this alternative) would be open for fluid mineral leasing. Approximately 4,000 acres would be subject to an NSO stipulation, and 3,700 acres would be subject to a CSU stipulation. Impacts would be the same as described under Alternative B for the area of overlap.

Outside the WSA, the potential ACEC (including the 600 acres that would be undesignated under this alternative) would be closed to mineral material disposal and nonenergy mineral leasing. This would limit permitted activities within the ACEC.

Also outside the WSA, approximately 5,700 acres would overlap a ROW avoidance area. ROW development could occur in the area under certain conditions; however, development activities and placement of facilities would take into account the cultural resources at the project level to minimize impacts.

Outside the WSA, the ACEC, including the 600 acres that would not be designated under this alternative, would be managed as VRM Class IV; impacts would be the same as those described under Alternative B.

Effects under Alternative E

The entire potential Fox Peak Cultural ACEC would be designated (49,000 acres). It would be closed to fluid mineral leasing, would be either a ROW avoidance or exclusion area, and would be proposed for withdrawal from locatable mineral entry. These actions would limit impacts on the cultural resources and setting of the area.

Also, outside the WSA, the ACEC would be closed to mineral material disposal and nonenergy mineral leasing. In addition, the area would be managed as VRM Class II. It is unlikely that new development could occur that would meet VRM Class II objectives. The impacts of VRM Class II management are the same as those described under Alternative C.

Greater Sand Mountain ACEC and Sand Springs Desert Study Area ACEC

Greater Sand Mountain is a potential 17,000-acre ACEC with identified relevant and important cultural and biological resource values. Within the proposed ACEC, approximately 104 archaeological sites have been recorded. Of these, approximately 60 have been evaluated as eligible for inclusion on the NRHP. Historic use of the Sand Mountain area includes Sand Springs Pony Express Station, an overland stage stop, an ore processing mill, and a post office. The Fallon Paiute-Shoshone Tribe considers Sand Mountain a sacred site. The area is also a complex ecological system that represents a rare, sensitive, and fragile environment of dune flora and fauna; 28 rare and endemic species are unique to Sand Mountain. The sand dunes provide habitat for the Kearny buckwheat (*Eriogonum nummulare*); this is the host plant for the Sand Mountain blue butterfly (*Euphilotes pallescens arenamontana*), a BLM sensitive species endemic

to Sand Mountain. Major threats to the potential ACEC are livestock grazing, looting, OHV use, locatable mineral mining, mineral material disposal, erosion, and invasive species.

Sand Springs Desert Study Area is a potential 50-acre ACEC with identified relevant and important cultural values. The Sand Springs Pony Express Station, one of the few remaining rock walled structures, is located within the study area. Major threats to the potential ACEC are erosion, looting, and vandalism.

Livestock can trample and damage the butterfly habitat, furthering its fragmentation. Closing the area to livestock grazing would eliminate the potential threats from livestock.

Intensive OHV travel has led to both habitat fragmentation and loss of habitat for the blue butterfly where Kearny buckwheat plants have been trampled or removed. These pathways also serve as corridors for the spread of invasive species, which can further reduce the habitat needed by the butterfly. Closing areas to motorized travel, the primary mode of transportation in the area, can minimize impacts from this type of use and help promote the recovery of native vegetation, including the Kearny buckwheat, the host plant for the butterfly.

OHV use can also damage archaeological artifacts and can be disruptive to traditional religious and sacred uses by the Fallon Paiute-Shoshone Tribe. OHV use also exacerbates erosion in the area. Erosion can damage cultural artifacts by covering, exposing, or eroding the resources themselves.

Locatable mineral development could impact ACEC values by flattening, destroying, or removing vegetation, desired plant communities, and special status plant species; changing the visual landscape; degrading and fragmenting habitat; disturbing wildlife; spreading weeds; and damaging cultural resources during road and facility construction. Petitioning to withdraw areas from locatable mineral entry could help protect cultural resource values if they are formally withdrawn. Withdrawal would limit the impacts of locatable minerals development on the portions of the ACEC that were withdrawn.

Effects Common to All Alternatives

Sand Springs Pony Express Station is listed on the NRHP.

Effects under Alternative A

Neither the potential Greater Sand Mountain nor the potential Sand Springs Desert Study Area ACECs are designated. The area, which encompasses Sand Springs Desert Study Area, is available for livestock grazing and mineral material disposal. Impacts would continue as described above.

Approximately 5,800 acres of the Greater Sand Mountain potential ACEC (including all of Sand Springs Desert Study Area) would be closed to motorized travel. This helps prevent damage to and fragmentation of the blue butterfly

habitat. In the same way, it benefits biological species and the cultural resources surrounding and including the Pony Express Station. In turn, the spread of invasive species in the closed area would be minimized. The remaining 11,200 acres of the Greater Sand Mountain potential ACEC would be open to cross-country travel. As previously described, cross-country travel can increase the rate of erosion over a larger area, damaging cultural and biological resources. Where native vegetation is trampled or removed, invasive species can spread more quickly.

Approximately 2,760 acres within the Sand Mountain Recreation Area (including all of the Sand Springs Desert Study Area) are segregated under the Classification and Multiple Purposes Act of 1964. The segregation includes segregation from locatable mineral entry, which helps protect the cultural and biological resources from fragmentation and damage associated with locatable mineral development.

Effects under Alternative B

The 17,000-acre potential Greater Sand Mountain ACEC would be designated. The potential Sand Springs Desert Study Area ACEC would not be designated, because it falls entirely within the Greater Sand Mountain ACEC. This ACEC would be available for livestock grazing, and 2,500 acres would be open to mineral material disposal; impacts would be similar to those described under *Effects Common to All Alternatives*.

Under Alternative B, 2,600 acres of the Greater Sand Mountain ACEC (including all of the Sand Springs Desert Study Area potential ACEC) would overlap an area that would be closed to motorized and mechanized travel. In this area, impacts on both the biological and cultural resources would be protected from damage or destruction as described above. An additional 2,600 acres of the Greater Sand Mountain ACEC would be closed to motorized travel; impacts would be the same as described under Alternative A on the 5,800 acres. Furthermore, 10,500 acres of the ACEC would overlap an area where motorized and mechanized travel would be limited to designated routes. Limiting travel to designated routes can minimize the spread of invasive species, trampling or removal of vegetation, and damage of cultural resources. The remaining 1,300 acres of unvegetated dune area within the ACEC would be open to cross-country travel. Impacts would be the same as described under Alternative A in this area.

The Greater Sand Mountain ACEC and the Sand Springs Desert Study Area potential ACEC would be proposed for withdrawal from locatable mineral entry under Alternative B. This would result in 16,400 acres in the Greater Sand Mountain ACEC and 17,000 acres in the Sand Springs Desert Study Area being closed to locatable mineral entry. Locatable mineral development would not occur and the impacts described above would not occur.

Approximately 12,000 acres of the Greater Sand Mountain ACEC would overlap the Salt Wells ERMA and 5,000 acres (including all of the Sand Springs Desert Study Area potential ACEC) would overlap the Sand Mountain SRMA. SRMA management that would impact the ACEC values primarily relates to travel designations (i.e., open, limited, or closed) and are previously discussed in this section. The ERMA would primarily promote long-distance trail riding opportunities on designated routes, which would be compatible with management of the Greater Sand Mountain ACEC. While recreation may be highlighted and concentrated in the area, it is more likely that recreation would be monitored in the area, as opposed to areas not designated as recreation management areas, and so impacts could be identified and mitigated earlier on.

Effects under Alternative C

The 17,000-acre potential Greater Sand Mountain ACEC and the 50-acre potential Sand Springs Desert Study Area ACEC would be designated. The Sand Springs Desert Study Area ACEC would be entirely within the Greater Sand Mountain ACEC.

The Greater Sand Mountain ACEC would not be available for livestock grazing, and 14,500 acres would overlap an area closed to mineral material disposal. This would reduce the potential for the impacts described above, compared with Alternative A.

Under Alternative C, the Sand Springs Desert Study Area ACEC would be closed to motorized and mechanized travel. In this area, impacts on the cultural resources would be protected from damage or destruction, as described above. Approximately 11,600 acres of the Greater Sand Mountain ACEC (overlapping the Sand Mountain SRMA, Desert Habitat RMZ) would be closed to motorized travel; impacts would be the same as described under Alternative A. The remaining 1,300 acres of the ACEC (overlapping the Sand Mountain SRMA, Dune RMZ) would be open to cross-country travel. Impacts would be the same as described under Alternative A.

Both the Greater Sand Mountain and the Sand Springs Desert Study Area ACECs would be proposed for withdrawal from locatable mineral entry under Alternative C. This withdrawal, if processed, would help protect the cultural and biological resources from fragmentation and damage associated with locatable mineral development.

Approximately 4,900 acres of the Greater Sand Mountain ACEC would overlap the Salt Wells ERMA; 4,000 acres (including all of the Sand Springs Desert Study Area potential ACEC) would overlap the Sand Mountain SRMA. Impacts would be similar to those described under Alternative B.

Effects under Alternative D

Neither the potential Greater Sand Mountain nor the potential Sand Springs Desert Study Area ACECs would be designated. The Greater Sand Mountain

ACEC would be available for livestock grazing and 600 acres would be open to mineral material disposal. Impacts would be the same as Alternative B.

Under Alternative D, 5,800 acres of the Greater Sand Mountain potential ACEC (including all of the Sand Springs Desert Study Area potential ACEC) would overlap an area that would be closed to motorized travel; impacts would be the same as described under Alternative A. Motorized and mechanized travel in the remaining, 11,200 acres of the ACEC would overlap an area where motorized and mechanized travel would be limited to designated routes. This can minimize the spread of invasive species, trampling or removal of vegetation, and damage to cultural resources.

The Greater Sand Mountain ACEC and the Sand Springs Desert Study Area potential ACEC would be proposed for withdrawal from locatable mineral entry. Impacts would be the same as described under Alternative B.

Effects under Alternative E

Neither the potential Greater Sand Mountain nor the potential Sand Springs Desert Study Area ACECs would be designated. The potential Greater Sand Mountain ACEC would be available for livestock grazing and 400 acres would be open to mineral material disposal. Impacts would generally be the same as Alternative B.

Under Alternative E, 2,600 acres of the potential Greater Sand Mountain ACEC (including all of the potential Sand Springs Desert Study Area ACEC) would overlap an area that would be closed to motorized and mechanized travel. Impacts would be the same as described for Alternative B. An additional 2,600 acres of the potential Greater Sand Mountain ACEC would overlap an area that would be closed to motorized travel. Impacts would be the same as described under Alternative A. Furthermore, 10,500 acres of the potential ACEC would overlap an area where motorized and mechanized travel would be limited to designated routes. Impacts would be the same as described under Alternative B but over a greater area. The remaining 1,300 acres of the potential ACEC would be open to cross-country travel. Impacts would be the same as described under Alternative A.

Approximately 16,400 acres within the potential Sand Springs Desert Study Area ACEC overlap an area that would be proposed for withdrawal from locatable mineral entry. This withdrawal, if processed, would help protect the cultural resources from damage associated with locatable mineral development.

Approximately 5,000 acres of the potential Greater Sand Mountain ACEC would overlap the Salt Wells ERMA, and 12,000 acres (including all of the Sand Springs Desert Study Area potential ACEC) would overlap the Sand Mountain SRMA. Impacts would be similar to those described under Alternative B.

Grimes Point Archaeological District

Grimes Point Archaeological District is a potential 15,900-acre ACEC with identified relevant and important cultural resource values. Major threats to the potential ACEC are OHV use, mineral material extraction/exploration, mining, ROWs, vandalism, target shooting, erosion, trash accumulation, soil deposition, looting, and livestock grazing. Urbanization (e.g., human encroachment and increased use of public lands), which also threatens the potential ACEC, is discussed under Cumulative Effects.

Surface-disturbing activities, including OHV use, mining, and ROW location, and trampling due to livestock grazing, can all damage or destroy archaeological and paleontological artifacts on the surface. Livestock can also rub against petroglyphs, causing them to fade away over time. OHV use can also cause erosion that can damage artifacts by covering them, by exposing them, or by eroding the resources themselves.

Energy and minerals development could impact ACEC values by flattening, destroying, or removing vegetation; changing the visual landscape; causing erosion that could degrade resources by changing them (e.g., wearing them away or eroding them) or covering them up. Erosion can also lead to new resources coming to the surface and being discovered and damaging cultural or geologic resources during road and facility construction. Closures to mineral materials disposal would help protect ACEC values by eliminating surface-disturbance associated with such development.

Petitioning to withdraw areas from locatable mineral entry within potential ACECs could help protect ACEC values if they are formally withdrawn. Withdrawal would limit the impacts of locatable minerals development on ACEC values within the portions of ACECs that were withdrawn. Specific impacts of locatable minerals development on ACEC values are of the same nature and type as impacts of general energy and minerals development.

Identifying ACECs as ROW exclusion or avoidance areas would protect relevant and important values by reducing (for avoidance areas) or eliminating (for exclusion areas) impacts from development requiring a ROW permit, including for utilities and access roads.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The potential Grimes Point Archaeological District ACEC is not designated. Lands within this area are open to multiple uses that have the potential to damage resources, as described above. While the area is designated as an archaeological district, only a portion is listed on the NRHP. The potential ACEC would be open to mineral material disposal, nonenergy mineral leasing, and locatable mineral entry. These types of activities could result in the impacts

described above. The ACEC is also open to fluid mineral leasing, and 615 acres has an NSO stipulation. This would prevent surface disturbance in the NSO area, but operations could be moved (on the lease) to other portions of the potential ACEC; this would have impacts.

Approximately 13,800 acres of the potential ACEC would be open to cross-country travel and is causing the impacts described above. Only 2,100 acres (13 percent) would be closed to motorized travel. This closure precludes damage and destruction from OHV use, but similar impacts could be realized from nonmotorized recreation in the same area.

Effects under Alternative B

The potential Grimes Point Archaeological District ACEC (15,900 acres) would be designated. The ACEC would be open to fluid mineral leasing. This would be subject to an NSO stipulation to protect resources at the surface by not allowing fluid mineral development. The ACEC would also be open to nonenergy mineral leasing and livestock grazing, impacts of which would be the same as under Alternative A.

Cultural and historic values of rock art sites would be protected by prohibiting surface-disturbing activities and visual intrusions within 0.125 mile of these areas. This would be the case if they were to adversely affect these values during evaluation of eligibility for the NRHP.

Both motorized and mechanized travel would be limited to designated routes. Limiting travel to designated routes can minimize damage to artifacts on the surface by keeping recreationists away from them.

The ACEC would be managed as ROW avoidance. ROW development could occur in the area under certain conditions; even so, development activities and facilities placement should take into account the cultural resources at the project level in order to minimize impacts.

Finally, the ACEC would be entirely within the Salt Wells ERMA. The ERMA would primarily promote long-distance trail riding opportunities which would be compatible with management of the Grimes Point Archaeological District ACEC. While recreation may be highlighted in the ERMA, it is more likely that recreation would be monitored in the area, as opposed to areas not designated as recreation management areas. Thus, impacts could be identified and mitigated earlier.

Effects under Alternative C

The potential Grimes Point Archaeological District ACEC (15,900 acres) would be designated. The ACEC would overlap an area closed to fluid mineral leasing and portions of the ACEC would overlap with areas that would be closed to mineral material disposal (3,600 acres) and nonenergy mineral leasing (3,400 acres). These closures would protect visual integrity and artifacts from direct

damage in the closed areas. The entire ACEC would also be proposed for withdrawal from locatable mineral entry which, if withdrawn, would also provide protections from this type of development.

An 11,600-acre portion of the ACEC would be managed as ROW avoidance, with the same impacts as under Alternative B. The remaining 4,300 acres would overlap a ROW exclusion area, which would preclude impacts from ROW development.

Approximately 2,100 acres of the ACEC would not be available for livestock grazing to protect ACEC values; an additional 12,400 acres would overlap an area that is also not available for livestock grazing. Fencing or other exclosures may have to be constructed to keep cows out of the unavailable area; fence construction could cause local damage to artifacts. However, closing most of the ACEC to livestock grazing would protect the archaeological and paleontological values.

Cultural and historic values of rock art sites would be protected by prohibiting surface-disturbing activities and visual intrusions within 1 mile of these areas if they would adversely affect these values during their evaluation of eligibility for the NRHP.

The ACEC would be closed to motorized and mechanized travel, which would prevent damage or destruction from this type of recreation. Also, closure to motorized and mechanized travel would likely result in fewer people accessing the area. This would likely reduce the level of vandalism and looting that is occurring.

The 14,900 acres of the ACEC would be within the Salt Wells ERMA. Recreation that adversely impacts cultural or historic resources would not be authorized, providing additional protection from recreation requiring a permit. Because the ACEC would be closed to motorized and mechanized travel, impacts from recreation in general would be minimal.

Effects under Alternative D

The potential Grimes Point Archaeological District ACEC (15,900 acres) would be designated. Management would be the same as described for Alternative B, except that the area would not overlap the Salt Wells ERMA.

Effects under Alternative E

Only a 2,100-acre portion of the potential Grimes Point Archaeological District ACEC would be designated; the entire 15,900-acre potential ACEC would be within the Wyemaha Archaeological District. Management for the Wyemaha Archaeological District, including proposed withdrawal from locatable mineral entry, closed to fluid mineral leasing, and ROW avoidance (12,300 acres) and exclusion (3,600 acres), would all provide protections to the ACEC values.

Cultural and historic values of rock art sites would be protected by prohibiting surface-disturbing activities and visual intrusions within 0.5 mile (or the visual horizon) of these areas if they would adversely affect these values during their evaluation of eligibility for the NRHP.

The ACEC would be entirely within the Salt Wells ERMA; impacts would be the same as under Alternative B.

Incandescent Rocks Scenic

Incandescent Rocks Scenic is a potential 1,100-acre ACEC with identified relevant and important scenic values. The significance of the site centers on the rhyolitic outcrops and ridges that are characterized by red, yellow, orange, and purple hues that appear to glow as light reflects off them. Major threats are OHV use, mineral exploration, vandalism, and erosion.

Effects Common to All Alternatives

Under all alternatives, the ACEC would be managed as VRM Class II, which would allow low levels of landscape modifications in order to retain the scenic value. This would help maintain the scenic value in the area.

Effects under Alternative A

The Incandescent Rocks Scenic ACEC (1,100 acres) would be designated. It would be managed as open to fluid mineral leasing, mineral material disposal, nonenergy mineral leasing, locatable mineral entry, and ROW development. However, all of these activities, if permitted, would have to meet VRM Class II objectives; therefore, impacts on the scenic value would be minimal. These activities, though, even if meeting VRM Class II objectives, can all cause erosion, which can affect the scenic value. Limiting travel to existing routes minimizes erosion from cross-country travel but can still cause erosion in the area of use.

Effects under Alternative B

The potential Incandescent Rocks Scenic ACEC would be designated (1,100 acres). The ACEC would be open to fluid mineral leasing, mineral material disposal, and nonenergy mineral leasing. Travel would also be limited to designated routes; impacts would be the same as described under Alternative A.

Fluid mineral leasing would be subject to a CSU stipulation to protect resources other than the ACEC. While a CSU may not generally protect scenic values, the ACEC would be managed according to VRM Class II objectives. Therefore, any fluid mineral development activities would either need to be designed to meet the VRM Class II objectives or they would not be permitted.

The ACEC would be managed as an avoidance area for wind energy development; nearly all of the ACEC would be managed as an avoidance area for other ROWs. Placing ROWs outside of the area if possible or applying ROW avoidance stipulations, would minimize impacts on the scenic value and surface disturbance.

Effects under Alternative C

The potential Incandescent Rocks Scenic ACEC (1,100 acres) would be designated. It would be closed to fluid mineral leasing, mineral material disposal, nonenergy mineral leasing, and ROW development. These closures would preclude impacts on the scenic value and any erosion due to these types of activities. In addition, most of the area would be closed to motorized use, which would limit erosion. However, the area would still be accessible via mechanized means, so vandalism would still be possible.

The ACEC would also be recommended for withdrawal from locatable mineral entry. This withdrawal, if processed, would help prevent surface disturbance and protect scenic values from the visual impacts associated with locatable mineral development.

Because the area would be managed for day use only, the potential for vandalism would likely decrease if most of the vandalism occurs after dark.

Effects under Alternative D

The potential Incandescent Rocks Scenic ACEC (1,100 acres) would be designated (1,100 acres). The ACEC would be open to fluid mineral leasing, mineral material disposal, and nonenergy mineral leasing. Travel would also be limited to designated routes, and impacts would be the same as described under Alternative A.

Fluid mineral leasing would be subject to a CSU stipulation, which could help minimize impacts on the scenic value and of erosion.

The ACEC would be managed as an avoidance area for wind energy development, and nearly all of the ACEC would be managed as an avoidance area for other ROWs. Placing ROWs outside of the area if possible or applying ROW avoidance stipulations would minimize impacts on the scenic value and erosion. It is unlikely that aboveground utilities could be placed in the area and still meet VRM Class II objectives, therefore, there is little threat from this type of activity.

The ACEC would be recommended for withdrawal from locatable mineral entry, and impacts would be the same as described under Alternative C.

Effects under Alternative E

The potential Incandescent Rocks Scenic ACEC (1,100 acres) would be designated. The ACEC would be closed to fluid mineral leasing and nonenergy mineral leasing. Travel would also be limited to designated routes; impacts would be the same as described under Alternative C. Most of the area (1,060 acres) would be closed to mineral material disposal, which would result in the same impacts as described under Alternative C. The remaining 50 acres would be open to mineral material disposal, which could cause erosion in the area.

The ACEC would be managed as an avoidance area for wind energy development, and nearly all of the ACEC would be managed as an avoidance area for other ROWs. Impacts would be the same as described under Alternative D.

The ACEC would be recommended for withdrawal from locatable mineral entry, and impacts would be the same as described under Alternative C.

Lassen Red Rock Scenic

Lassen Red Rock Scenic is a potential 800-acre ACEC with identified relevant and important scenic values. The area contains unique and colorful geological features, including bright red, white, and gray pillars, pinnacles, crags and canyons. Major threats are OHV use, mineral exploration, vandalism (e.g., graffiti and rock collection), and erosion due to the development of social trails.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The potential Lassen Red Rock Scenic would not be designated as an ACEC under Alternative A. The potential ACEC would be managed as VRM Class III which would allow modifications to the landscape. Allowing this level of landscape modification would impact the scenic value.

The potential ACEC would be open to fluid mineral leasing, mineral material disposal, nonenergy mineral leasing, locatable mineral entry, and ROW development. While these activities, if permitted, must meet VRM Class III objectives, they could still affect the scenic quality of the area.

Travel in the potential ACEC is also limited to existing routes. While this should keep travel on such routes and minimize erosion, affecting the geology that gives the area its scenic value.

Effects under Alternative B

The potential Lassen Red Rock Scenic ACEC would not be designated, but it would be managed as VRM Class IV. This would allow major modifications to the landscape. Impacts would be similar to Alternative A.

The potential ACEC would be open to mineral material disposal and nonenergy mineral leasing; the impacts would be the same as described for Alternative A. However, because the area would be managed as VRM Class IV, more of these activities could be permitted without having to meet higher VRM Class objectives. This would allow for more potential impacts on the scenic quality of the area. These activities can also cause erosion, which affects the geology that gives the area its scenic value.

The potential ACEC would be open to fluid mineral leasing, with a CSU stipulation on 300 acres. This could help minimize some impacts.

A nearly 400-acre portion of the potential ACEC would be an avoidance area for ROWs. Placing ROWs outside of the potential ACEC would mitigate impacts on the scenic value; however, if permitted inside the potential ACEC, it would have the same impacts as described under Alternative A.

Finally, travel would be limited to designated routes, and impacts would be the same as described under Alternative A.

Effects under Alternative C

The potential Lassen Red Rock Scenic ACEC (800 acres) would be designated. The ACEC would be managed as VRM Class II, which would allow low levels of landscape modifications to retain the existing character. This would help maintain the scenic values.

The ACEC would be closed to fluid mineral leasing, mineral material disposal, and nonenergy mineral leasing. This would preclude potential impacts from these types of activities. The ACEC would also be an exclusion area for ROWs, including solar, and for wind. Potential development would be the least of any alternative.

The ACEC would be closed to motorized travel, which would eliminate erosion from motorized travel. However, social trails could be created by nonmotorized travel, which could still cause erosion in sensitive areas.

Effects under Alternative D

The potential Lassen Red Rock Scenic ACEC would not be designated, but it would be managed as VRM Class IV. Impacts would be the same as described under Alternative B. Other allocations, with one exception, would also be the same as under Alternative B, so impacts would be the same.

Alternative D differs from Alternative B in that the potential ACEC would be recommended for withdrawal from locatable mineral entry. If withdrawn, the scenic values would be protected from this type of activity.

Effects under Alternative E

The potential Lassen Red Rock Scenic ACEC would not be designated. The BLM would manage 600 acres of Lassen Red Rock Scenic as VRM Class IV; impacts would be the same as described under Alternative B in this area, except that Alternative E would manage 400 acres as closed to mineral material disposal. The remaining 200 acres would be managed as VRM Class II, and impacts would be the same as described under Alternative C.

Other allocations would be the same as under Alternative B, so impacts would be the same.

Namazii Wunu Cultural

Namazii Wunu Cultural is a potential 158,300-acre ACEC with identified relevant and important cultural resource values. It is a traditional use area for the Yerington Paiute Tribe. Major threats are wildfire, OHV use, livestock grazing, and mining.

OHV use can damage archaeological artifacts on the surface and can disrupt the traditional use area used by the Yerington Paiute Tribe. OHVs can also spread seeds of invasive species or damage or remove native vegetation, allowing invasive species to spread. This fuel buildup can increase the frequency and severity of wildfires, which can damage or destroy cultural artifacts and the area for traditional uses by the tribe. Improper livestock grazing can have a similar impact.

Energy and minerals development could impact ACEC values by flattening, destroying, or removing vegetation; changing the visual landscape; spreading weeds; and damaging cultural resources during road and facility construction. An NSO stipulation would eliminate these impacts by prohibiting surface occupancy or surface-disturbing activities from fluid mineral development. A CSU stipulation would allow mineral leasing with certain operational or locational constraints imposed by the BLM to protect an identified resource or value. This stipulation would reduce impacts on cultural values associated with fluid mineral leasing. Closures to leasing of fluid minerals nonenergy solid minerals and to mineral materials disposal would help protect cultural resource values. It would accomplish this by eliminating surface disturbance from energy and minerals development.

Petitioning to withdraw areas from locatable mineral entry could help protect cultural resource values if they were formally withdrawn. Withdrawal would limit the impacts of locatable minerals development on the portions of the ACEC that were withdrawn. Specific impacts of locatable minerals development on cultural resources are of the same nature and type as impacts of general energy and minerals development.

Effects Common to All Alternatives

Approximately 10,200 acres of the potential Namazii Wunu Cultural ACEC overlaps the Burbank Canyons WSA. The WSA is managed as VRM Class I and would be closed to new permanent disturbances that do not meet the nonimpairment standard. Because of this, it is unlikely that the relevant and important values would be impacted in the area of overlap, which accounts for 6 percent of the potential ACEC.

Under all alternatives, except for Alternative C, between 5,700 acres and 8,000 acres are identified for disposal. Disposal would move potentially significant cultural resources outside of federal management. However, in all cases, cultural surveys would be required before disposal. If significant resources were discovered, the land would likely remain under federal ownership.

Effects under Alternative A

The potential Namazii Wunu Cultural ACEC would not be designated.

Outside of the WSA, the potential ACEC would be open for fluid mineral leasing, nonenergy mineral leasing, mineral material disposal, locatable mineral entry, and ROW location, including solar energy. Approximately 7,000 acres is available for utility-scale solar development. Development of these resources could result in the impacts described above.

The entire potential ACEC is available for livestock grazing, which can result in the impacts described above.

Outside of the WSA, 124,100 acres would be open to cross-country travel. This type of travel area designation has the greatest potential for damage to or destruction of cultural resources and for weed spread and potentially wildfire. The remaining area is limited to existing routes, which can minimize damage to specific locations.

Effects under Alternative B

The potential Namazii Wunu Cultural ACEC would be designated (158,300 acres). Approximately 3,600 acres would overlap the Churchill Narrows Buckwheat Botanical ACEC.

Outside the WSA, the potential ACEC would be open to fluid mineral leasing; 18,800 acres would be subject to an NSO stipulation, and the entire area outside the WSA would be subject to a CSU stipulation. These stipulations would protect cultural resources, as described above. However, the CSU stipulation relies on project design, siting, and implementation of appropriate mitigation measures and monitoring protocols to ensure that resources are adequately safeguarded. Application of the CSU stipulation across a portion of the potential ACEC would mitigate impacts from fluid mineral development, but the stipulation would not eliminate all impacts.

The ACEC outside of the WSA would be open for mineral material disposal, nonenergy mineral leasing, and locatable mineral entry. Impacts would be the same as described for Alternative A.

The ACEC outside of the WSA would be managed as a ROW avoidance area, although only 79,100 acres would be avoidance areas for wind energy development. While ROW development could occur in the area under certain conditions, development and placement of facilities should take into account the cultural resources at the project level to minimize impacts. The entire ACEC would be an exclusion area for utility-scale solar, eliminating potential impacts from this type of development.

The entire ACEC would be available for livestock grazing; impacts would be the same as under Alternative A.

Outside the WSA, travel would be limited to designated routes. This would reduce the potential for damage to or destruction of cultural resources to the routes themselves. However, during the designation process, routes that avoid such resources would likely be considered.

Approximately 56,500 acres of the ACEC would overlap the Pine Nut ERMA. While recreation may be highlighted in the ERMA, it is more likely that it would be monitored there, as opposed to areas not designated as recreation management areas; thus, impacts could be identified and mitigated earlier.

Effects under Alternative C

The potential Namazii Wunu Cultural ACEC would be designated (158,300 acres). Approximately 3,600 acres would overlap the Churchill Narrows Buckwheat Botanical ACEC, 45,800 acres would overlap the Pine Nut Bi-State Sage Grouse ACEC, and 130 acres would overlap the Pine Nut Mountains Williams Combleaf Botanical ACEC.

All of the ACEC would be closed to fluid mineral leasing, mineral material disposal, nonenergy mineral leasing, and livestock grazing. The ACEC would also be managed as a ROW exclusion area, including for utility-scale solar and wind energy development, and would be closed to SRPs. Precluding these types of activities would prevent damage to and destruction of the cultural resources and would also preserve the traditional use area for the tribe.

Except for 14,100 acres that would be closed to motorized and mechanized travel, 144,100 acres of the ACEC would be closed to motorized travel. Mechanized travel would be limited to designated routes. This would further reduce potential impacts from OHV use.

Approximately 115,800 acres of the ACEC would overlap the Pine Nut and Singatse ERMAs. Dispersed motorized opportunities would be highlighted in the Singatse ERMA; however, because the ACEC would be closed to motorized travel, recreation in the ACEC is unlikely to impact the buckwheat in the area of overlap.

Effects under Alternative D

The potential Namazii Wunu Cultural ACEC would not be designated. In the potential Namazii Wunu Cultural ACEC, which would not be designated, approximately 3,600 acres would overlap the Churchill Narrows Buckwheat Botanical ACEC; 270 acres would overlap the Pine Nut Mountains Williams Combleaf Botanical ACEC.

Outside the WSA, the potential ACEC would be open to fluid mineral leasing, 80,300 acres would be subject to an NSO stipulation, and 88,800 acres would be subject to a CSU stipulation. These stipulations would protect cultural resources, as described above. However, the CSU stipulation relies on project design, siting, and implementation of appropriate mitigation measures and

monitoring protocols to ensure that resources are adequately safeguarded. Application of the CSU stipulation across a portion of the potential ACEC would mitigate impacts from fluid mineral development, but the stipulation would not eliminate all impacts. In both the NSO and CSU, the stipulations would not be targeted to protect the cultural resource value. If the BLM Authorized Officer were to except, modify, or waive the restrictions, impacts could occur.

The ACEC outside of the WSA would be open for mineral material disposal, nonenergy mineral leasing, and locatable mineral entry (except for 270 acres that would be proposed for withdrawal, less than 1 percent of the potential ACEC). Impacts would be the same as described for Alternative A.

Outside the WSA, 57,900 acres would be a ROW avoidance area, 68,200 acres would be an avoidance area for wind, and 3,400 acres would be available for solar energy development. Impacts would be the same as described for Alternative A but over a different area.

The entire potential ACEC would be available for livestock grazing; impacts would be the same as under Alternative A.

Outside the WSA, travel would be limited to designated routes, and impacts would be the same as under Alternative B. Approximately 56,500 acres of the ACEC would overlap the Pine Nut ERMA; impacts would be the same as under Alternative B.

Effects under Alternative E

The potential Namazii Wunu Cultural ACEC would not be designated.

Outside the WSA, 9,600 acres would be closed to fluid mineral leasing, precluding impacts from surface disturbance. The remaining 138,400 acres of the potential ACEC would be open to fluid mineral leasing, 93,800 acres would be subject to an NSO stipulation, and 82,500 acres would be subject to a CSU stipulation. These stipulations would protect cultural resources. However, the CSU stipulation relies on project design, siting, and implementation of appropriate mitigation measures and monitoring protocols to ensure that resources are adequately safeguarded. Application of the CSU stipulation across a portion of the potential ACEC would mitigate impacts from fluid mineral development, but the stipulation would not eliminate all impacts.

Outside the WSA, 73,200 acres would be closed to mineral material disposal, 90,100 acres would be closed to nonenergy mineral leasing, and 3,600 acres would be proposed for withdrawal from locatable mineral entry. In these areas, cultural resources and traditional uses would be protected. The remaining potential ACEC would be open to such uses and could experience impacts.

Outside the WSA, 80,000 acres would be managed as a ROW avoidance area. Within the ACEC, 28,400 acres would be managed as an avoidance area for wind energy development, and 72,300 acres would be managed as exclusion areas for wind energy development. In these areas, cultural resources and traditional uses would be protected. The remaining potential ACEC would be open to such uses and could experience impacts. Approximately 2,400 acres would be identified as variance areas for utility-scale solar development.

The entire potential ACEC would be available for livestock grazing; impacts would be the same as under Alternative A.

Outside of the WSA, travel would be limited to designated routes; impacts would be the same as under Alternative B. Approximately 115,800 acres of the potential ACEC would overlap the Pine Nut and Singatse ERMAs. While recreation may be highlighted in the ERMA, it is more likely that it would be monitored, as opposed to areas not designated as recreation management areas; thus, impacts could be identified and mitigated earlier.

Pah Rah High Basin (Dry Lakes) Petroglyph District

Pah Rah High Basin (Dry Lakes) Petroglyph District is a potential 5,300-acre ACEC with identified relevant and important cultural resource values. Evidence indicating that Native Americans used the site for over 3,500 years includes petroglyphs, rock rings, stone artifacts, and seasonal and residential camps. The site is culturally significant to both the Southern Washoe and Northern Paiute Tribes. Major threats are livestock grazing, target shooting, OHV use, trash accumulation, and theft and vandalism of artifacts. Increased urbanization and encroachment, which also threaten the cultural resources, are discussed under cumulative effects.

It has been reported that livestock grazing in the area have rubbed against the petroglyphs. Over time, this may cause them to wear away, removing evidence of the cultural past. Livestock grazing may also damage the riparian areas in the potential ACEC by trampling or consuming vegetation.

The increase in OHV use in the area can damage or destroy artifacts in the potential ACEC. In addition, increased access to the area would result in increased OHV use, which can lead to the accumulation of trash and theft or vandalism of artifacts.

Effects Common to All Alternatives

Under all alternatives, the ACEC would be open to noncommercial target shooting, which can also damage or destroy artifacts if directly hit.

Effects under Alternative A

Currently 3,900 acres of the 5,300 acre potential ACEC are designated as the Pah Rah High Basin (Dry Lakes) Petroglyph District ACEC. The area, including the area not designated as an ACEC, is available for livestock grazing, so the

potential for them to rub against the petroglyphs exists. Travel in the ACEC and potential ACEC is limited to existing routes. This minimizes the risk of damage to or destruction of artifacts to just those routes used for travel.

Effects under Alternative B

All 5,300 acres of the potential ACEC would be designated as the Pah Rah High Basin Petroglyph ACEC. Management in the ACEC would be similar to Alternative A, so impacts are expected to be similar. Under Alternative B the ACEC also overlaps the Pah Rah ERMA, which would be designated to provide for mountain biking, hiking, and environmental education opportunities. Management would be compatible with protecting the archaeological resources.

Effects under Alternative C

All 5,300 acres of the potential ACEC would be designated as the Pah Rah High Basin Petroglyph ACEC. The ACEC would not be available for livestock grazing, eliminating the threat of them rubbing against the petroglyphs. In order to keep livestock out, however, fences or other barriers would need to be constructed. Construction and maintenance could damage or destroy cultural artifacts in the area.

The ACEC would also be closed to motorized travel, eliminating the risk from this type of use. However, mechanized travel would still be permitted on designated routes and could damage resources on the routes. Limiting travel to just mechanized use may reduce the level of access to the area, which would also likely reduce the amount of trash buildup, vandalism, and looting.

Under Alternative C the ACEC also overlaps the Pah Rah ERMA. This would be designated to provide for mountain biking, hiking, and environmental education opportunities, while emphasizing protection of cultural, historical, and natural resources. Management would be compatible with protecting the archaeological resources.

Effects under Alternative D

All 5,300 acres of the potential ACEC would be designated as the Pah Rah High Basin Petroglyph ACEC. Management would be similar to Alternative B, except that the ACEC would not be available for livestock grazing, eliminating the threat of them rubbing against the petroglyphs. In order to keep livestock out, however, fences or other barriers would need to be constructed. Construction and maintenance could damage or destroy cultural artifacts in the area.

Effects under Alternative E

All 5,300 acres of the potential ACEC would be designated as the Pah Rah High Basin Petroglyph ACEC. Management would be similar to Alternative B; however, the ACEC would also be closed to mineral material disposal and would be managed as a ROW exclusion area, instead of avoidance. These additional restrictions would further preclude surface-disturbing activities that could damage or destroy cultural resources.

Pine Nut Mountains Williams Combleaf Botanical and Virginia Range Williams Combleaf Botanical

Pine Nut Mountains Williams Combleaf Botanical (330 acres) and Virginia Range Williams Combleaf Botanical (470 acres) are potential ACECs with identified relevant and important biological values. The areas contain habitat for Williams combleaf (*Polyctenium williamsiae*), a BLM sensitive species and a State of Nevada critically endangered species. The playa lakes in the Pine Nut Mountains Williams Combleaf Botanical potential ACEC are also important strutting grounds next to nesting areas for the Bi-State sage grouse. Major threats are invasive species, OHV use, and livestock grazing.

OHVs and domestic livestock can spread the seeds of invasive species that can outcompete and eradicate the Williams combleaf plants. Trampling by livestock and OHVs compacts soil and disrupts the recharge of soil moisture into the habitat. Because the Williams combleaf plant is restricted to a narrow margin around the playa lakes, alteration to the hydrology and to the wet and dry cycles of the playa lakes can reduce plant densities or extirpate the species.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The Virginia Range Williams Combleaf Habitat ACEC (470 acres) would be designated, but the potential Pine Nut Mountains Williams Combleaf Botanical ACEC is not.

The Virginia Range Williams Combleaf Habitat ACEC overlaps an area that would be closed to locatable mineral entry, fluid mineral leasing, and nonenergy mineral leasing for other resource concerns. However, the area is available for livestock grazing, which can compact the soils and lead to impacts described above. Travel in the area is limited to existing routes, which can help keep recreationists on established routes away from the fragile plants. This minimizes soil compaction and impacts caused by soil compaction.

The Pine Nut Mountains Williams Combleaf Botanical potential ACEC is available for livestock grazing, would be open to cross-country OHV use, fluid mineral entry, and mineral material disposal. These uses can spread the seeds of noxious weeds that can outcompete and eradicate the Williams combleaf plants. They can also compact the soil, which can lead to the impacts described above, or trample the plant.

Effects under Alternative B

The Virginia Range Williams Combleaf Habitat ACEC would be designated (470 acres), but the Pine Nut Mountains Williams Combleaf Botanical ACEC would not. In the potential Pine Nut Mountains Williams Combleaf Botanical ACEC, 270 acres would overlap the Namazii Wunu Cultural ACEC and 50 acres would overlap the Tagim aša Cultural ACEC.

Management of the Virginia Range Williams Combleaf Habitat ACEC would be the same as described under Alternative A, so impacts would be the same.

The Pine Nut Mountains Williams Combleaf Botanical potential ACEC would be managed similarly to Alternative A; however, 320 of the 330-acre potential ACEC would be open to fluid mineral leasing, subject to a CSU stipulation. The CSU stipulation would allow fluid mineral leasing with certain operational or locational constraints imposed by the BLM. The CSU stipulation relies on project design, siting, and implementation of appropriate mitigation measures and monitoring protocols to ensure that resources are adequately safeguarded.

Application of the CSU stipulation across a portion of the potential ACEC would mitigate impacts from fluid mineral development, but the stipulation would not be targeted to protect the Williams combleaf.

In addition, all of the Pine Nut Mountains Williams Combleaf Botanical potential ACEC would be limited to designated routes. This could minimize the soil compaction and the impacts that result. It can also minimize the spread of invasive species that might outcompete or eradicate the Williams combleaf plant.

Effects under Alternative C

Both the Virginia Range Williams Combleaf Habitat ACEC (470 acres) and the Pine Nut Mountains Williams Combleaf Botanical ACEC (330 acres) would be designated. In the latter, 270 acres would overlap the Namazii Wunu Cultural ACEC, 190 acres would overlap the Pine Nut Bi-state Sage Grouse ACEC, and 50 acres would overlap the Tagim aša Cultural ACEC.

As under Alternative A, the Virginia Range Williams Combleaf Habitat ACEC would be closed to fluid mineral leasing, locatable mineral entry, and nonenergy mineral leasing. Under Alternative C, the ACEC would also be closed to mineral material disposal, providing some additional protection. Most important, the ACEC would be closed to motorized and mechanized travel; this would reduce opportunities for soil compaction and weed spread, compared to Alternative A.

The Virginia Range Williams Combleaf Habitat is completely within the Virginia Range ERMA, which would be managed specifically for recreation, while protecting cultural, historical, and natural resources.

Because of the overlap with the Namazii Wunu Cultural ACEC, the Pine Nut Bi-State Sage Grouse ACEC, and the Tagim aša Cultural ACEC, the Pine Nut Mountains Williams Combleaf Botanical ACEC would be closed or mostly (about 98 percent) closed to fluid mineral leasing and mineral material disposal. About 98 percent of the ACEC would also be managed as a ROW exclusion area. This would eliminate, or nearly eliminate, impacts from surface disturbance. Most important, the ACEC would not be available for to livestock

grazing and motorized and mechanized travel. This would reduce opportunities for soil compaction and weed spread, compared to Alternative A.

Approximately 300 acres of the Pine Nut Mountains Williams Combleaf Botanical ACEC would overlap with the Pine Nut ERMA. While recreation may be highlighted in the ERMA, it is more likely that it would be monitored, as opposed to areas not designated as recreation management areas; thus, impacts could be identified and mitigated earlier.

Effects under Alternative D

Both the Virginia Range Williams Combleaf Habitat ACEC (470 acres) and the Pine Nut Mountains Williams Combleaf Botanical ACEC (330 acres) would be designated. In the Pine Nut Mountains Williams Combleaf Botanical ACEC, 50 acres would overlap the Tagim aša Cultural ACEC.

As under Alternative C, motorized and mechanized travel would be limited to designated routes, and impacts would be the same as those described under Alternative A.

Under Alternative D, the Pine Nut Mountains Williams Combleaf Botanical ACEC would be available for livestock grazing; impacts would be the same as under Alternative A. Motorized and mechanized travel would be limited to designated routes, which would minimize impacts from soil compaction and the spread of invasive species.

Effects under Alternative E

The Virginia Range Williams Combleaf Habitat ACEC (470 acres) would be designated, but the Pine Nut Mountains Williams Combleaf Botanical ACEC would not.

Management of the Virginia Range Williams Combleaf Habitat ACEC would be similar to that under Alternative B, except that the ACEC would be completely within the Virginia Range ERMA. While recreation may be highlighted in the ERMA, it is more likely that it would be monitored. This differs from areas not designated as recreation management areas, and so impacts could be identified and mitigated earlier. In cases where there may be conflicting management objectives, the ACEC management would take precedence over ERMA management.

Pine Nut Mountains Williams Combleaf Botanical potential ACEC would be available for livestock grazing; thus, the potential for impact would be the same as under Alternative A. Motorized and mechanized travel would be limited to designated routes, which could minimize the soil compaction and the impacts that result, as well as greatly reduce or eliminate trampling of the plant. It can also minimize the spread of invasive species that might outcompete or eradicate the Williams combleaf plant.

Approximately 300 acres of the Pine Nut Mountains Williams Combleaf Botanical potential ACEC would overlap with Pine Nut ERMA. Impacts would be the same as described under Alternative C.

Ruhenstroth Paleontological

Ruhenstroth Paleontological is a potential 2,300-acre ACEC with identified relevant and important paleontological values. The area contains an abundance of vertebrate fossils in the Sunrise Pass geologic formation. Major threats are unauthorized collection and unauthorized recreation, including OHV use.

Unauthorized OHV use, such as the creation of social trails, can damage or destroy paleontological resources at the surface. Conversely, ground disturbances monitored by qualified paleontologists could lead to the discovery and recovery of scientifically significant fossils.

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The Ruhenstroth Paleontological ACEC is not designated. There is currently little management in the Ruhenstroth area that would prevent OHV use and other unauthorized recreation. As such, the potential exists for both fossil damage and additional scientific discoveries.

Effects under Alternative B

The Ruhenstroth Paleontological ACEC would be designated (2,300 acres). Approximately 580 acres would be identified for disposal, which would transfer relevant and important values that have yet to be discovered out of BLM management.

Under Alternative B, travel in the ACEC would be limited to designated routes. This would minimize risks of damage to resources by keeping recreationists on routes designated to avoid sensitive resources.

The ACEC would be entirely within the Pine Nut ERMA. While recreation may be highlighted in the ERMA, it is more likely that it would be monitored, as opposed to areas not designated as recreation management areas; thus, impacts could be identified and mitigated earlier on. In cases where there may be conflicting management objectives, the ACEC management would take precedence over ERMA management.

Effects under Alternative C

The Ruhenstroth Paleontological ACEC would be designated (2,300 acres). It would not be available for livestock grazing, fluid mineral leasing, mineral material disposal, and nonenergy mineral leasing. The ACEC would also be managed as a ROW exclusion area and would be closed to SRPs. These restrictions would preclude impacts on the relevant and important values but

may also reduce opportunities for scientific discovery. Furthermore, the ACEC would be closed to motorized travel, while mechanized travel would be limited to designated routes. The potential for damage from motorized use would be eliminated, although mechanized travel could still impact paleontological resources.

The ACEC would be entirely within the Pine Nut ERMA. Impacts would the same as described under Alternative B.

Effects under Alternative D

The Ruhenstroth Paleontological ACEC (2,300 acres) would be designated. Management would be the same as under Alternative B, so impacts would be the same.

Effects under Alternative E

The Ruhenstroth Paleontological ACEC would be designated (2,300 acres). The ACEC would be closed to fluid mineral leasing, mineral material disposal, and nonenergy mineral leasing. It would be managed as a ROW exclusion area and would be proposed for withdrawal from locatable mineral entry. These restrictions would preclude impacts on the relevant and important values but may also reduce opportunities for scientific discovery.

Under Alternative E, travel in the ACEC would be limited to designated routes. This would minimize risks of damage to resources by keeping recreationists on routes designated to avoid sensitive resources.

The ACEC would be entirely within the Pine Nut ERMA. Impacts would the same as described under Alternative B.

Steamboat Buckwheat Botanical

Steamboat Buckwheat Botanical is a potential 80-acre ACEC with identified relevant and important biological values. The area is habitat for steamboat buckwheat (*Eriogonum ovalifolium* var. *williamsiae*), a federally endangered and State of Nevada critically endangered species, and also the altered andesite buckwheat (*E. robustum*), a BLM sensitive species. Major threats are disruption of thermal hydrologic processes, which create and maintain habitat over time, OHV use, invasive species, and urbanization (discussed under Cumulative Effects).

Disturbances that disrupt the soils can lead to a chain of events that would allow for native and nonnative plant species to establish themselves in the area. These species, which compete with the steamboat buckwheat for limited resources, could reduce the density of the Steamboat buckwheat, leading to a possible extinction of this species. Competition from native and nonnative species for resources could reduce the density of the altered andesite buckwheat and potentially lead to extirpation of this species.

Effects Common to All Alternatives

Under all alternatives the potential Steamboat Buckwheat ACEC would be closed to fluid mineral and nonenergy mineral leasing and would be closed to locatable mineral entry. Precluding these developments would prevent soil disruption, stabilizing the habitat allowing for unimpacted seed dispersal and seed germination of the Steamboat buckwheat thus promoting species density and ensuring adequate stage classes needed to ensure a vibrant and robust community.

Under all alternatives, species would receive some protection via BLM compliance with ESA and Section 7 consultation. While actions that "adversely affect" the species may be permitted by the BLM and USFWS, mitigation and conservation measures would be incorporated into any take permit issued by the USFWS in order to reduce the amount of take.

Effects under Alternative A

The Steamboat Buckwheat Botanical ACEC is not designated. Approximately 40 acres of the potential ACEC overlaps the existing Steamboat Hot Springs Geyser Basin ACEC. The potential ACEC would be open to mineral material disposal, which can cause surface-disturbance, making areas vulnerable to invasive plant species introduction and spread.

Motorized and mechanized travel is limited to existing routes, which minimizes the extent of soil disruption in the area but still has the potential for invasive species introduction and spread.

Effects under Alternatives B, D, and E

The Steamboat Buckwheat Botanical ACEC would not be designated. Allocations in the area would be the same as under Alternative A, so potential impacts would be similar.

Effects under Alternative C

The Steamboat Buckwheat Botanical ACEC would be designated (80 acres). The ACEC would be closed to motorized and mechanized travel and is fenced off. This would ensure that that activities that would disrupt the soil and habitat do not occur, thereby offering maximum protection.

Steamboat Hot Springs Geyser Basin

Steamboat Hot Springs Geyser Basin is a potential 80-acre ACEC with a previously identified relevant and important geologic value for a unique geyser field and related geothermal features.

Effects Common to All Alternatives

The surface expression of the geyser field no longer exists at the site; therefore managing it as an ACEC is not necessary. This is because the previous relevant and important value is no longer present.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Stewart Valley Fossil Site
The Stewart Valley Fossil Site is a potential 15,900-acre ACEC with identified relevant and important paleontological values for its abundance of fossils. Major threats are unauthorized collection, unauthorized recreation, OHV use, and erosion.

OHV use can damage or destroy paleontological resources at the surface, and erosion can wear away fossil traces. On the other hand, erosion, both natural and from recreational use, can also expose fossils and lead to new scientific discoveries.

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The Stewart Valley Fossil Site ACEC is designated (15,900 acres). Motorized travel is limited to designated roads, trails, and washes, which helps to keep recreationists in designated areas away and from sensitive resources. Commercial and private collection of fossils is prohibited, which keeps that resource available for scientific research and discovery.

Effects under Alternative B
The Stewart Valley Fossil Site ACEC would be designated (15,900 acres). Motorized and mechanized travel would be limited to designated routes, which helps to keep recreationists in designated areas and away from the sensitive resources. Casual collection of fossils would not be explicitly prohibited, which could inadvertently lead to artifacts being taken from the site.

Other surface-disturbing activities, such as ROW location and fluid mineral leasing, would be restricted by managing the area as a ROW exclusion area and applying an NSO to fluid mineral leases. This would prohibit surface disturbance associated with these types of activities, thereby preventing damage.

Finally, 1,400 acres of the ACEC, which is a high-value area, would be withdrawn from locatable mineral entry. If processed, this would prohibit surface disturbance from these types of activities, thereby preventing damage.

Effects under Alternative C

The Stewart Valley Fossil Site ACEC (15,900 acres) would be designated. Motorized and mechanized travel would be limited to designated routes, which helps to keep recreationists in designated areas and away from the sensitive resources in the area. Alternative C would prohibit removing rocks, mineral specimens, semiprecious stones, fossils, and petrified wood, which would keep the resource available for scientific research and discovery.

The ACEC would be closed to fluid mineral leasing, and a 13,600-acre portion would overlap areas closed to mineral material disposal and nonenergy mineral leasing. The same acreage would be managed as a ROW exclusion area. This would prohibit surface disturbance from these types of activities, thereby preventing damage. However, mineral material disposal, nonenergy mineral leasing, and ROW location could still be permitted on 2,400 acres. If permitted, these types of activities could cause damage at the development site. On the other hand, surface disturbance could also lead to new scientific discoveries.

Finally, 1,420 acres of the ACEC, which is a high-value area, would be withdrawn from locatable mineral entry. If processed, this would prohibit surface disturbance from these types of activities, thereby preventing damage.

Effects under Alternative D

The Stewart Valley Fossil Site ACEC would not be designated. Motorized and mechanized travel would be limited to designated routes, which helps to keep recreationists in designated areas and away from the sensitive resources in the area. Casual collection of fossils would not be explicitly prohibited, which could inadvertently lead to artifacts being taken from the site.

Other surface-disturbing activities, such as mineral material disposal, nonenergy mineral leasing, locatable mineral entry, and ROW location, would be permitted. If so, these activities could cause damage at the development site. On the other hand, surface disturbance could also lead to new scientific discoveries.

The potential ACEC would be open to fluid mineral leasing, subject to a CSU stipulation covering 9,400 acres (60 percent). The CSU stipulation would allow fluid mineral leasing, with certain operational or locational constraints imposed by the BLM. The CSU stipulation relies on project design, siting, and implementation of appropriate mitigation measures and monitoring protocols to ensure that resources are adequately safeguarded. Application of the CSU stipulation across a portion of the potential ACEC would mitigate impacts from fluid mineral development, but the stipulation would not be targeted to protect paleontological resources. If the BLM Authorized Officer were to except, modify, or waive the restrictions, impacts could occur.

Effects under Alternative E

The Stewart Valley Fossil Site ACEC (15,900 acres) would be designated. Motorized and mechanized travel would be limited to designated routes, which helps to keep recreationists in designated areas and away from sensitive resources. Alternative E would prohibit removing rocks, mineral specimens, semiprecious stones, fossils, and petrified wood, which would keep these resources available for scientific research and discovery.

As with Alternative C, the ACEC would be closed to fluid mineral leasing; this would prohibit surface disturbance from these types of activities, thereby preventing damage. The entire ACEC would also be managed as a ROW exclusion area, having the same impact.

Other surface-disturbing activities, such as mineral material disposal and nonenergy mineral leasing, would be permitted; these activities could cause damage at the development site. On the other hand, surface disturbance could also lead to new scientific discoveries.

Finally, 1,420 acres of the ACEC, which is a high-value area, would be withdrawn from locatable mineral entry. If processed, this would prohibit surface disturbance from these types of activities, thereby preventing damage.

Tagim aša Cultural

Tagim aša Cultural is a potential 81,800-acre ACEC with identified relevant and important cultural resource values. The Washoe Tribe of Nevada and California identified the site as an important source of spiritual renewal and subsistence. This includes the collection of a variety of plant and animal resources. The tribal members also use the area for the traditional gathering of the pine nuts. Major threats are wildfire, OHV use, livestock grazing, wood cutting, and locatable minerals mining.

OHV use can damage archaeological artifacts on the surface and can disrupt the traditional use area used by the Washoe Tribe of Nevada and California. OHVs can also spread seeds of invasive species or damage or remove native vegetation, allowing for invasive species to spread. This changing fire regime can increase the frequency and severity of wildfires that can damage or destroy cultural artifacts in the area for traditional uses by the tribe. Improper livestock grazing can have a similar impact.

Wood cutting can remove vegetation that the Washoe Tribe of Nevada and California use for traditional purposes, decreasing their availability for such uses.

Locatable mineral development could impact ACEC values by flattening, destroying, or removing vegetation, desired plant communities, and special status plant species; changing the visual landscape; degrading and fragmenting habitat; disturbing wildlife; spreading weeds; and damaging cultural resources during road and facility construction. Petitioning to withdraw areas from

locatable mineral entry could help protect cultural resource values if they are formally withdrawn. Withdrawal would limit the impacts of locatable minerals development on the portions of the ACEC that were withdrawn.

Effects Common to All Alternatives

Approximately 2,500 acres of the potential Tagim aša Cultural ACEC overlaps the Burbank Canyon WSA. The WSA is managed as VRM Class I and would be closed to new permanent disturbances that do not meet the nonimpairment standard. Because of this, it is unlikely that the relevant and important values would be impacted in the area of overlap, which accounts for 3 percent of the potential ACEC.

Approximately 1,400 acres of the potential ACEC are withdrawn from locatable mineral entry, which would eliminate impacts of locatable minerals development on this area, as described above.

Effects under Alternative A

The Tagim aša Cultural ACEC would not be designated. Outside the WSA, a 29,000-acre portion of the potential ACEC overlaps an area where motorized travel is limited to existing routes. This potentially limits travel to areas away from sensitive resources. In the limited area, potential impacts would be limited to the routes themselves, or just off the route. The remaining 50,300 acres would be open to cross-country travel. Resource damage has the highest potential to occur in the open areas where travel is not restricted.

Except for the 1,400 acres withdrawn from locatable mineral entry (discussed under *Effects Common to All Alternatives*), the entire potential ACEC is also open to locatable mineral entry and could experience the types of impacts described above.

The entire potential ACEC is available for livestock grazing, and wood cutting would continue to be allowed, which could result in the types of impacts described above.

Outside the WSA, 8,400 acres of the potential ACEC are managed as VRM Class II, which would allow low levels of landscape modifications in order to retain the scenic value. This would help maintain the scenic value in the area for the tribe by disallowing development that does not meet the VRM Class II objective, such as aboveground mining.

The remaining 70,900 acres of the potential ACEC are managed as VRM Class III and VRM Class IV. These allow moderate to high levels of landscape modification that aim to partially retain the existing character of the landscape (VRM Class III) or allow for major modifications of the landscape (VRM Class IV). Development in areas managed as VRM Class III or IV could alter the landscape to the extent that it impacts the traditional use of the area by the tribe.

Effects under Alternative B

The Tagim aša Cultural ACEC (81,800 acres) would be designated. Outside the WSA, travel would be entirely limited to designated routes. This would limit impacts on the designated routes themselves and would minimize possible damage elsewhere. Routes would also likely be located away from sensitive resources, so as to further minimize damage.

Except for the 1,400 acres withdrawn from locatable mineral entry (discussed under *Effects Common to All Alternatives*), the entire ACEC would be open to locatable mineral entry. However, because the ACEC would be designated under this alternative, a mining plan of operation would be required, and mitigation could be incorporated to minimize impacts on the cultural resources.

The entire ACEC would be available for livestock grazing which could lead to the types of impacts as under Alternative A.

Wood cutting would be allowed and could result in the same impacts as under Alternative A.

Outside the WSA, the ACEC would be managed according to VRM Class III objectives, which aim to partially retain the existing character of the landscape and allow for moderate levels of change. Development could alter the landscape to the extent that it impacts the traditional use of the area by the tribe, but not as much as under Alternative A.

Approximately 78,900 acres would overlap the Pine Nut ERMA. While recreation may be highlighted in the ERMA, it is more likely that it would be monitored in the area, as opposed to areas not designated as recreation management areas; therefore, impacts could be identified and mitigated earlier.

Effects under Alternative C

The Tagim aša Cultural ACEC (81,800 acres) would be designated; 42,800 acres of the Tagim aša Cultural ACEC would overlap the Pine Nut Bi-State Sage Grouse ACEC; 50 acres would overlap the Pine Nut Mountains Williams Combleaf Botanical ACEC.

Outside the WSA, the ACEC would be closed to motorized travel, thereby eliminating the risk from this type of use. However, mechanized travel would still be permitted on designated routes and could damage resources on the routes. Limiting travel to just mechanized use may reduce the level of access in the area, which would also likely reduce the amount of unauthorized recreation.

The entire ACEC would be recommended for withdrawal from locatable mineral entry, which would limit the types of impacts described above.

The entire ACEC would not be available for livestock grazing, which would eliminate trampling vegetation and weed spread from such use.

Wood cutting would not be allowed, so impacts from this type of use on the availability of traditional vegetation for tribal use would be reduced, compared to Alternative A.

Outside the WSA, the ACEC would be managed according to VRM Class II objectives, which aim to retain the existing character of the landscape and allow for low levels of change. Development could alter the landscape but not likely to the extent that it would impact the tribe's traditional use of the area.

Approximately 78,900 acres would overlap the Pine Nut ERMA. Impacts would be the same as described under Alternative B.

Effects under Alternative D

The Tagim aša Cultural ACEC (81,800 acres) would be designated; 50 acres of the Tagim aša Cultural ACEC would overlap the Pine Nut Mountains Williams Combleaf Botanical ACEC.

Outside the WSA, travel in the area would be entirely limited to designated routes. Impacts would be the same as described under Alternative B.

The 1,400 discussed above under *Effects Common to All Alternatives* and an additional 50 acres of the overlapping Pine Nut Williams Combleaf Botanical ACEC would be withdrawn from locatable mineral entry discussed under *Effects Common to All Alternatives*, the entire ACEC would be open to locatable mineral entry. Impacts would be the same as described under Alternative B.

The entire ACEC would be available for livestock grazing, which could lead to the types of impacts as under Alternative A.

Wood cutting would be allowed and could result in the same impacts as under Alternative A.

Outside the WSA, the ACEC would be managed according to VRM Class III objectives, which aim to partially retain the existing character of the landscape and allow for moderate levels of change. Development could alter the landscape to the extent that it impacts the tribe's traditional use of the area, but not as much as under Alternative A.

Approximately 78,900 acres would overlap the Pine Nut ERMA. Impacts would be the same as described under Alternative B.

Effects under Alternative E

The Tagim aša Cultural ACEC would not be designated.

Outside the WSA, travel would be entirely limited to designated routes. Impacts would be the same as described under Alternative B.

Except for the 1,400 acres withdrawn from locatable mineral entry (discussed under *Effects Common to All Alternatives*), the entire ACEC would be open to locatable mineral entry. Impacts would be the same as described under Alternative A.

The entire potential ACEC would be available for livestock grazing, which could lead to the types of impacts as under Alternative A.

Wood cutting would be allowed and could result in the same impacts as under Alternative A.

Outside of the WSA, the potential ACECs are managed as VRM Class III or Class IV. This allows moderate to high levels of landscape modification that aim to partially retain the existing character of the landscape (VRM Class III) or allow for major modifications of the landscape (VRM Class IV). Development in areas managed as VRM Class III or IV could alter the landscape to the extent that it impacts the tribe's traditional use of the area.

Approximately 78,900 acres would overlap the Pine Nut ERMA. Impacts would be the same as described under Alternative B.

Virginia City National Landmark Historic District

The Virginia City National Landmark Historic District is a potential 14,700-acre ACEC with identified relevant and important cultural resource values. It was designated by the National Park Service as a National Historic Landmark in 1961, and it is also listed on the NRHP. It is recognized as nationally significant for its role in the Civil War, the creation of the State of Nevada, as well as for the many significant developments in mining and milling technology and water systems that occurred there.

More than a century of mining and milling has led to a landscape riddled with abandoned mines, deep shafts, and ground instability. Early milling processes left the soils and watershed of Virginia City contaminated with mercury, arsenic, and other EPA-listed contaminants. Major threats are looting, vandalism, structural fire, gold mining, ROWs, and wind energy development. Increased urbanization, which also threatens the area, is discussed under cumulative effects.

Locatable mineral development could impact ACEC values by flattening, destroying, or removing vegetation, desired plant communities, and special status plant species; changing the visual landscape; and damaging cultural resources during road and facility construction. Petitioning to withdraw areas from locatable mineral entry could help protect cultural resource values if they were formally withdrawn. This would eliminate the impacts of locatable minerals development on the portions of the ACEC that were withdrawn.

Identifying ACECs as ROW or wind exclusion or avoidance areas would protect historical values by reducing (for avoidance areas) or eliminating (for exclusion

areas) impacts from development requiring a ROW permit, including utilities, access roads, and renewable energy. This would help to preserve the historical setting of the area.

Effects Common to All Alternatives

Under all alternatives, the BLM would need administrative- or implementation-level actions to reduce the impacts of looting, vandalism, and structural fire. Because access would not be significantly restricted under any of the alternatives, these types of activities could still occur.

Approximately 1,000 acres of the potential ACEC are withdrawn from locatable mineral entry, which would limit the impacts of locatable minerals development, as described above, on this area. Except for the existing withdrawal, the entire potential ACEC would be open to locatable mineral entry and could experience the types of impacts described above.

Effects under Alternative A

The potential Virginia City National Landmark Historic District ACEC would not be designated. In addition to the impacts described under *Effects Common to All Alternatives*, the potential ACEC would be open to ROW location, including for wind energy. Development could damage historical artifacts and could also diminish the historical setting of the area. However, because the district is listed on the NRHP, it is unlikely that aboveground utilities that affect the NRHP listing would be permitted.

Effects under Alternative B

The Virginia City National Landmark Historic District ACEC would be designated (14,700 acres). In addition to the impacts described under *Effects Common to All Alternatives*, only 530 acres of the ACEC would overlap an area that would be managed as a ROW avoidance area and 1,100 acres would overlap the identified avoidance area for wind. Development could damage historical artifacts and could also diminish the historical setting of the area. However, because the district is listed on the NRHP, it is unlikely that aboveground utilities that affect the NRHP listing would be permitted.

Effects under Alternative C

The Virginia City National Landmark Historic District ACEC would be designated (14,700 acres). In addition to the impacts described under *Effects Common to All Alternatives*, the ACEC would be an avoidance area for ROWs (except for 100 acres managed as ROW exclusion) and an exclusion area for wind ROWs. The exclusion area for wind would prevent damage associated with such development. While other ROW development could occur in the area under certain conditions, development and placement of facilities would take into account the historical resources at the project level in order to minimize impacts.

The ACEC would overlap the Virginia Range ERMA, which would be managed specifically for providing recreation, while protecting cultural, historical, and natural resources. No conflicts between the ACEC and the ERMA are expected.

Effects under Alternative D

The Virginia City National Landmark Historic District ACEC would be designated (14,700 acres). In addition to the impacts described under *Effects Common to All Alternatives*, only 560 acres of the ACEC would overlap an area that would be managed as a ROW avoidance are; 1,200 acres would overlap the identified avoidance area for wind. Development could damage historical artifacts and diminish the historical setting of the area. However, because the district is listed on the NRHP, it is unlikely that aboveground utilities that affect the NRHP listing would be permitted.

Effects under Alternative E

The potential Virginia City National Landmark Historic District ACEC would not be designated; however, the entire 14,700-acre potential ACEC would be within the Virginia City National Historic Landmark District. The district would be managed as a ROW avoidance area and a ROW exclusion area for wind energy development. Impacts would be the same as described under Alternative C.

The potential ACEC would overlap the Virginia Range ERMA. While recreation may be highlighted in the ERMA, it is more likely it would be monitored, as opposed to areas not designated as recreation management areas; thus, impacts could be identified and mitigated earlier.

Cumulative Effects

Past and Present Actions

Past and present actions in the cumulative impacts analysis area impacting ACECs include mineral exploration and development, renewable energy, livestock grazing, lands and realty development activities, recreation, travel management, wild horse and burro management, and management of fire, invasive weeds, climate change, and habitat for special status species.

Impacts include surface disturbance and vegetation disturbance, displacement of species, habitat fragmentation, and changes to the visual landscape that could affect resources within ACECs. Impacts would be greater where recreation areas, such as SRMAs or ERMAs, or development were next to an ACEC. The BLM would adaptively manage to protect ACEC values and minimize impacts where applicable and feasible.

Reasonably Foreseeable Actions

Reasonably foreseeable future actions are likely to have similar impacts on the past and present actions. Grazing within the Cumulative Impact Analysis Area (CIAA) is expected to continue. On-going mineral exploration and development

and renewable energy development as described in **Table 4-1**, Past, Present, and Reasonably Foreseeable Projects, Plans, or Actions that Make up the Cumulative Impact Scenario, have the potential to impact ACECs by creating surface disturbance and potentially removing sensitive resources. Similarly, ROW grants could result in disturbance of lands. With a projected increase in population and recreational use, there may also be an increase the risk of recreational use and visitation as well as wildfire, However, proposed fuels management projects would reduce fire size or spread and reduce the number of acres burned, reducing the impacts on ACECs and sensitive resources.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Under all alternatives, incremental impacts on ACECs would be limited from minerals, lands and realty and renewable energy development as most ACECs have use restrictions applicable to these uses. Incremental impacts from livestock grazing would be higher under Alternatives A and B and would decrease under alternatives C, D, and E due to potential reductions in forage allocation and AUMs. Incremental impacts would increase under all alternatives for recreation, as public use would continue to increase overtime. Alternatives, B, C, D, and E would reduce OHV impacts within ACECs due to designation of travel management areas. Vegetation and habitat improvement projects and managing wild horses and burros to AML would improve ACEC vegetation values under all alternatives. Impacts relating to climate change would continue with impacts dependent on drought conditions.

4.5.2 Back Country Byways

Summary

Impacts on Back Country Byways (Back Country Byway) are those that affect access to view the unique visual, cultural, historic, or geologic features.

Alternative D would result in the greatest impact on Back Country Byway interpretive opportunities because it would not designate any Back Country Byway. Alternative A would continue the Fort Churchill to Wellington Back Country Byway but would not designate or manage any new Back Country Byway. Alternative C would add new routes to the Back Country Byway network. It would provide the most protection from changes to unique visual, historic, cultural, and geologic features. However, Alternative C would also rescind the existing Fort Churchill to Wellington Back Country Byway; this would eliminate Back Country Byway-related interpretive opportunities along that route. Alternatives B and E would provide similar benefits to Back Country Byway. Both alternatives would expand the Back Country Byway network and limit uses that conflict with a Back Country Byway unique features and the public's opportunity to interpret them. Because Alternative E would have more restrictions on conflicting uses than Alternative B, it would maintain or enhance interpretive opportunities more than any other alternative.

Table 4-22, Miles of Back Country Byways, summarizes the distribution of Back Country Byway miles for each alternative.

Table 4-22
Miles* of Back Country Byways by Alternative

Back Country Byway	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Fort Churchill to Wellington	33	30	0	0	30
Marietta	0	33	41	0	33
New Pass to Hawthorne	0	111	71	0	111
Total	**33**	**174**	**112**	**0**	**174**

*Miles shown are those on BLM-administered lands only.
Source: BLM 2014

Methods of Analysis

Methods and Assumptions
The following methods and assumptions were used to assess the impacts on Back Country Byways:

- The nature and types of potential impacts on Back Country Byway from proposed actions under each alternative are based on
  - numerical data gathered during the planning process
  - BLM interdisciplinary team knowledge of the resource
  - input provided during the public scoping process

  Where possible, this analysis uses quantitative data to describe impacts on Back Country Byway from other resources and resource use programs. Qualitative information is also used to support quantitatively based analysis or where numerical data does not exist. In all cases, best professional judgment is used in evaluating effects on the lands and realty program.
- Driving for pleasure will continue to be a popular use of BLM-administered lands.
- The scenic quality of Back Country Byway and associated Back Country Byway user experience and opportunity to interpret unique features along the route is directly influenced by the visual character of the surrounding landscape.
- Signs, public kiosks, online maps, social media, and other sources of public information improve public interpretation and exploration opportunities of Back Country Byway.
- The use of public lands for family oriented adventure travel and historical tourism will continue to increase.

Indicators
The following indicators were used to assess the degree of impacts on Back Country Byway:

- Availability of opportunities for the public to interpret, understand, and view features being highlighted by the Back Country Byway
- Change to the unique scenic, historic, cultural, or geologic landscape characteristics that the Back Country Byway is intended to highlight

Nature and Type of Effects
Management actions that preserve the unique scenic, historic, cultural, and geologic characteristics of the surrounding landscape maintain or enhance public interpretation and exploration opportunities. Actions that improve public access and understanding of Back Country Byway also support the purpose of Back Country Byway as an opportunity to explore unique public landscapes and historical settings. Resource or resource use programs that alter the character of the Back Country Byway and surrounding landscape would decrease its intended interpretive values.

Intensification of uses can decrease overall Back Country Byway quality by changing the Back Country Byway visual, historic, cultural, or geologic character. Examples of these uses are minerals or energy development, livestock grazing, ROW authorizations, and increases in public visitation and OHV use along or near Back Country Byway. Management actions emphasizing resource preservation (e.g., closure to motorized travel) could also reduce the intended value of Back Country Byway. This would occur if such actions would limit interpretive opportunities.

The extent of the impacts from management of resources and resource uses varies by alternative because of the various Back Country Byway segments and lengths in each alternative and the variation in management of resources and resource uses in each alternative.

Management for the following resources would not result in an effect on Back Country Byway: air quality, water, soil, caves and cave resources, paleontological resources, forestry and woodland products, WSAs, WSRs, tribal interests, and public health and safety.

Back Country Byway: Effects from Climate Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, the unique character of landscapes in the planning area would continue to change. In response to climatic factors such as drought and

extreme precipitation. Indirect effects on the Fort Churchill to Wellington Back Country Byway from climate change would be from increased wildfire potential, and flooding. These and other events could alter the overall character of the landscape and the public's ability to view and interpret key features along the route.

The BLM would continue to manage climate change with an emphasis on drought management on a case by case basis. Climate-related landscape changes surrounding the Fort Churchill to Wellington Back Country Byway would continue and development of strategies to mitigate impacts would occur as needed.

Effects under Alternative B

Compared to Alternative A, climate management under Alternative B would lead to more protections on ecosystem functions. Alternative B proposes the identifying and mitigating threats from climate change. This would protect the opportunities to view and interpret unique features along the Fort Churchill to Wellington Back Country Byway. Climate management would also preserve all interpretive opportunities along the Marietta and New Pass to Hawthorne Back Country Byway, proposed to be designated under Alternative B.

Effects under Alternative C

The nature and types of impacts on the Marietta and New Pass to Hawthorne Back Country Byway from climate management would be similar to those under Alternative B; however, the impacts would apply to slightly different route configurations (see **Table 4-22**, Miles of Back Country Byways by Alternative).

Effects under Alternative D

The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E

For the Fort Churchill to Wellington Back Country Byway, climate management under Alternative E would provide the most protection from climate-related changes. This alternative would prioritize treatments to remove existing threats that may exacerbate the negative effects of climate change and would develop proactive steps that can be taken to mitigate the effects of climate change. Viewing and interpretation opportunities would be maintained to the extent possible.

For the Marietta and New Pass to Hawthorne Back Country Byway, the *Nature and Types of Effects* from climate management under Alternative E would be similar to those under Alternative C; however, they would apply to 32 more miles of Back Country Byway.

Back Country Byway: Effects from Vegetation Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Management actions for vegetation resources under Alternative A would maintain the visual character of the landscape surrounding the Fort Churchill to Wellington BLM Back Country Byway. This would maintain or improve the condition of rangelands and riparian habitats, would reduce soil erosion, and would maintain a diverse vegetation habitat for livestock, wild horses and burros, and wildlife.

Effects under Alternative B
Management under Alternative B would maintain healthy landscape conditions surrounding Back Country Byway. It also would restore the most sagebrush habitat through pinyon-juniper removal of any alternative. Further management that would allow for the removal of fire-killed and invasive trees, prevent invasive plant species, and protect riparian areas would subsequently preserve the scenic character of landscapes. Compared to Alternative A, management under Alternative B would improve the nature and extent of Back Country Byway-related interpretive opportunities.

Effects under Alternative C
The effects of vegetation resources management on the Marietta and New Pass to Hawthorne Back Country Byway would be similar to those under Alternative B. The difference is that there would be 65 percent fewer overall Back Country Byway miles identified for pinyon-juniper removal and applicability (see **Table 4-22**, Miles of Back Country Byways by Alternative).

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E
The effects of vegetation resources management under Alternative E would be similar to those under Alternative B. Compared to Alternative A vegetation resources management under Alternative E would preserve opportunities to interpret unique visual features next to Back Country Byway. It would do this by removing fire-killed and invasive trees, by preventing invasive plant species, and by protecting riparian areas.

Back Country Byway: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A

The BLM would manage fish and wildlife based on existing land use plans, implementation plans, and by BLM policy and guidance. Site-specific habitat improvement projects may intrude or detract viewing of settings but would improve Back Country Byway viewing over the long term as habitat conditions improve.

Effects under Alternative B

Alternative B includes management to protect fish and wildlife within priority habitat areas and would include applicable CSU stipulations to protect lentic and lotic wildlife habitat. Implementing ROW avoidance restrictions within priority habitat areas and CSU stipulations would maintain Back Country Byway viewing opportunities.

Effects under Alternative C

Alternative C includes the most extensive management to protect fish and wildlife habitats. As a result, wildlife viewing opportunities along the Marietta and New Pass to Hawthorne Back Country Byway would be greatest. However, compared to Alternative A, rescission of the Fort Churchill to Wellington Back Country Byway would eliminate Back Country Byway-related wildlife viewing opportunities on that route.

Effects under Alternative D

The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E

Enhanced Back Country Byway viewing and interpretive opportunities from the management of most fish and wildlife species would be similar to Alternative B and greater than Alternative A. Restrictions on land uses in raptor habitat would result in the same benefits as Alternative C; however, these restrictions would also apply to the Fort Churchill to Wellington Back Country Byway providing additional benefits to Back Country Byway. They would have slightly different configurations for the Marietta and New Pass to Hawthorne Back Country Byway (see **Table 4-22**, Miles of Back Country Byways by Alternative).

Back Country Byway: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A would continue to manage 1,235,200 acres (26 percent) of the planning area within HMAs. It would continue to provide wild horse and burro viewing and interpretive opportunities along 17 miles (52 percent) of the Fort Churchill to Wellington Back Country Byway.

Effects under Alternative B

Alternative B would manage 238,700 acres (19 percent) fewer HMAs than Alternative A. However, there would continue to be 17 miles of the Fort Churchill Back Country Byway in wild horse and burro HMAs. Additionally, the Marietta and New Pass to Hawthorne Back Country Byway would add 44 miles of Back Country Byway in wild horse and burro HMAs. Accordingly, wild horse and burro management under Alternative B would maintain and support Back Country Byway values.

Effects under Alternative C

Alternative C would manage 145,200 acres (12 percent) fewer HMAs than Alternative A. It would add an additional mile of Back Country Byway in wild horse and burro HMAs. Accordingly, compared to Alternative A, wild horse and burro management would maintain and enhance Back Country Byway-related wild horse and burro interpretive opportunities. This would be the case particularly along the Marietta and New Pass to Hawthorne Back Country Byway.

Effects under Alternative D

The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E

Wild horse and burro management under Alternative E would have the same effects as Alternative B by providing 61 miles of wild horse and burro viewing opportunities along Back Country Byway. Compared to Alternative A, management under Alternative E would provide 44 more miles of Back Country Byway-related wild horse and burro viewing and interpretive opportunities.

Back Country Byway: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Wildland fire management would restrict access along Back Country Byway during fire-suppression activities in order to provide fire fighter and public safety. Access restrictions would be expected to be short term until the fire is controlled or until access along the Back Country Byway is determined safe.

Effects under Alternative A

BLM wildland fire ecology management under Alternative A would continue to manage wildfires according to a four-tier system. Fewer fire and fuels management objectives and actions would increase the likelihood for fire-related effects on the Fort Churchill to Wellington Back Country Byway.

Effects under Alternative B

Fire and fuels management techniques would reduce the potential for long-term changes to Back Country Byway values compared to Alternative A. In the short term, prescribed fire, vegetation treatments, and other fuels reduction

techniques would temporarily alter the visual qualities of the landscapes surrounding Back Country Byway. Rehabilitation and restoration of burned areas would include prevention of cheatgrass and other invasive species. This would restore the scenic and historic conditions around Back Country Byway after fires, thereby minimizing long-term effects on Back Country Byway-related interpretive opportunities.

Effects under Alternative C

An emphasis on minimal impact fire suppression techniques would reduce fire suppression impacts however since MIST tactics could limit fire suppression efficiency fires could spread quicker or take longer to control. Impacts on viewers could include larger areas burned compared to Alternative A. Rehabilitation and restoration of burned areas would restore scenic and historic conditions available for interpretation around Back Country Byway after fires, thereby minimizing long-term effects.

Effects under Alternative D

The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E

Wildland fire ecology and management under Alternative E provides the full range of management activities and prioritizes the most areas for suppression. Visual settings within Back Country Byway would be less vulnerable to potential wildfire spread. It would have long- and short-term effects similar to those described under Alternative B but with more suppression priority areas.

Back Country Byway: Effects from Cultural Resources Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Protection of NRHP-listed Properties and Districts, National Historic Landmarks, and Traditional Cultural Properties (TCPs) listed, eligible, or known but not yet formally designated for the NHPA Section 106 process would protect cultural resources and help maintain visitor experiences along the Fort Churchill to Wellington Back Country Byway.

Effects under Alternative B

Protective management practices would preserve Back Country Byway-related interpretive opportunities of cultural features more than Alternative A. Protecting NRHP-listed Properties and Districts, National Historic Landmarks, and Traditional Cultural Properties (TCPs) listed, eligible, or known but not yet formally designated would also protect proposed Back Country Byway. Designation of proposed ACECs to protect cultural resources would also protect Back Country Byway if ACECs are within visual settings of Back Country Byway.

Effects under Alternative C

Alternative C would manage for the largest buffer areas around cultural resources and would apply ROW exclusion criteria. It would be the most restrictive alternative and would result in the greatest preservation of Back Country Byway-viewing opportunities and related interpretive opportunities of cultural features.

Effects under Alternative D

The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E

Cultural resources management would preserve unique cultural resource interpretive opportunities of Back Country Byway. Alternative E would do this through expanded restrictions on ROWs, mineral development, and other surface-disturbing activities. Additional restrictions on resource uses along the three miles where Back Country Byway would overlap NHT buffer areas would further preserve Back Country Byway-related interpretive opportunities for cultural features.

Back Country Byway: Effects from Visual Resources Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A would manage 8 miles (24 percent) of the Fort Churchill to Wellington Back Country Byway as VRM Class III and 15 miles (45 percent) as VRM Class IV; the remainder of the Back Country Byway (10 miles or 30 percent) would be undesignated for VRM. Alternative A would allow changes to the visual character of the Back Country Byway landscape in accordance with VRM Class III and IV objectives.

Effects under Alternative B

Impacts would be similar to alternative A. Under Alternative B, 28 miles (94 percent) of the Fort Churchill Back Country Byway would be managed as VRM Class III, with the remaining 2 miles (6 percent) would be managed as VRM Class IV. Compared to Alternative A, fewer acres would be managed as VRM Class IV.

BLM management for the Marietta Back Country Byway would be consistent with VRM Class III objectives. However, the New Pass to Hawthorne Back Country Byway would pass through 3 miles of VRM Class I, 1 mile of VRM Class II, 32 miles of VRM Class III, and 74 miles of VRM Class IV. Visual resource management objectives for Class I and Class II areas would be more restrictive and would result in fewer visual impacts in Back Country Byway viewing areas.

Effects under Alternative C
Alternative C would primarily manage the Marietta and New Pass to Hawthorne Back Country Byway according to VRM Class IV objectives. This would result in less protection from changes to the Back Country Byway landscape under VRM than Alternative B.

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E
The entire length of the Fort Churchill Back Country Byway would be within VRM Class IV. Compared to Alternative A, VRM under Alternative E would provide fewer protections from changes to the Back Country Byway landscape. For the Marietta and New Pass to Hawthorne Back Country Byway, visual resources management and corresponding effects on the long-term visual characteristics of Back Country Byway would be the same as Alternative B.

Back Country Byway: Effects from Livestock Grazing Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Under Alternative A, the Fort Churchill to Wellington Back Country Byway would continue to overlap areas that are available for livestock grazing and managed according to existing use levels. As a notable feature of Nevada's history and culture, Alternative A would preserve livestock grazing-related interpretive opportunities along the Back Country Byway.

Effects under Alternative B
Areas along the proposed Back Country Byway currently managed as available for livestock grazing would continue to be managed to existing use levels. Management under Alternative B would decrease the likelihood of long-term impacts from grazing on Back Country Byway-related viewing and interpretive opportunities. Examples are prescriptive grazing for vegetation management and prohibitions on continuous year-round grazing.

Effects under Alternative C
The BLM would manage more acres as Back Country Byways than Alternative A and would manage some of those acres as closed to livestock grazing, which could result in less potential for long-term aesthetic changes from grazing and reduced opportunity for conflict with wild horses and burros along the Marietta Back Country Byway. However, closing allotments and reducing AUMs would diminish grazing along the Back Country Byway, limiting interpretive opportunities. Limitations on grazing would restrict the BLM's ability to meet Back Country Byway objectives under Alternative C. This is particularly the case

along the New Pass to Hawthorne Back Country Byway, where a Back Country Byway management objective would be to highlight cattle ranching.

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E
Effects from livestock grazing management on Back Country Byway under Alternative E would be the same as described under Alternative B.

Back Country Byway: Effects from Geology and Mineral Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The BLM would continue to manage all 33 miles along the Fort Churchill to Wellington Back Country Byway as open to all forms of mineral development which would affect Back Country Byway viewing experiences depending on the size of surface disturbance. While Back Country Byway management objectives would highlight Nevada's unique heritage (including the Como Mining District), new mineral development could conflict with the visual and historic qualities of the Back Country Byway landscape.

Effects under Alternative B
With the exception of 3 miles along the New Pass to Hawthorne Back Country Byway, the remaining 171 miles of Back Country Byway would overlap areas open to all forms of mineral development. Impacts on Back Country Byway viewing would be similar to Alternative A. Alternative B would support objectives to highlight Nevada's unique mining heritage. The affected areas would be the Como, Marietta, and Candelaria Mining Districts. Even so, new mineral development could conflict with the visual and historic qualities of the Back Country Byway landscapes. Mineral development would also affect other characteristics. For example vegetation, wild horses and burros, and grazing would be highlighted as part of the Back Country Byway designations. Compared to Alternative A, the nature of effects would be similar under Alternative B but would extend to 138 more miles of Back Country Byway. Undesirable long-term visual impacts from mineral development would be limited due to proposed locatable mineral withdrawals (439,600 acres) and use restrictions more than under Alternative A. These use restriction would include CSU and NSO stipulations applicable to fluid minerals.

Effects under Alternative C
Management under Alternative C would close more acres to mineral development and manage larger areas under NSO stipulations than Alternative A or B. Limitations on mineral development could conflict with Back Country Byway management objectives. This is because BLM management for the

Marietta and New Pass to Hawthorne Back Country Byway would promote mining as an element of Nevada's heritage. However, new mineral development could be incompatible with the historic and aesthetic qualities of such older mining districts as Marietta and Candelaria. Based on proposed mineral development closed areas and CSU and NSO restrictions and stipulations this alternative would provide the most protection of historic settings for Back Country Byway viewing and the potential for viewing intrusions would be lower.

Effects under Alternative D

The BLM would not designate any Back Country Byways under Alternative D.

Effects under Alternative E

Effects from geology and mineral management on Back Country Byways would be similar to Alternative B; however, Alternative E would preserve more interpretive opportunities unrelated to mining. It would accomplish this by closing more areas to fluid and mineral materials development and would apply NSO stipulations to a wider area than Alternative B.

Back Country Byway: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The BLM would promote a wide variety of recreation opportunities, including recreational driving, which would support BLM Back Country Byway management objectives. Certain recreation activities, such as shooting, camping, and OHV use, could either conflict or enhance Back Country Byway users experience depending on their personal perspective. Cross-country OHV use would add new linear features to the landscape. This would alter the unique character of the landscape for which the Fort Churchill to Wellington Back Country Byway was designated.

Effects under Alternative B

Similar to Alternative A, recreation and visitor services management under Alternative B would promote a wide variety of recreation opportunities. These include recreational driving, which would support BLM Back Country Byway management objectives. Seventy (70) miles (40 percent) of Back Country Byways would cross ERMAs where the BLM would focus additional management on providing users with quality recreation opportunities. Because of this, effects would vary, depending on the recreation management objectives within each ERMA. However, the effects would in general maintain or have neutral effects on Back Country Byway-related interpretive opportunities in those areas.

Effects under Alternative C

Alternative C would support the use of Back Country Byways for recreation, such as driving for pleasure, hiking, or biking. Forty-five (45) miles (39 percent)

of Back Country Byway would cross ERMAs, while less than one mile of the New Pass to Hawthorne Back Country Byway would cross a SRMA. The effects would vary, depending on specific recreation management objectives within each RMA. This is because RMA management under Alternative C would focus on providing users with quality recreation opportunities; however, it would in general maintain or have neutral effects on Back Country Byway-related interpretive opportunities in those areas.

Effects under Alternative D

The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E

Effects from recreation management on Back Country Byway would be similar to Alternative B. The exception would be effects from RMAs, which would apply to an additional 23 miles of the Fort Churchill to Wellington Back Country Byway.

Back Country Byway: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

The BLM would continue to manage 80 percent (3,840,300 acres) of the planning areas as open to cross-country motorized travel. Thus, Alternative A would result in the most impacts on Back Country Byway. These include long-term effects on Back Country Byway interpretive opportunities from the creation of new linear features (e.g., two-tracks) throughout the landscape. New linear features would degrade the visual quality of the landscape, thereby altering interpretive opportunities along the Fort Churchill to Wellington Back Country Byway.

Effects under Alternative B

Alternative B would limit motorized and mechanized travel to existing routes across 4,677,000 acres of the planning area. Compared to Alternative A, CTTM under Alternative B would minimize the creation of new linear features and therefore preserve Back Country Byway-related landscape viewing and interpretive opportunities. However, limiting travel to existing routes could increase the volume of traffic on the Back Country Byway. This could make the byways more congested and limit the availability of public interpretation opportunities.

Effects under Alternative C

Effects on Back Country Byway from CTTM would be similar to Alternative B, but with effects applicable only to the Marietta and New Pass to Hawthorne Back Country Byway.

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E
Effects on Back Country Byway from CTTM would be the same as Alternative B.

Back Country Byway: Effects from Lands and Realty

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would continue to manage most of the planning area as open to new ROW development. This includes areas next to the Fort Churchill to Wellington Back Country Byway. Therefore, the likelihood of new ROWs, such as transmission lines, pipelines, or roads, altering the unique visual and historic characteristics along the Fort Churchill to Wellington Back Country Byway would be greatest under this alternative.

Effects under Alternative B
Compared to Alternative A, management would decrease the potential for impacts from new ROW development along Back Country Byway routes. Under Alternative B, 28 miles (93 percent) of the Fort Churchill to Wellington Back Country Byway and 35 miles (32 percent) of the New Pass to Hawthorne Back Country Byway would cross ROW avoidance areas. Another 3 miles of the New Pass to Hawthorne Back Country Byway would cross ROW exclusion areas. Avoiding or excluding new ROW development would minimize changes to the unique visual and historic qualities of the Fort Churchill to Wellington and New Pass to Hawthorne Back Country Byway. This would preserve all types of interpretive opportunities along these routes.

The BLM would manage areas next to the Marietta Back Country Byway as open to ROW development. New ROWs would change the visual characteristics of the Marietta Back Country Byway. They also would conflict with management objectives, such as highlighting the area's wild horse and burro range, and unique landscape features, such as Teals Marsh.

Effects under Alternative C
Alternative C would exclude new ROW development along 8 miles (20 percent) of the Marietta Back Country Byway and 12 miles (17 percent) of the New Pass to Hawthorne Back Country Byway. Within ROW exclusion areas, Alternative C would preserve the unique Back Country Byway characteristics along these route segments. Outside of ROW exclusion areas, Alternative C would continue to manage areas along Back Country Byways as open to new ROWs. In these areas, new ROWs would affect Back Country Byway management by changing the visual and historic characteristics for which the

Marietta and New Pass to Hawthorne Back Country Byway would be designated.

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E
Compared to Alternative A, management under Alternative E would decrease the potential for impacts from new ROW development along the Fort Churchill to Wellington route and the New Pass to Hawthorne route. Three (3) miles (3 percent) of the New Pass to Hawthorne Back Country Byway and 14 miles (47 percent) of the Fort Churchill to Wellington Back Country Byway would cross ROW avoidance areas. Another 37 miles (33 percent) of the New Pass to Hawthorne Back Country Byway would cross ROW exclusion areas. Avoiding or excluding new ROW development would reduce the potential for changes to the unique visual and historic qualities along these Back Country Byway. The effects on the Marietta Back Country Byway from lands and realty would be the same as Alternative B.

Back Country Byways: Effects from Renewable Energy

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
This alternative has the most potential for wind and solar energy development to impact the unique visual, cultural, and historic features along the Fort Churchill to Wellington Back Country Byway. All areas surrounding the 33-mile route would be open to wind energy development; 7 miles (21 percent) of the route would pass through a solar energy variance area.

Effects under Alternative B
Along the Fort Churchill to Wellington Back Country Byway, Alternative B would decrease the potential for effects on Back Country Byway-related viewing and interpretive opportunities from wind and solar energy, compared to Alternative A. The route would not pass through any solar variance areas; a 13-mile segment would traverse a ROW avoidance area for wind. Impacts from wind energy development along the remainder of the route outside ROW avoidance areas would be the same as Alternative A.

Under Alternative B, 20 miles of the Marietta Back Country Byway and 40 miles of the New Pass to Hawthorne Back Country Byway would be within solar variance areas. The entire Marietta Back Country Byway and all but 19 miles of the New Pass to Hawthorne Back Country Byway would be outside wind ROW avoidance areas. Renewable energy development would impact Back Country Byway viewing settings along Back Country Byway routes. Impacts would be dependent on the size disturbance or the type of facility.

Effects under Alternative C

For the Marietta Back Country Byway, BLM management for renewable energy would provide the greatest protections of Back Country Byway-related viewing and interpretive opportunities by designating 8 miles of the Back Country Byway in ROW exclusion areas. For the New Pass to Hawthorne Back Country Byway, 1 mile would be within ROW exclusion areas and 3 within wind ROW avoidance areas. Managing ROW avoidance and exclusion areas would preserve unique visual, cultural, and historic features and the public's opportunity to interpret them. For Back Country Byway segments outside these ROW avoidance and exclusion areas, effects from renewable energy would be similar to Alternative B but would apply to fewer miles of Back Country Byways (see **Table 4-22**, Miles of Back Country Byways by Alternative). Nineteen (19) miles of the Marietta Back Country Byway and 42 miles of the New Pass to Hawthorne Back Country Byway would be within solar variance areas, which could result in more solar development than would occur under Alternative A.

Effects under Alternative D

The BLM would not designate any Back Country Byways under Alternative D.

Effects under Alternative E

Compared to Alternative A, lands and realty management under Alternative E would preserve Back Country Byway-related interpretive opportunities along the Fort Churchill to Wellington Back Country Byway. It would accomplish this by designating 13 miles of the route within ROW exclusion areas. Within the ROW exclusion area the potential for new wind and solar energy development and associated changes to the visual characteristics would be eliminated. Also, compared to Alternative A, four fewer miles of the route would pass through a solar variance area. This would reduce the potential for alterations to interpretive opportunities from solar energy development.

The effects on the Marietta Back Country Byway would be similar to Alternative B, with the exception that 5 fewer miles of the Back Country Byway would cross solar variance areas.

For the New Pass to Hawthorne Back Country Byway, Alternative E would provide the greatest protections of designated Back Country Byway characteristics and interpretive opportunities. It would accomplish this by managing 37 miles within avoidance areas for all ROW types, 5 miles within wind energy ROW avoidance areas, and 15 miles within ROW wind energy exclusion areas.

Back Country Byway: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A
Alternative A, ACEC management would have no impacts on Back Country Byway. This is because the Fort Churchill to Wellington Back Country Byway would not pass through any currently designated ACECs.

Effects under Alternative B
Under Alternative B, 28 miles of the Fort Churchill to Wellington Back Country Byway would pass through the Namazii Wunu Cultural ACEC. By avoiding ROW development and promoting expanded educational opportunities along this portion of the byway, ACEC management would maintain or enhance opportunities for viewing and to interpret visual and cultural features highlighted by the Back Country Byway, compared to Alternative A.

Effects under Alternative C
Similar to Alternative A, ACEC management under Alternative C would not affect the Fort Churchill to Wellington Back Country Byway.

For a one-mile segment of the New Pass to Hawthorne Back Country Byway that would be within the Desatoya GRSG ACEC, proposed ACEC management would protect and maintain the historic elements within the viewing setting from new ROW, fluid minerals, and mineral disposal disturbance.

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E
Similar to Alternative A, ACEC management under Alternative E would not affect the Fort Churchill to Wellington Back Country Byway. This is because neither the Marietta nor New Pass to Hawthorne Back Country Byway would pass through an ACEC under Alternative E.

Back Country Byway: Effects from Back Country Byways

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The BLM would continue managing the Fort Churchill to Wellington Back Country Byway. The byway, which begins at the historic Fort Churchill east of Dayton, travels along the Carson River and through the Pine Nut Mountains before terminating at Wellington. Management of the byway would be to continue to highlight unique visual features (e.g., the Carson River), historic features (e.g., Fort Churchill, Pony Express trail, and Como Mining District), and geomorphologic features (e.g., Eldorado Canyon and Pine Nut Mountains). Back Country Byway management under Alternative A would continue providing interpretive opportunities along the Fort Churchill to Wellington Back Country

Byway; however, the BLM would not expand the Back Country Byway network by designating any other Back Country Byway.

Effects under Alternative B

Alternative B would rescind a 23-mile segment (3 miles on BLM-administered land) from Fort Churchill to Dayton and would manage the Dayton to Wellington Back Country Byway. This rescission would eliminate Back Country Byway-related opportunities to interpret unique features (e.g., Fort Churchill and the Carson River) otherwise available under Alternative A. Overall, by designating the Marietta and New Pass to Hawthorne Back Country Byway. Alternative B would result in a net 141-mile increase in Back Country Byway over Alternative A. The Marietta Back Country Byway would provide users with expanded environmental and historical interpretation and educational opportunities in the southern portion of the planning area by highlighting the Candelaria Mining District, Teals Marsh, and Marietta Wild Horse and Burro Range. The New Pass to Hawthorne Back Country Byway would increase interpretation opportunities of Nevada's western heritage (e.g., livestock ranching) and unique visual landscapes (e.g., Basin and Range geomorphology).

Additional Back Country Byway management would promote the Marietta and New Pass to Hawthorne routes. It would do this via various outreach methods and partnering with other organizations to provide road signs, kiosks, and ongoing maintenance. Therefore, Alternative B would increase the public's opportunity to use these routes and to interpret their unique features. Upgrading signs where needed along the 30-mile Fort Churchill to Wellington Back Country Byway would also improve public understanding of key features, compared to Alternative A.

Effects under Alternative C

Back Country Byway management would rescind the entire Fort Churchill to Wellington Back Country Byway and would remove all Back Country Byway-related signs. It would eliminate all Back Country Byway-related interpretive and environmental education opportunities previously available along that route.

Compared to Alternative A, management under Alternative C would increase Back Country Byway-related interpretive opportunities. It would accomplish this by designating the 41-mile Marietta Back Country Byway and 71-mile New Pass to Hawthorne Back Country Byway, a net 79 mile increase in Back Country Byways, compared to Alternative A. For the Marietta Back Country Byway, Alternative C would provide the most interpretive opportunities in terms of miles of routes.

Effects under Alternative D

Alternative D would reduce Back Country Byway-related interpretive opportunities more than any other alternative by rescinding the Fort Churchill to Wellington Back Country Byway and not designating any new Back Country

Byways. There would be no Back Country Byway-related interpretive opportunities under Alternative D.

Effects under Alternative E
Effects of Back Country Byway management would be the same as Alternative B, with the exception that BLM management to mitigate user conflicts would enhance interpretive opportunities along the Fort Churchill to Wellington Back Country Byway.

Back Country Byway: Effects from National Trails

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The Fort Churchill to Wellington Back Country Byway and Pony Express NHT would occupy the same route from Fort Churchill to Dayton. Management of the trail for public interpretation opportunities would support the Back Country Byway same objectives. NHT management would have no effect on the portion of the route from Dayton to Wellington.

Effects under Alternatives B, C, D, and E
No Back Country Byway would share a common route with an NHT under Alternative B; therefore, NHTs would not affect Back Country Byway.

Back Country Byway: Effects from Back Country Wildlife Conservation Areas

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternatives A, B, D and E
No Back Country Byway would cross BCWCAs, so they would not be affected by BCWCAs management.

Effects under Alternative C
The New Pass to Hawthorne Back Country Byway would run next to or bisect the Gabbs Valley Range North, Gillis West, and Gillis East BCWCAs. Management of these areas, which would be to preserve wildlife habitat, would also provide the opportunity for wildlife interpretation and education opportunities along the Back Country Byway.

Back Country Byway: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
No interpretation and environmental education management actions are proposed under Alternative A and therefore would not impact Back Country Byway

Effects under Alternative B
Proposed management under Alternative B would benefit Back Country Byway by enhancing education and interpretive opportunities of BLM-administered resources, including for those unique features found along Back Country Byway routes.

Effects under Alternative C
Effects would be similar to Alternative B but would apply only to the Marietta and New Pass to Hawthorne Back Country Byway routes.

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E
Effects on Back Country Byway from interpretation and environmental education under Alternative E would be the same as Alternative B.

Back Country Byway: Effects from Facilities and Transportation Maintenance

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Maintaining Back Country Byway-related facilities, such as kiosks and signs, would maintain interpretive opportunities along the Fort Churchill to Wellington Back Country Byway.

Effects under Alternative B
Maintaining Back Country Byway-related facilities, such as kiosks and signs, would maintain interpretive opportunities along the Fort Churchill to Wellington, Marietta, and New Pass to Hawthorne Back Country Byway routes.

Effects under Alternative C
Alternative C would rescind the Fort Churchill to Wellington Back Country Byway designation. Effects on the Marietta and New Pass to Hawthorne Back Country Byway would be the same as Alternative B.

Effects under Alternative D
The BLM would not designate any Back Country Byway under Alternative D.

Effects under Alternative E

Effects on Back Country Byway from facilities and transportation maintenance would be the same as Alternative B.

Back Country Byways: Cumulative Effects

Cumulative impacts on Back Country Byways are the result of past, present, and reasonably foreseeable future actions that increase or decrease opportunities to interpret unique features of Nevada's landscape that are visible from the byway route. Opportunities for interpretation are a direct function of total Back Country Byway route miles, which vary by alternative, as well as the likelihood that the unique features available for interpretation will change over time. In general, resource protection preserves interpretive opportunities while resource uses diminish those opportunities. However, where the unique landscape feature being highlighted is a resource use (e.g., livestock grazing or mineral development), resource protection could affect interpretive opportunities of that feature.

Because there would be no Back Country Byway under Alternative D, incremental cumulative effects on Back Country Byway apply only to Alternatives A, B, C, and E. Under these alternatives, effects would vary based on the unique features being highlighted by the Back Country Byway and the length and locations of the Back Country Byway routes.

Trends indicate that the number of wildfires will continue to gradually increase based on climate, conversion of habitat to areas dominated by invasive species, and increased potential for human-caused fires due to population growth and recreation use increases. An increase in wildfires would increase the potential for fires along Back Country Byway routes, which could result in damage to viewsheds and interpretation opportunities. ESR of areas that wildfires have burned would continue based on the number of acres burned. ESR treatments would continue to be prioritized to provide for human life and safety, soil/water stabilization, special status species habitat restoration, and invasive plant deterrence. This would help prevent long-term impacts on national trail resources from wildfires.

Incremental effects from climate change, wildfires, and invasive weeds would occur under all alternatives. However, the effects would be the most impactful on Back Country Byway under Alternative A. This is because this alternative would provide the fewest and most outdated management actions to protect the unique visual, cultural, and historic features. Alternatives B, C, and E would provide varying levels of management to address these threats and would result in fewer impacts on Back Country Byway.

Mineral development will continue to occur on both federal and nonfederal mineral estate lands within the planning area. These actions have altered and will continue to alter the landscape surrounding Back Country Byway and to affect opportunities to interpret features along those routes. Mineral exploration and

development is expected to continue for locatable minerals, fluid minerals, nonenergy mineral leasing, and mineral material disposables. There are approximately 23 plans of operations for explorations (greater than 5 acres) or mining currently administered, 148 fluid mineral leases, and 260 contracts for free-use permits for salable mineral operations (BLM 2013f). NSO stipulations, closures, and VRM objectives would decrease incremental impacts according to the specific management under each alternative. Under Alternatives B, C, and E, which highlight historic mineral activity along the Marietta Back Country Byway, restrictions on new mineral development would serve to protect the old mining developments and other unique features available for interpretation along that route.

CTTM actions that would close areas to motorized travel could reduce interpretive opportunities along Back Country Byway for users other than those on nonmotorized means, while preserving unique visual features from degradation due to the creation of new linear features. In areas open to motorized travel, there would continue to be the potential for motorized activities to degrade the unique features available for interpretation along Back Country Byway routes.

Use of BLM-administered lands for livestock grazing and wild horses and burros is anticipated to continue with localized increases and decreases in use. While livestock and wild horses and burros could conflict with Back Country Byway interpretive objectives, these uses are unique features of Nevada's past and will continue to be highlighted by Back Country Byway management. Therefore, maintaining or increasing livestock and wild horse and burro activity would support most Back Country Byway objectives.

Increasing use by the BLM of social media and Web-based resources will allow the public to better understand the unique features available for interpretation along Back Country Byway routes. Use of these technologies is expected to incrementally benefit Back Country Byway users over time.

4.5.3 Back Country Wildlife Conservation Areas

The Theodore Roosevelt Conservation Partnership, Coalition for Nevada's Wildlife, and Nevada Bighorn's Unlimited have requested that 9 areas, totaling 817,800 acres on BLM-administered lands within the planning area, be managed as Back Country Wildlife Conservation Areas (BCWCAs). They are as follows:

- Gillis West (42,500 acres)
- Gillis East (63,900 acres)
- Gabbs Valley Range North (50,800 acres)
- Gabbs Valley Range South (154,400 acres)
- Pilot Mountains (93,700 acres)

- Excelsiors (125,800 acres)
- Fairview 131,400 acres)
- Sand Springs (53,700 acres)
- Clan Alpine (101,600 acres)

Lands considered to be managed as BCWCA were identified with the following characteristics:

- Intact and undeveloped identifiable area
- Important fish and wildlife habitat
- Dispersed recreation opportunities, such as hunting and fishing
- Large enough to support conservation, maintenance, restoration, and enhancement of the natural habitats and ecosystem

Summary

Actions for managing and designating areas as BCWCAs apply under Alternative C only. Under Alternative C, implementing BCWCAs and the actions outlined for management of these areas would provide additional protection of wildlife habitat and dispersed recreation opportunities.

Methods of Analysis

Direct impacts on BCWCAs are considered to be those that either impair or enhance the values for which the BCWCA was proposed. Also analyzed were impacts on these values from either the creation of the BCWCA or, where an BCWCA is not proposed, the management actions for other resources. All impacts discussed are direct, though some may not occur immediately after implementation of management actions. The analysis in this section focuses on specific threats to the characteristics identified for BCWCAs. Actions for managing and designating areas as BCWCAs apply under Alternative C only. Therefore, impacts associated with management of vegetation, fish and wildlife, special status species, wildland fire ecology, livestock grazing, geology and minerals, recreation and visitor services, comprehensive travel and transportation management, and lands and realty are only assess for Alternative C. All other effects would be common to all for those resources.

Assumptions

The following assumptions were used to assess the impacts on BCWCAs:

- Although management actions for most resources and resource uses have district office-wide application, BCWCA management applies only to those lands within the BCWCAs.
- Areas will be kept open to hunting, fishing, trapping and other outdoor recreation, and the Nevada Department of Wildlife retains management authority over fish and wildlife populations.

- Travel management decisions will consider access to BCWCAs and attempt to maintain the existing dispersed nonmotorized recreation in these areas.

Management for the following resources would not result in an effect on BCWCAs: air quality, climate management, soil and water resources, wild horse and burros, cultural resources, paleontological resources, visual resources, caves and cave resources, forestry and woodland products, renewable energy, ACECs, Back Country Byways, national trails, WSRs, WSAs, tribal interests, public health and safety, and interpretation and environmental education.

Indicators

The following indicators were used to assess the degree of these impacts on BCWCAs:

- Surface disturbance activities that alter the range and dispersal of fish and wildlife species within the BCWCA through fragmentation of habitat and introduction of nonnative invasive species
- Activities that decrease opportunities for native plant and animal species to thrive within the ecosystem, while maintaining sustainable population numbers
- Activities that alter the quality of dispersed recreation, such as backpacking, camping, fishing, hiking, hunting, and horseback riding

Nature and Type of Effects

Effects on BCWCAs include any actions that increase wildlife habitat fragmentation, wildfire, pinyon-juniper expansion, and introduction or establishment of invasive species. Impacts would also result from minerals or energy development, livestock grazing, ROW authorizations, and OHV use within BCWCAs that decrease the overall quality of the area. Removing native plant and animal species habitat or by altering the dispersed recreation experience would cause impacts. Management actions emphasizing resource protection (e.g., closure to motorized travel) could also reduce the intended purpose of BCWCAs if such actions would limit access to the BCWCA. However, closure of a large area to motorized travel may restrict the ease of access to some areas, but it would also protect habitat and closure of select routes to motorized travel to eliminate multiple routes would not have an impact.

The following sections discuss the effects from various resources on BCWCAs under Alternative C.

BCWCAs: Effects Common to All Alternatives

There are no similar effects among all alternatives. Actions for managing and designating areas as BCWCAs apply under Alternative C only; therefore, Alternatives A, B, D, and E were not evaluated.

BCWCAs: Effects from Fish and Wildlife

Under Alternative C, the reintroduction or augmentation of native wildlife would be supported. This action would positively impact animals and wildlife-related recreation opportunities within BCWCAs by maintaining healthy populations of native wildlife species. Nonnative, undesirable aquatic animal species (such as bullfrogs) would be removed from active native aquatic breeding grounds. This would protect fish and wildlife priority habitat by reducing the competition of native species with nonnative species.

BCWCAs: Effects from Special Status Species

Under Alternative C, 52,600 acres of PPMA would overlap BCWCAs. The BLM would manage for protection of PPMA and PGMA Sage-Grouse habitat in cooperation with the USFWS and NDOW on BCWCA lands. Management actions under Alternative C for protecting Sage-Grouse habitat are closing PPMA and PGMA to fluid mineral and mineral material disposal, imposing ROW exclusions, prohibiting motorized and mechanized travel, and closing areas to livestock grazing. The reduced surface disturbance from these actions would benefit BCWCAs by reducing habitat fragmentation, reducing potential for nonnative species establishment, and preserving the landscape for primitive types of recreation.

BCWCAs: Effects from Wildland Fire Ecology and Management

Under Alternative C, fire management actions would be implemented using strategies designed to mimic natural fire regime and enhance fish and wildlife habitat. These actions under Alternative C include applying minimum impact suppression tactics, whereby the environmental impacts of emergency fire management methods would be no greater than necessary to meet fire management objectives. The use of dozers would be authorized only when there is a threat to public safety or property damage. Chemical agents would not be allowed for suppression. These actions would help keep vegetation within BCWCAs native and would provide for high quality recreation.

BCWCAs: Effects from Livestock Grazing

Under Alternative C, livestock grazing in BCWCAs would be restricted to prescriptive grazing and would be authorized annually. Grazing would also be consistent with BLM-approved Sage-Grouse management guidance. These management actions would improve habitat for these species and would protect other species thriving near them.

BCWCAs: Effects from Geology and Minerals

Under Alternative C, BCWCAs would have an NSO stipulation for fluid minerals. This would generally provide the same level of protection as closing the area to leasing. This is because, while the mineral would still be available for extraction beneath the surface, facilities would be located outside of the designated boundaries. BCWCAs would also be closed to mineral material disposal and nonenergy mineral leasing. These stipulations and closures would

protect BCWCA from habitat fragmentation and allow for high quality recreation.

BCWCAs: Effects from Recreation and Visitor Services

Management of ERMAs could result in fewer impacts on BCWCAs due to the increased availability of recreation. Recreation impacts in these areas are largely dependent on the type of recreation that is utilized in the ERMAs. Such recreation as motorized vehicle use can allow for access within the BCWCA, but at the same time, cross-country travel can fragment habitat. Activities in these areas would likely be monitored more than areas lacking the recreation designation; therefore, impacts could be minimized through monitoring.

BCWCAs: Effects from Comprehensive Travel and Transportation Management

Travel and transportation management would affect BCWCA areas by addressing administrative and resource access needs to or within the BCWCAs. Specific actions would include designation of routes that allow for motorized access and the possible closure or limited use of routes to meet the overall management objective or implementation actions of the BCWCAs. Trail needs for nonmotorized uses such as hiking, biking or horseback riding within the BCWCA to manage resources, legal access, or provide recreational activities such as photography, camping, or hunting would also be addressed.

Limiting the construction of new roads as well as maintenance or rehabilitation of primitive roads and motorized trails would help reduce route density to conserve wildlife habitat and reduce habitat fragmentation.

BCWCAs: Effects from Lands and Realty

Under Alternative C, the BCWCAs would be managed as ROW exclusion, except within existing ROWs. This would protect the wildlife habitat and BCWCA characteristics.

BCWCAs: Effects from Areas of Critical Environmental Concern

Under Alternative C, 52,200 acres of the Clan Alpine BCWCA overlaps with a proposed ACEC area; 13,100 acres of the Gabbs Valley Range South BCWCA overlaps with proposed ACEC area. Where the BCWCA overlaps the ACEC, management could indirectly protect characteristics of the BCWCA due to the protective measures proposed for the ACEC. Management actions that protect habitat, such as PPMA for Greater Sage-Grouse, will potentially enhance the habitat for other wildlife species. These protective measures would aid management objectives for the BCWCA. They also would offer some indirect protection from habitat fragmentation due to the limitations of surface-disturbing activities on the ACEC, such as limits to mineral or lands and realty actions.

BCWCAs: Cumulative Effects

There were no past or present impacts on BCWCAs as these areas were not previously delineated. Past and present impacts relating to resource and multiple use management continues in landscapes where delineation of BCWCAs are proposed (Alternative C only)

Livestock grazing would continue, but it would be limited to prescriptive grazing in the BCWCAs under Alternative C. ROWs would be allowed only in existing ROWs. There would be limited minerals development due to the NSO for fluid minerals and closures for mineral materials and nonenergy minerals. Designation of priority wildlife habitat and watersheds, sensitive species management, and ACECs would restrict certain uses and minimize impacts on BCWCAs. Travel designations and limited fire suppression strategies would also minimize impacts on BCWCA. Potential impacts from motorized recreational activities, including OHV travel and permitted recreation events, would require stipulations to prevent impacts BCWCAs. Since permitted activities are low and remain on graded roads and washes, cumulative impacts from these activities are expected to be negligent. Since most of the BCWCAs fall within proposed ERMAs, impacts from OHV activity will be monitored and any potential impacts will be mitigated.

Overall, the incremental impacts on BCWCA would be low.

4.5.4 National Trails

This section discusses impacts on National Historic Trails (NHTs) and National Recreational Trails (NRTs) from proposed management actions of other resources and resource uses. Existing conditions concerning national trails are described in **Section 3.4.3,** National Trails. None of the alternatives substantially interfere with NHTs, and all are compatible with the nature and purpose of the NHTs.

Summary

The CCD has two congressionally designated historic trails and one congressionally designated national recreation trail. The California National Historic Trail, the Pony Express National Historic Trail, and the Grimes Point National Recreation Trail are shown on **Figure 3-18**, Back Country Byways and National Trails. The National Trails System is the network of scenic, historic, and recreation trails created by the National Trails System Act of 1968. These trails provide for outdoor recreation needs, promote the enjoyment, appreciation, and preservation of outdoor areas and historic resources, and encourage public access and citizen involvement. National historic trails are fragile nonrenewable evidence of recent human history and heritage on the landscape. They are public resources entrusted to the BLM for protection and interpretation, providing a context for present-day land use decisions.

NHTs are extended trails that closely follow a historic trail or route of travel of national significance. They are designated in order to protect the historic route

and its historic remnants and artifacts for public use and enjoyment (1968 National Trails System Act, Section 3[3]). National Recreation Trails (NRTs) provide a variety of outdoor recreation uses within or in reasonable access to urban areas (1968 National Trails System Act, Section 3[1]). Overall, objectives and actions associated with other resources that result in closure to surface disturbance activities near national trails would be beneficial due to reduced chance of disturbance to national trail features.

Management for the following resources would not result in an effect on national trails: air quality, soil and water resources, fish and wildlife, wild horses and burros, cultural resources, paleontological resources, caves and cave resources, forestry and woodland products, and WSRs.

Methods of Analysis

Methods and Assumptions

National trail baseline information in **Section 3.4.3**, National Trails, was reviewed for current understanding of known resources and to determine the condition of the resources. Also, all laws pertinent to determining effects on national trails (e.g., National Trails System Act, NHPA) were included in the criteria for determining impacts. This known information was overlain with the actions found under each alternative in Chapter 2. Then conclusions were drawn based on an understanding of how these types of actions may affect known and potentially discoverable resources.

This analysis includes the following assumptions:

- Congressional designation of a trail as part of the National Trails System signifies that the resource is of exceptional scenic, recreational, and historic value.
- National trails and related sites are protected in accordance with federal laws and BLM regulations and agreements.
- Impacts on the NHTs are assessed by applying the criterion of adverse effect, as defined in 36 CFR, Part 800.5a: "An adverse effect is found when an action may alter the characteristic of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects cause by the action that may occur later in time, be farther removed in distance, or be cumulative."
- The BLM will follow 36 CFR Part 800, Section 106, and the Nevada State Protocol when addressing federal undertakings; therefore, adverse effects on the NHT will be appropriately mitigated.

- Degradation of the national trail from natural processes (e.g., erosion) will continue regardless of avoidance of human caused impacts.
- Potential impacts on an NHT and its setting from subsequent undertakings (implementation of the planning decisions or site-specific project proposals) require separate compliance with the NEPA and Section 106.

Indicators

Indicators of impacts on national trails are as follows:

- Management goals and objectives that conflict with sustaining national trail qualities
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the NHT's historic character or the surroundings of a national trail
- Loss of integrity and in some cases a loss of archaeological information, resulting from physical damage to or destruction of all or parts of an NHT
- Alterations to the level of public access to trail resources, which may increase use, erosion, looting, and vandalism
- A lack of action, which, in certain cases, can allow a trail resource to deteriorate
- Substantial interference with the values for which the components of the system were designated occurs
- Impacts on the resources, qualities, values, and associated settings of the BLM-administered lands through which such National Trails may pass, and the primary trail use or uses

Nature and Type of Effects

Indirect impacts on national trails result from project-induced increases or decreases in activity in the planning area. Intensification of such uses as grazing, ROW authorizations, and OHV use along or near national trails typically decrease overall trail quality. This is caused by changing the visual or historic character for which the trail was designated.

Direct impacts on national trails typically result from actions that disturb the soil or alter characteristics of the surrounding environment. These characteristics contribute to trail significance, introduce visual elements out of character with the property or alter its setting, or result in neglect of the resource to the extent that it is deteriorated or destroyed. For example, surface-disturbing activities that impact trail ruts for historic trails are considered a direct impact because the trail segments are nonrenewable. Direct impacts also include

actions that result in data collection and proactive preservation of NHTs and NRTs.

Proposed management that would encourage increased visitor use or construct recreation facilities may result in theft or vandalism of historic trail cultural resources. It also may damage the trail through increased use. Recreation in particular is a complex issue. This is because actions taken to preserve historic values can positively and negatively affect heritage tourism and trail enthusiasts.

Federal actions defined as federal undertakings under Section 106 of the NHPA require the identification, evaluation, and consideration of adverse effects and the appropriate mitigation of those effects. Nearly all implementation actions would be subject to further cultural resource review before site-specific projects are authorized or implemented. If adverse effects are identified, mitigation measures, including avoidance, would have to be considered to minimize or eliminate the effects.

National Trails: Effects from Climate Management

Effects Common to All Alternatives
The unique character of landscapes in the planning area will continue to change in response to such climatic factors as drought and extreme precipitation. Indirect effects on national trails from climate change would occur from increased wildfire potential, flooding, and other events capable of altering the overall character of the landscape and the public's ability to interpret key features along the route.

Effects under Alternative A
Climate-related landscape changes surrounding the California NHT, the Pony Express NHT, and the Grimes Point NRT would continue and would steadily alter the unique landscape of the area surrounding the national trails.

Effects under Alternative B, C, D, and E
Climate change management under Alternatives B through E would aim to preserve ecosystem functions. They would accomplish this by identifying and mitigating threats from climate change through adaptive management, thereby protecting opportunities to interpret unique features along the national trails.

National Trails: Effects from Water Resources

Effects Common to All Alternatives
Management of water resources would not affect the Grimes Point NRT.

Effects under Alternative A
Management of water resources under Alternative A would restrict development and disposal of lands within 100-year floodplains and would eliminate OHV use through or near surface water bodies. It also would

preserve the current character of the Carson River, which runs along parts of the California NHT and the Pony Express NHT.

Effects under Alternative B, C, D, and E
Management under Alternative B through E, which would prioritize acquisition of water rights and land acquisition to maintain stream flows, would preserve the unique character of the landscapes surrounding NHTs.

National Trails: Effects from Vegetation Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Management actions for vegetation resources would maintain or improve the condition of rangelands and riparian habitats, reduce soil erosion, and maintain a diverse vegetation habitat for livestock, wild horses and burros, and wildlife. It also would maintain the character of the landscape surrounding NHTs and NRTs.

Effects under Alternative B
Management under Alternative B would maintain healthy landscape conditions surrounding national trails and would restore the most sagebrush habitat through pinyon-juniper removal than any other alternative. Further management that would allow for the removal of fire-killed and invasive trees, prevent invasive plant species, and protect riparian areas would subsequently preserve the scenic character of landscapes next to national trails.

Effects under Alternative C
The effects of vegetation resources management on the national trails are similar to those under Alternative B, but with 82 percent less area identified for pinyon-juniper removal.

Effects under Alternative D
The BLM would manage vegetation for the removal of pinyon-juniper; therefore, it would not protect the character around national trails from pinyon-juniper encroachment.

Effects under Alternative E
The effects of vegetation resource management on national trails are similar to those under Alternative B, but with 57 percent less area identified for pinyon-juniper removal.

National Trails: Effects from Special Status Species Management

Effects Common to All Alternatives

Measures to protect special status fish and wildlife and their wildlife habitats include a variety of restrictions, buffers, closures, and structure height limits. These actions would limit activities that are incompatible with maintaining special status species. They also could indirectly reduce the potential for disturbance of national trails and their accompanying setting by reducing the potential for visual interference and noise.

Under all alternatives, the Grimes Point NRT would not intersect Greater Sage-Grouse PPMA or PGMA; therefore, it would not be affected by Sage-Grouse habitat management.

Effects under Alternative A

Management of special status species would not provide for any additional land use restrictions that would reduce the possibility of impacts on national trails.

Effects under Alternative B

Greater Sage-Grouse

Greater Sage-Grouse habitat management would manage PPMA (275,600 acres) with CSU stipulations for fluid mineral leasing and as ROW avoidance areas.

PPMA does not intersect the California NHT, but it would intersect 3,600 acres of the Pony Express NHT; therefore, it would limit fluid mineral and ROW development in these areas. Management of special status species under Alternative B would provide for more protection of NHTs and their settings than Alternative A.

Effects under Alternative C

Greater Sage-Grouse

Alternative C would close Greater Sage-Grouse PPMA and PGMA (414,200 acres) to fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. In addition, these areas would be managed as ROW exclusion areas.

PPMA and PGMA would intersect 3,600 acres of the California NHT and 47,700 acres of the Pony Express NHT. This would restrict mineral and ROW development in these areas. Management of Sage-Grouse habitat under Alternative C would provide the most protections to NHTs and their settings.

Effects under Alternative D

Greater Sage-Grouse

Under Alternative D Greater Sage-Grouse habitat management would apply NSO stipulations for fluid mineral leasing within PPMA (275,600 acres), with no

exceptions, modifications, or waivers. Alterative D would apply NSO stipulations for fluid mineral leasing within PGMA (138,600 acres), with exceptions, modifications, and waivers, as outlined in **Appendix C**. It would manage PPMA and PGMA as ROW avoidance areas (414,200 acres).

PPMA would not intersect the California NHT under Alternative D but would intersect 3,600 acres of the Pony Express NHT. PGMA would intersect 200 acres of the California NHT and 400 acres of the Pony Express NHT. Due to the provision of NSO stipulations, Alternative D would be more protective of NHTs and their setting than Alternative A.

Effects under Alternative E

Greater Sage-Grouse

Greater Sage-Grouse habitat management under Alternative E would be similar to that described under Alternative D. In addition to the management actions under Alternative D, Alternative E would close PPMA and PGMA to nonenergy mineral leasing and mineral material disposal.

PPMA would not intersect the California NHT but would intersect 17,500 acres of the Pony Express NHT. PGMA would intersect 2,000 acres of the California NHT and 2,100 acres of the Pony Express NHT. Alternative E would be more protective of NHTs and their settings than Alternative A.

National Trails: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Wildland fire could result in direct disturbance or loss of sites associated with national trails through the destruction or modification of structures, features, and artifacts (Tratebas et al. 2004; Greer and Greer 2001; Buenger 2003). Organic materials are especially vulnerable to heat damage.

Fire management would involve ground-disturbing activities that could also directly affect the national trail's footprint and associated sites by erasing the trail ruts and altering the spatial relationships within archaeological sites. The removal of vegetation increases the visibility of archaeological remains, resulting in artifacts becoming more susceptible to unauthorized collection, vandalism, and subsequent erosion. Effects from prescribed fire would be similar to those of wildland fire. However, prescribed fire is subject to project-level analysis and Section 106 process. Any effects could be mitigated to prevent adverse effects on the national trails or associated sites.

Effects under Alternative A

The BLM would continue to manage wildfires according to a four-tier system. Outdated management and lack of specific fire and fuels management objectives and actions would increase the likelihood for fire-related effects on the landscape surrounding national trails.

Effects under Alternative B

A full range of fire management activities and options would be used to protect all identified values at risk, as identified in the regularly updated fire management plan for the district. Fire suppression would reduce the potential impact on NHTs and NRTs from wildland fires, but it may increase the risk of impact from fire suppression tools and equipment.

After a fire, Alternatives B through E would implement emergency stabilization and burned area rehabilitation projects. These would stabilize soils, reestablish hydrologic function, maintain and enhance biological integrity, promote plant resiliency, limit expansion or dominance of invasive species, and reestablish native species. Rehabilitation and restoration of burned areas, which includes preventing cheatgrass and other invasive species, would restore the scenic and historic conditions around national trails after fires. This would minimize long-term effects following fires.

Effects under Alternative C

Minimum impact suppression would apply so that emergency fire management methods would be no greater than necessary to meet fire management objectives. Alternative C would limit the use of dozers for fire management. They would be used only when there is a threat to public safety or property damage and chemical agents would not be allowed for suppression. These limits to suppression could put NHTs, NRTs, and their surroundings at a greater risk of impact from wildland fire; but these areas would be at less of a risk for impact from fire suppression. However, Alternative C would protect sensitive cultural resources from catastrophic impacts of wildfire and wildfire suppression. Emergency stabilization and burned area rehabilitation would have the same objectives as Alternative B.

Effects under Alternative D

A full range of fire management activities and options would be used to protect all identified values at risk, as identified in the regularly updated fire management plan for the district. Fire suppression would reduce the potential impact on NHTs and NRTs from wildland fires; however, it may increase the risk of impact from fire suppression tools and equipment. All identified WUI values at risk would be protected from catastrophic impacts of wildfire and wildfire suppression. Emergency stabilization and burned area rehabilitation would occur with the same objectives as Alternative B.

Effects under Alternative E

The effects of Wildland Fire Ecology and Management on national trails are similar to those under Alternative B.

National Trails: Effects from Visual Resources Management

Effects Common to All Alternatives

VRM Class I and II designations protect cultural resources where visual setting contributes to the significance of the property or the traditional use, such as NHTs. Using the visual resource contrast rating system during project planning could reduce the impact of visual intrusions on NHTs. Visual intrusion on the setting of NHTs must be considered in the Section 106 process, regardless of VRM designation.

Class I. The objective of this class is to *preserve* the existing character of the landscape. This class provides for natural ecological changes with very limited management. The level of change by the activity to the characteristic landscape should be very low and must not attract attention.

Class II. The objective of this class is to *retain* the existing character of the landscape. The level of change to the characteristic landscape should be low. Management may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the landscape.

Under all alternatives, the Grimes Point NRT would not be impacted by visual resource management.

Effects under Alternative A

Alternative A would not provide specific management for NHTs under VRM management; therefore, VRM management would not indirectly protect these resources.

Effects under Alternative B

Alternatives B through E would designate NHTs as VRM Class II areas. This means they would retain the existing character of the landscape and management would be limited so as not to attract the attention of the casual observer. Alternative B would manage the VRM Class II classification with a 0.25-mile buffer from the centerline of the historic trails.

In addition, under Alternatives B through E, management would classify WSAs as VRM Class I. This classification intersects 1,000 acres of the Pony Express NHT. It would preserve the existing character of the landscape and would allow for very limited management.

Effects under Alternative C

Alternative C would manage NHTs similar to Alternative B. VRM Class II would have a 2.5-mile buffer from the centerline of the historic trails, which would be the greatest buffer of all the alternatives. WSA Class I management would intersect 1,200 acres of the California NHT and 22,500 acres of the Pony

Express NHT. This is the greatest acreage of VRM Class I intersection with NHTs of all the alternatives.

Effects under Alternative D
Alternative D would manage NHTs and WSA VRM classification and management just as Alternative B would.

Effects under Alternative E
Alternative E would manage NHTs similar to Alternative B. It would manage VRM Class II with a 1-mile buffer from the centerline of the historic trails. This is more than Alternative A. WSA Class I management would not intersect the California NHT but would intersect 6,600 acres of the Pony Express NHT, more than under Alternative A.

National Trails: Effects from Livestock Grazing Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
The California NHT, Pony Express NHT, and Grimes Point NRT would continue to cross areas that are available for livestock grazing; they would be managed according to existing use levels. Concentrated livestock grazing use in localized areas would result in eroded soil, vegetation cover reduction, and other landscape changes that would affect NHT and NRT.

Effects under Alternative B
Areas along the NHTs and NRT currently managed as available for livestock grazing would continue to be managed as such according to existing use levels. Management, such as prescriptive grazing for vegetation management and prohibitions on continuous year-round grazing, would decrease the likelihood of long-term impacts on the visual and historic quality of the landscape.

Effects under Alternative C
Compared to Alternative A, the BLM would manage 45 percent fewer acres as available for livestock grazing under Alternative C. Benefits of reduced grazing on national trails would include less potential for long-term aesthetic changes from overgrazing.

Effects under Alternative D
Effects from livestock grazing management on national trails would be the same as described under Alternative B.

Effects under Alternative E
Effects from livestock grazing management on national trails would be the same as described under Alternative B.

National Trails: Effects from Geology and Mineral Management

Effects Common to All Alternatives

The Grimes Point NRT is on lands withdrawn to the Bureau of Reclamation but is managed by the BLM under a memorandum of understanding with the Bureau of Reclamation. Reclamation withdrawal effectively closes the area to anything other than Reclamation uses, so the trail is effectively closed to energy development. Recreational values would be protected under all alternatives.

Effects under Alternative A

Management of mineral development would not provide specific management for national trails or actions for reclamation subsequent mining activities. Mining would continue be a long-term visual feature on the landscape. However, trail designation would prevent damage to the fragile, nonrenewable evidence of recent human history and heritage features associated with the trails.

Effects under Alternative B

Alternative B would manage the California NHT as follows: closed to fluid mineral leasing along 1,100 acres, closed to nonenergy mineral leasing along 1,100 acres, and closed to locatable mineral entry along 2,000 acres. Additionally, 2,900 acres would be managed with CSU stipulations and 1,000 acres would be managed with NSO stipulations toward fluid mineral leasing. Alternative B would not limit mineral material disposal along the NHT; however, it would manage other areas of the NHT as open to all forms of mineral development. Other resource management, such as VRM, would further protect NHTs from mineral development.

Alternative B would manage the Pony Express NHT as follows: closed to fluid mineral leasing along 1,000 acres, closed to nonenergy mineral leasing along 1,000 acres, closed to locatable mineral entry along 300 acres, and closed to mineral material disposal along 1,000 acres. Additionally, 11,200 acres would be managed with CSU stipulations and 600 acres would be managed with NSO stipulations toward fluid mineral leasing. Alternative B would manage other areas of the NHT as open to all forms of mineral development. Other resource management, such as VRM, would further protect NHTs from mineral development.

Alternative B would provide more restriction and closure to mineral material development than Alternative A, which would result in fewer changes to the landscape, affording a more historical viewshed for those using the trail. Trail designation would prevent undue impacts on the trails from mineral development.

Effects under Alternative C

Alternative C would manage the California NHT and the Pony Express NHT as closed to mineral development; it would not manage any areas as open to

mineral development. This would preserve the setting of the NHTs the best of all the alternatives.

Effects under Alternative D
Alternative D would manage the California NHT the same as Alternative B would, except it would manage 3,000 acres with a CSU stipulation toward fluid mineral leasing instead of 2,900 acres. Alternative D would manage the Pony Express NHT the same as Alternative B would, except it would manage 12,800 acres with a CSU stipulation toward fluid mineral leasing, rather than 11,200, and 4,300 acres with a NSO stipulation for fluid mineral leasing, rather than 600. These additional restrictions would preserve the setting of the trails more than Alternative A and B, but less than Alternative C.

Effects under Alternative E
Alternative E would manage the California NHT as follows: closed to fluid mineral leasing along 58,700 acres, closed to nonenergy mineral leasing along 58,700 acres, closed to mineral material disposal along 58,700 acres, and closed to locatable mineral entry along 9,300 acres. Alternative E would not manage any segments of the California NHT as NSO or CSU stipulations for fluid mineral leasing.

Alternative E would manage the Pony Express NHT as follows: closed to fluid mineral leasing along 120,400 acres, closed to nonenergy mineral leasing along 120,400 acres, closed to mineral material disposal alone 120,400 acres, and closed to locatable mineral entry along 2,000 acres. Alternative E would not manage any segments of the California NHT as NSO or CSU stipulations for fluid mineral leasing.

Alternative E would provide more closure along NHTs to mineral development and thus preserve the historic setting along more segments of the trails than Alternatives A, B and D, but fewer than Alternative C.

National Trails: Effects from Recreation and Visitor Services

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Under Alternative E, a small portion of the Pony Express NHT would cross the Sand Mountain SRMA, which would be managed for historical interpretation. The Sand Mountain SRMA would be closed to nonenergy and fluid mineral leasing, and new ROW authorizations would be restricted to existing ROW corridors.

National Trails: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives
Under all alternatives OHV and off road vehicle use can result in damage or desecration to the fragile, nonrenewable evidence of recent human history and heritage. Impacts can be limited by increasing restrictions on and around the NHTs and NRTs. Designations and restrictions to maintain the integrity of NHTs and NRTs will be considered and implemented in the development of the Comprehensive Travel Management Plan.

Effects under Alternative A
Under Alternative A, the lands surrounding NHTs would be undesignated/managed as open to motorized and mechanized travel management, resulting in the highest risk for damage of NHTs of all the alternatives.

Effects under Alternative B
Alternative B would manage the land surrounding NHTs as limited to designated routes. This would reduce the potential for damage to NHTs by restricting trail blazing and keeping OHV use to existing routes. However, impacts to NHTs could still occur if OHV users trail blaze over NHT corridors.

Effects under Alternative C
Alternative C would restrict access to mechanized travel only within a 2.5-mile buffer from the center line of the NHTs. This would eliminate the use of motorized vehicles on the trails. Alternative C would provide the greatest protection to NHTs from OHV use of all the alternatives.

Effects from Alternative D
The potential for impacts on NHTs from OHVs as a result of travel management under Alternative D would be the same as those described under Alternative B.

Effects from Alternative E

The potential for impacts on NHTs from OHVs as a result of travel management under Alternative E would be the same as those described under Alternative B.

National Trails: Effects from Lands and Realty

Effects Common to All Alternatives

The Grimes Point NRT is on Bureau of Reclamation withdrawn lands but managed by the BLM under a memorandum of agreement with Bureau of Reclamation. If the BLM processes a relinquishment on the Bureau of Reclamation withdrawal, the lands would revert back to BLM management and the BLM would manage the trail. Impacts would be the same under all alternatives as the BLM is currently managing the trail under a memorandum of agreement.

Effects under Alternative A

Alternative A would allow ROW development throughout most of the planning area, including that next to the California NHT, the Pony Express NHT, and the Grimes Point NRT. Under Alternative A, the probability would be highest that new ROWs, such as transmission lines, pipelines, and roads, would alter the unique visual and historic characteristics along the national trails.

Effects under Alternative B

Compared to Alternative A, management under Alternative B would decrease the potential for impacts from new ROW development along NHTs. Under Alternative B, 9,500 acres of the California NHT and 28,700 aces of the Pony Express NHT would cross ROW avoidance areas. An additional 1,000 acres of the Pony Express NHT would intersect ROW exclusion areas. Avoiding or excluding new ROW development would minimize changes to the unique visual and historic qualities of NHTs.

Effects under Alternative C

Alternative C would exclude new ROW development along 94,500 acres of the California NHT and 144,000 acres of the Pony Express NHT. Additionally, Alternative C would manage 93,000 acres of the California NHT and 164,400 acres of the Pony Express as ROW avoidance areas. Compared to Alternative A, prohibitions on new ROWs under Alternative C would better preserve the unique NHT characteristics along these route segments. Alternative C would also provide more restriction and prohibitions on ROW development than Alternative B.

Effects under Alternative D

Effects of ROW management under Alternative D would be the same as those discussed under Alternative B.

Effects under Alternative E

Alternative E would exclude new ROW development along 6,600 acres of the Pony Express NHT. Additionally, Alternative E would manage 58,700 acres of the California NHT and 113,800 acres of the Pony Express as ROW avoidance areas. Compared to Alternative A, prohibitions on new ROWs under Alternative E would better preserve the unique NHT characteristics along these route segments. Alternative E would also provide more restriction and prohibitions on ROW development than Alternative B.

National Trails: Effects from Renewable Energy

Effects Common to All Alternatives

NHTs would not be within solar variance areas; that is, utility-scale solar development around NHTs would be prohibited.

Effects under Alternative A

The potential for changes to the unique landscape characteristics surrounding the NHTs from wind energy development would be greatest under Alternative A. No segments of the NHTs would be managed as ROW avoidance or exclusion areas for wind energy development. New wind development along the NHTs would hinder the BLM's ability to meet its management objectives for that route.

Effects under Alternative B

Alternative B would decrease the potential for effects from wind energy development along the NHTs compared to Alternative A. Intersecting ROW avoidance areas for wind energy are 9,500 acres of the California NHT and 29,700 acres of the Pony Express NHT. Impacts from wind energy development along the remainder of the route outside ROW avoidance areas would be the same as Alternative A.

Effects under Alternative C

Alternative C would decrease the potential for effects from wind energy development along the NHTs compared to Alternative A. Intersecting ROW exclusion areas for wind energy are on 187,500 acres of the California NHT and 308,400 acres of the Pony Express NHT. Impacts from wind energy development along the remainder of the route outside ROW exclusion areas would be the same as Alternative A. Alternative C would manage the most NHT areas as wind energy ROW exclusion areas of all the alternatives.

Effects under Alternative D

Alternative D would decrease the potential for effects from wind energy development along the NHTs, the same as Alternative B would.

Effects under Alternative E

Alternative E would decrease the potential for effects from wind energy development along the NHTs compared to Alternative A. Intersecting ROW

avoidance areas for wind energy are 54,100 acres of the California NHT and 113,800 acres of the Pony Express NHT. In addition, 4,600 acres of the California NHT and 20,800 acres of the Pony Express NHT would be managed as ROW exclusion areas for wind energy development. Impacts from wind energy development along the remainder of the route outside ROW avoidance and exclusion areas would be the same as Alternative A. Alternative E would be the only alternative to manage for more ROW exclusion areas for wind energy development than Alternatives A, B, and D. It would also manage more acres as ROW avoidance areas for wind energy development than Alternative A.

National Trails: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Under Alternative C, the Pony Express NHT would be managed as part of the Sand Springs Desert Study Area ACEC. The Sand Springs Pony Express Station and Pony Express NHT would be managed for historical interpretation, and the Sand Springs interpretive trail would be maintained.

This 50-acre ACEC would be designated to protect cultural resources. It would be closed to motorized and mechanized travel, recommended for withdrawal from mineral entry, and managed as a ROW exclusion area; vegetation collecting would not be permitted. Management of the Sand Springs Pony Express Station and the Pony Express NHT would be more protective within the ACEC than outside of it. This designation would not afford these protections for the Cold Springs Pony Express Station or for other segments of the Pony Express NHT.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

National Trails: Effects from National Trails

Effects Common to All Alternatives
The BLM would cooperate with the Oregon-California Trails Association and other partners to identify, record, and evaluate NHT segments and sites for

NRHP eligibility. It also would cooperate with the National Park Service, National Trails Centers, the National Pony Express Association, and other groups to implement projects related to the Pony Express and California Trail. Additionally, the scientific and historical studies of cultural landscapes, sites, historic trails, and other resources, including excavation, would be allowed by qualified researchers on a case-by-case basis within the Pony Express and California Trail corridors with authorization.

The California NHT would be managed with three eligible historic sites or route segments: the Fernley Ruts high potential historic site and the Mickey Canyon and Humboldt Sink to Carson high potential route segments. The Pony Express NHT would be managed with two high potential historic sites: the Cold Springs Station and the Sand Springs Station.

Effects under Alternative A

Management of NHTs would be similar to those described in *Effects Common to All Alternatives*. Congress designated the California and Pony Express NHTs without any specific management identified, other than general NHT management. This is to ensure the protection of the trail resources, their interpretation, and their appropriate public use and to maintain the NHT and associated sites in public ownership. Currently there is a self-guided interpretive trail with informational signs at the Sand Springs and Cold Springs Pony Express Stations, which would continue to be maintained under Alternative A.

<u>California National Historic Trail</u>

The Fernley Ruts high potential historic site would be managed under a historic preservation and access easement under all the alternatives. Alternative A would not provide for specific management of the high potential historic sites.

<u>Pony Express National Historic Trail</u>

Alternative A would designate appropriate sites for public use, would provide access and information for interpretation, and would promote visitation of the Cold Springs and Sand Springs Stations. Alternative A would maintain the self-guided interpretation and informational signs at the stations and would excavate, stabilize, and develop the stations as public interpretive sites.

<u>Grimes Point National Recreation Trail</u>

Under Alternative A, the Grimes Point trail would be designated with no specific management actions identified.

Alternative A would protect the NHTs and provide information for the public to interpret the setting and historical context of the NHTs.

Effects under Alternative B

General Management of NHTs

Alternatives B through E would manage NHTs to preserve their historic and scenic values and related cultural landscapes and viewsheds. Managing the related cultural landscapes and viewsheds would be an additional measure not included in Alternative A. Preserving the viewshed surrounding the NHTs can enhance the interpretive experience for people recreating on the NHTs. The NHTs would be evaluated for high potential historic sites and route segments for inclusion on the NRHP based on resource qualities, values, associated setting, and the primary uses identified.

Additionally, Alternatives B through E would manage NHTs to mitigate for direct and indirect adverse effects on eligible, unevaluated, or high potential route segments and associated sites through such means as avoidance, project redesign, data collection, interpretation, and public education. Also new audible and atmospheric effects would not exceed current levels, where feasible. These management measures would protect the setting of the NHTs and enhance the recreation aspect of them more than Alternative A.

Alternative B would pursue legal access for public visitation to trail segments. It would develop and enhance significant segments and sites by installing trail markers and trail traces, interpretive signs, and directional signs to trail segments from main roads. Alternative B would provide recreation opportunities consistent with the historic values of the NHTs. It would develop facilities for placement outside of the trail corridor, when feasible, to protect resources and provide for visitor safety. This would enhance the public's interpretation of the sites, but it also could put these sites at an increased risk of vandalism and theft by providing signs that would point out these resources.

Development Restrictions

Specific management actions pertaining to both NHTs under Alternative B are management as VRM Class II and as a ROW avoidance area within a 0.25-mile buffer on either side of the centerline. Alternative B would open the NHT corridors to mineral material sales and disposal, as long as actions were compatible with the VRM Class II designation and the historic values.

California National Historic Trail

Alternative B would manage the Fernley Ruts as Alternative A would. Alternative B would manage the Mickey Canyon and the Humboldt Sink to Dayton high potential route segments in order to protect their historic values. It would also mitigate actions that would adversely affect the NHT through such means as avoidance, project redesign, data collection, interpretation, and public education. This is similar to management discussed under General Management of NHTs.

Pony Express National Historic Trail

Under Alternative B, the Pony Express NHT would not have any additional management directives other than those prescribed generally for national trails (as described under General Management).

Grimes Point National Recreation Trail

The BLM would manage the 0.75-mile Grimes Point NRT to be consistent with the management designated by the Secretary of the Interior. The following management actions would be implemented: a management plan would be developed to include maintenance, interpretation, and monitoring of petroglyphs; at a minimum, trails would be inspected annually to document the integrity of the petroglyph art; interpretive trail markers would be maintained and brochures would be provided; site steward monitoring with the Nevada Rock Art Foundation or other similar group would continue; and the BLM would coordinate with the Fallon Paiute Shoshone Tribe and the Bureau of Reclamation for trail management.

Effects under Alternative C

General Management of NHTs

General management actions of NHTs are similar to those identified under Alternative B. In contrast, Alternative C would pursue legal access to protect the trail segments and would continue to support stewardship programs to monitor sites and assist with management. Alterative C would not specifically promote public use of the trails or enhance the significant segments and sites, as Alternatives B, D, and E would; this would reduce the public's ability to interpret the sites but may also decrease the potential for the trail to be damaged by theft or vandalism.

Alternatives C, D, and E would also provide the opportunity to develop facilities within trail corridors only when needed to protect the trail integrity and resources or to establish an NHT recreation retracement route. This would preserve the historical setting of the NHT more than Alternative A and B, but may decrease the ability of the public to interpret and recreate at the NHTs.

Development Restrictions

Specific actions pertaining to both NHTs under Alternative C are management as VRM Class II and ROW avoidance within a 2.5-mile buffer on either side of the centerline. This is greater than Alternative B. Under Alternative C, the BLM would limit new noise sources and would seek opportunities to reduce current noise levels. Alternative C would also close NHTs to nonenergy mineral leasing, mineral material disposal, and fluid mineral leasing within 2.5 miles of the centerline. Due to these restrictions and closures to development of ROW and minerals along the NHT corridors, Alternative C would be the most protective of NHTs of all the alternatives from development features on the surrounding landscape. Alternative C would most preserve the historic setting of the NHTs.

California National Historic Trail

Alternative C would manage the Fernley Ruts the same as Alternative A would but with enhanced protection measures, such as signs and fencing where appropriate. Alternative C would manage the Mickey Canyon and Humboldt Sink to Dayton NHT segments to protect their historic values; actions that would adversely affect the NHT would not be allowed.

Pony Express National Historic Trail

Under Alternative C, the Pony Express NHT would not be managed under any directives other than those prescribed generally for national trails (as described under General Management).

Grimes Point National Recreation Trail

The Grimes Point NRT would be managed as discussed under Alternative B.

Effects under Alternative D

General Management of NHTs

General management actions of NHTs are similar to those identified under Alternative B. In addition, Alternative D would continue to support stewardship programs and partnerships to lead trail tours, monitor sites, and generally assist with management, which would enhance public ability to interpret and recreate on the trails.

Alternatives C, D, and E would also provide the opportunity to develop facilities within trail corridors, only when needed to protect the trail integrity and resources or to establish an NHT recreation retracement route.

Development Restrictions

Specific management actions of NHTs under Alternative D would be the same as described under Alternative B.

California National Historic Trail

Alternative D would manage the Fernley Ruts the same as Alternative A would and would manage the Mickey Canyon and Humboldt Sink to Dayton high potential historic sites the same as Alternative B would.

Pony Express National Historic Trail

Under Alternative D, the Pony Express NHT would not be managed under any directives other than those prescribed generally for national trails (as described under General Management).

Grimes Point National Recreation Trail

The Grimes Point NRT would be managed as discussed under Alternative B.

Effects under Alternative E

General Management of NHTs

General management actions of NHTs are similar to those identified under Alternative D.

Development Restrictions

Specific management actions pertaining to NHTs under Alternative E include management as VRM Class II and as a ROW avoidance area within a 1-mile buffer on either side of the centerline. This buffer of restricted use is greater than under Alternatives A and, therefore, more protective of the setting of the NHTs.

Additionally, Alternative E would close high potential historic sites and high potential route segments along the NHT corridor to nonenergy and fluid mineral leasing. It would close mineral material disposal within a 1-mile buffer on either side of the centerline. The remainder of the NHT corridor would be open to such leasing and development as long as the actions are compatible with the historic values. Such restrictions and closures would provide more protection of NHTs than under Alternatives A.

California National Historic Trail

Alternative E would manage the Fernley Ruts the same as Alternative C. It would manage the Mickey Canyon and Humboldt Sink to Dayton high potential historic sites the same as Alternative B would.

Pony Express National Historic Trail

Under Alternative E, the Pony Express NHT would not have any additional management directives other than those prescribed generally for national trails (as described under General Management).

Grimes Point National Recreation Trail

The Grimes Point NRT would be managed as discussed under Alternative B.

National Historic Trails: Cumulative Effects

Past and Present Actions

Table 4-1 and **Section 4.2.2** list past, present, and reasonably foreseeable future actions. Past and present actions in the cumulative impacts analysis area impacting National Historic Trails include climate change, wildfire, livestock grazing, wild horse and burros, minerals exploration and development, renewable energy, and ROWs. Impact associated with these activities include direct disturbance to the trail or the trail setting.

Reasonably Foreseeable Actions

Reasonably foreseeable future actions are likely to have similar impacts on the past and present actions. Nevada's gross greenhouse gas emissions rose faster

than those of the nation as a whole, increasing 62 percent from 1990 to 2004, while national emissions rose 16 percent during the same period. As such, the effects of climate change on vegetation composition and erosion hazards on the national trail viewsheds is expected to continue.

Trends indicate that the number of wildfires will continue to gradually increase. This is based on climate, conversion of habitat to areas dominated by nonnative invasive species, and increased potential for human-caused fires due to population growth and increases in recreation. An increase in wildland fires increases the potential for fires within national trail routes, which could damage trail viewsheds and affect interpretation and associated cultural resources. ESR of areas that have burned would continue based on the number of acres burned. ESR treatments would continue to be prioritized to provide for human life and safety, soil and water stabilization, important habitat restoration for special status species, and preventing invasive plants from becoming established. This would help prevent long-term impacts on national trails from wildland fires.

The National Pony Express Association has a permit issued from the BLM Utah State Office to conduct annual rerides of the Pony Express National Historic Trail. Management of the trail would not affect the permit. During the period of the reride, increased use could locally impact historical resources and the historical setting.

Grazing pressure on rangelands from livestock and wild horses and burros is anticipated to continue, if not increase. There is interest in acquiring grazing permits as they become available. In addition, due to their proximity to expanding urban areas, some allotments may lose grazing acreage, which would ensure demand for areas that will remain available for livestock grazing. This may include allotments surrounding national trails.

Minerals, renewable energy, and lands and realty activities could result in surface disturbance and impact soils during construction of roads, drill pads, power lines, and facilities. Mineral exploration and development is expected to continue for locatable minerals, fluid mineral leasing, nonenergy mineral leasing, and mineral material disposal. Currently there are approximately 23 plans of operation for explorations (greater than 5 acres) or mining administered, 260 contracts for free-use permits for salable mineral operations, and 148 geothermal leases leased (BLM 2013f). Restrictions around national trails due to VRM classifications would reduce impacts on these resources.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Actions – All Alternatives

Incremental cumulative impacts would be similar for all alternatives. Overall, incremental impacts on National Historic Trails would vary based on use restrictions, and the size and number of minerals and renewable energy developments and construction associated with ROW authorizations.

4.5.5 Wild and Scenic Rivers

This section discusses the impacts on Wild and Scenic Rivers (WSRs) from proposed management actions on other resources and resource uses. Within the planning area, the BLM has found three segments on the East Fork Carson River to be eligible and suitable for inclusion in the National Wild and Scenic Rivers System (NWSRS). However, beginning at the headwaters, the Forest Service administers most of the river corridor. The Forest Service would need to identify a suitability determination of these segments before the BLM could recommend these segments to Congress for designation. Existing conditions concerning WSRs are further described in **Section 3.4.4**, Wild and Scenic Rivers.

Summary

Alternatives A and C would provide the most protection for eligible or suitable WSR segments because all segments would be managed as either eligible or suitable. The BLM would take no action that would impair the free-flowing nature, tentative classification, or ORVs of the segments.

Alternative B would provide the least protection. This is because the three eligible segments along the East Fork Carson River would be determined to be not suitable for inclusion in the NWSRS and would be released from interim management protection. The East Fork Carson River Segments 1, 2, and 3 would be managed similar to adjacent reaches of the river. Although this segment would not be suitable for inclusion in the NWSRS, 400 acres are within the Carson Iceberg WSA. They would be managed as VRM Class 1, which would provide indirect protection to the areas that were identified as having scenic ORV. The other area segments, however, would be provided the least protection under Alternative B. It would provide the fewest opportunities for protection for the East Fork Carson River Segments 2 and 3 due to the surface-disturbing activities allowed.

Alternative D would provide a fair amount of protection for the segments along the East Fork of the Carson River determined to be suitable for inclusion in the NWSRS. It would accomplish this by restricting surface-disturbing activities and SRMA designations that overlap stream segments. Impacts would be similar to Alternative C; however, because the BLM would take a more active approach to land management and restoration, there is greater potential for impacts on recreational ORVs to be mitigated under this alternative.

Effects under Alternative E would be similar to Alternative D but to a lesser degree. This is because the area of overlapping protection would be reduced.

Management for the following resources would not result in an effect on WSRs: air quality, climate management, soil and water resources, vegetation, fish and wildlife, wild horses and burros, wildland fire ecology and management, cultural resources, paleontological resources, caves and cave resources, forestry and woodland products, livestock grazing, lands and realty, renewable energy, areas

of critical environmental concern, Back Country Byways, national trails, back country wildlife conservation areas, WSAs, tribal interests, public health and safety, and interpretation and environmental education.

Methods of Analysis

Methods and Assumptions

The methods and assumptions below were used to assess the impacts on WSRs. This analysis assumes the following:

- The Forest Service will make a suitability determination for the three segments of the East Fork Carson River already found eligible and suitable by the BLM.
- Until the Record of Decision for this RMP is adopted, all suitable stream segments under consideration for WSR designation will be managed under interim protective measures required by the WSR Act and BLM Manual 6400, Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management (BLM 2012o). At that time, any stream segment not found suitable for inclusion in the NWSRS would lose its interim protection. This procedure and the interim protective measures will ensure that the values for which these river segments were found eligible and suitable are not compromised until Congress makes a decision regarding WSR designation.
- If WSR designation is not provided (i.e., if segments are found not suitable and released from further study under the WSR Act), provisions could still remain to protect these river corridors. This will be done under a combination of existing plans, policies, and actions proposed under the action alternatives of this RMP. These provisions protect streamside and riparian habitats, riparian and aquatic wildlife, water quality, and cultural and visual resources. The major difference between designation and nondesignation is the legislative and, thus, lasting protection afforded designated streams. Decisions in this RMP, however, affect suitability only; once a segment is determined suitable, only Congress can formally designate it as part of the NWSRS.
- The BLM will not permit any actions that would adversely affect the free-flowing nature, ORVs, or tentative classification of any of the segments, or would result in the reduction of water quality to the extent that it would no longer support the ORVs. As such, implementing the management actions will not adversely impact eligible or suitable segments. There would not be impacts from other resources with either eligible or suitable segments. Recognizing that, the analysis of impacts on eligible and suitable WSR stream segments includes an evaluation of where management

actions might be inconsistent with the tentative classification given to each suitable segment, as well as potential impacts on its ORVs or free-flowing nature.

- A withdrawal is an administrative designation made by the BLM that prohibits certain activities on the identified federal lands to protect the identified value. The BLM's determination of whether a stream segment is suitable could affect some of these withdrawals. This is especially the case with withdrawals that are designed to protect potential water storage and potential hydropower generation sites. If the BLM determines that a stream segment is suitable, the final management plan could recommend revocation of water storage- or hydropower-related withdrawals. In addition, Congress could require revocation of certain withdrawals if it were to designate a river segment. A WSR management plan created in accordance with designation could also include a recommendation for revocation of withdrawals.

Indicators

The following indicators were used to assess the degree of impacts on WSR quality: any potential change to the ORVs, tentative classification (i.e., wild, scenic, recreational), or free-flowing nature of the river segment or corridor area from its current state, as described in **Section 3.4.4**, Wild and Scenic Rivers, and the draft Wild and Scenic River suitability report (BLM 2013c).

The tentative classification and identified ORVs for each segment are summarized in **Table 4-23**, Summary of Wild and Scenic River Study Segments.

Documentation of the process used to determine suitability can be found in the draft Wild and Scenic River suitability report (BLM 2013c).

Table 4-23
Summary of Wild and Scenic River Study Segments

East Fork Carson River Segment[1]	Tentative Classification	ORVs	Alternative Determined Eligible/Suitable
Segment 1	Wild	Recreation, scenic, fish	A, C, D, E
Segment 2	Recreational	Recreation, scenic, fish, geologic	A, C, D, E
Segment 3	Scenic[2]	Recreation, scenic, fish, geologic	A, C, D, E

Source: BLM 2013c
[1]Each segment along the East Fork of the Carson River considered in the alternatives will be managed within 0.25-mile of either side of the ordinary high water mark.
[2]Under Alternative D the tentative classification is Recreational.

Nature and Type of Effects

The potential impact on each stream segment depends on the ORVs identified for the segment and the tentative classification of the segment. Segments classified as recreational would allow for the greatest level of development in the study corridor, while segments classified as wild must remain relatively undeveloped. Segments classified as scenic fall in between recreational and wild segments, allowing a moderate amount of development within the study corridor. Because segments classified as recreational would allow development to the extent it is compatible with the protection of the identified ORVs, impacts on segments classified as wild or scenic are the focus of the analysis of impacts on the segments' classification. In the planning area, impacts on the tentative classification would come mostly from trail and road and mineral and energy development.

Properly functioning riparian/wetland vegetation communities provide soil stabilization, soil filtration, and diverse vegetation species. In turn, properly functioning riparian/wetland vegetation communities can provide protection for vegetation, fish, and wildlife ORVs. Uses in riparian/wetland vegetation that could degrade the riparian/wetland vegetation ORV include camping, livestock grazing, and trail development. These activities can also cause soil erosion and degrade water quality, potentially impacting the fish ORV.

Management actions that prohibit surface-disturbing activities, including ROW exclusion areas, in the WSR study corridor would provide some amount of protection for a number of ORVs, including fish, scenic, and geological, by keeping the ORVs intact. This would also ensure that the tentative classification of the area remains intact. Under Alternative C, the East Fork Carson River Segments 2 and 3 would be managed as ROW avoidance. This could still allow some ROW development, which would primarily impact scenic ORVs. It could also cause soil erosion, vegetation loss, and habitat fragmentation, which could impact wildlife, fish, and vegetation ORVs. Segment 1 has a tentative classification of Wild and therefore would be managed as a ROW exclusion area.

Managing the segments according to VRM Class I or II objectives would directly protect segments with a scenic ORV by requiring that alterations to the landscape be done so as not to dominate the viewshed. Alterations that could not be mitigated to reach the VRM class objective would not be permitted. Because most large-scale developments cannot meet VRM Class I or II objectives, managing to protect the scenic values of the planning area would generally preclude most large-scale developments. In turn, this would indirectly protect segments with geological ORV.

In general, livestock grazing leads to use of wetland and riparian habitats. Detrimental impacts on these habitats can occur when they are improperly managed; this can lead to stream bank alteration, water quality degradation,

erosion, loss of vegetative health, and increases in nonnative or upland vegetation. These effects, however, would be minimized due to such management actions as changes in stocking rate and the timing of grazing. These actions could mitigate impacts from livestock grazing on vegetation ORVs.

Under all alternatives, mitigation measures and BMPs to prevent impacts on wetland and riparian habitats would be implemented during fire suppression and fuels management. Use of retardant would be restricted within stream segments, protecting water quality. These restrictions would be implemented on all surface waters, including NWSRS-eligible streams. In general, these actions would protect the habitats that provide NWSRS-eligible segment ORVs. However, this limitation of fuels management and suppression can increase fuel loads; therefore, fires that do impact NWSRS-eligible segments could be larger or more severe.

WSR study segments could benefit from interpretation and environmental education that teaches users about the importance of protecting the ORVs and encouraging them to recreate in the area in ways that do not threaten the resources. In addition, conducting research to learn more about resources associated with or connected to the ORVs would result in a better understanding of how best to provide long-term protection. This could result in either direct impacts (where science and education are aimed directly at the ORV) or indirect impacts (where the ORV benefits or protection result from monitoring, research, or education programs aimed at other programs).

The alternatives vary from no action to an emphasis on resource use, an emphasis on conservation, an emphasis on BLM lands within the urban interface area, and an overall mix and variety of management actions. Each alternative results in different priorities for resource development. Some of these priorities on resource use are expected to impact WSRs more than others. Below is a comparison of the effects from each resource on WSRs under the five alternatives.

WSRs: Effects from Special Status Species Management

Effects Common to All Alternatives

Under all alternatives, the BLM would make recommendations or support recommendations to ensure adequate flows through the East Fork Carson River to support flow-dependent values, such as recreation and fish. This would enhance the free-flowing nature of the East Fork Carson River, as well as protect or enhance the recreational and fish ORVs by providing adequate flows for recreationists and fish habitat.

Effects under Alternative A

Under Alternative A, the BLM supports the reintroduction of Lahontan cutthroat trout by other agencies in suitable and historic habitat and streams and springs. These would be identified by the Nevada Department of Wildlife as

having the potential to support populations of Lahontan cutthroat trout and other threatened and endangered fish. This action would enhance and protect the fish ORV in the river by supporting native fish species populations.

Effects under Alternative B

Under Alternative B, eligible river segments would be determined not suitable for NWSRS. Special status species management would protect eligible segments that are not suitable should any of the identified river segments be located within proposed special status species plant or wildlife ACECs. Federally listed and proposed species would be maintained and recovered by conserving and protecting their habitats on BLM-administered lands. The BLM would support habitat recovery on non-BLM-administered. This action would enhance and protect the fish ORVs.

Effects under Alternative C

Under Alternative C, eligible river segments would be determined suitable for NWSRS. Special status species management would further protect suitable segments in adjacent areas should segments be located within proposed special status species plant or wildlife ACECs.

Effects under Alternative D

Under Alternative D, impacts would be the same as those under Alternative C.

Effects under Alternative E

Under Alternative E, impacts would be the same as those under Alternative C.

WSRs: Effects from Visual Resources Management

Effects Common to All Alternatives

Under all alternatives, the East Fork Carson River Segment 1 would be managed as VRM Class I within 0.25-mile of either side of the ordinary high water mark. This would ensure viewsheds are maintained to VRM Class I objectives.

Effects under Alternative A

The BLM would manage 400 acres of the East Fork Carson River Segment 2 as VRM Class III. The objective would be to allow a moderate level of change in order to partially retain the existing character of the landscape. This would allow modifications that would directly impact the scenic ORVs.

The BLM would manage 600 acres of the East Fork Carson River Segment 3 as VRM Class II. This would allow for moderate level of change to viewsheds within the study corridor.

Effects under Alternative B

Under Alternative B, the three eligible segments along the East Fork Carson River would be determined to be not suitable for inclusion in the NWSRS and would be released from interim management protection. The East Fork Carson

River Segments 1, 2, and 3 would be managed similar to adjacent reaches of the river.

Effects under Alternative C

The BLM would manage 300 acres of the East Fork Carson River Segment 2 as VRM Class I and 100 acres as VRM Class II within 0.25-mile of either side of the ordinary high water mark. The acres within the VRM Class I would be provided direct protection to the scenic ORV and would have incidental protection to other ORVs. The VRM Class II objective would allow a low level of change. This would maintain the existing character of the landscape, while facilities and uses within WSR corridors would be managed to blend in with the surrounding landscape. Impacts on the scenic ORV from the areas in the VRM Class II would be greater than those in the VRM Class I areas.

Under Alternative C, 100 acres of the East Fork Carson River Segment 3 would be managed as VRM Class II and 500 acres would be managed as VRM Class I. These management directives would be developed to classify this segment as a Scenic Area. The areas classified as VRM Class II would allow for moderate amounts of development within the study corridor. This would offer more protection to the scenic ORV than the Recreation classification but less than the Wild classification. However, most acres would be managed under VRM Class I, which would provide direct protection to the scenic ORV and would have incidental protection to other ORVs.

Effects under Alternative D

Under Alternative D, impacts would be the same as those under Alternative C.

Effects under Alternative E

The BLM would manage 400 acres of the East Fork Carson River Segment 2 as VRM Class II. The VRM Class II objective would be to allow a low level of change. This would maintain the existing character of the landscape, while facilities and uses within WSR corridors would be managed to blend in with the surrounding landscape.

Impacts on the East Fork Carson River Segment 3 would be the same as those under Alternative A.

WSRs: Effects from Geology and Mineral Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Subject to WSR interim management guidance, BLM Manual 6400 (2012), the BLM would temporarily withdraw 400 acres in Segment 1, 400 acres in Segment 2, and 600 acres in Segment 3 from locatable minerals within a quarter mile of eligible segment banks subject to valid existing rights. Potential impacts from

locatable mineral development would not occur in these areas. Mineral leasing would continue subject to restrictions that would maintain ORVs. Salable minerals would be avoided or closed. The BLM would implement or require design features, mitigation measures, and monitoring systems to ensure the continued eligibility of the segments. All segments would need to be managed to protect the ORVs, free flowing nature, and tentative classification of each segment. Until the eligibility determination is superseded, management activities and authorized uses would not be allowed to adversely affect either eligibility or the tentative classification (43 CFR, Part 8351).

Effects under Alternative B

The three eligible segments along the East Fork Carson River would be determined to be not suitable for inclusion in the NWSRS and would be released from interim management protection. The East Fork Carson River Segment 1, 2, and 3 would be managed similar to adjacent reaches of the river. There would be no more direct protection to any ORVs except those in the 400 acres of Segment 1 within the Carson Iceberg WSA. All ORVs outside of Segment 1 could be impacted by mineral development. These impacts could include habitat degradation, erosion, runoff, and modifications to the landscape affecting scenic quality and settings for cultural and historical ORVs. Development of site-specific mitigation measures would reduce the potential for adverse impacts.

Effects under Alternative C

The East Fork Carson River Segment 1 would have an NSO stipulation for fluid minerals. A portion of Segment 1 (400 acres) is within the Carson Iceberg WSA and is closed to fluid minerals. This would generally provide the same level of protection as closing the entire area to leasing. This is because, while the mineral would still be available for extraction beneath the surface, facilities would be located outside of the study corridor. Segment 1 would also be closed to mineral material disposal and nonenergy mineral leasing. It would be recommended for withdrawal from locatable mineral entry, and any surface-disturbing activities would be prohibited. These stipulations and closures would protect all ORVs by limiting activities associated with mineral development that might cause habitat degradation, erosion, runoff, and modifications to the landscape, affecting scenic quality and settings for cultural and historical ORVs.

Effects under Alternative D

Impacts would be the same as those under Alternative C.

Effects under Alternative E

Impacts would be the same as those under Alternative C.

WSRs: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Management of recreation and visitor services would protect WSR ORVs along Segments 2 and 3 of the East Fork Carson River as these segments are located within a SRMA. Managing these areas as a SRMA would protect the high quality recreational experience in this area. Since segment 2 has been identified as having ORVs for recreation, SRMA management would provide more protection for the overall recreational experience. Increased recreation could impact ORVs associated with each segment. Uses in riparian and wetland vegetation could degrade the riparian and wetland vegetation ORV. Recreation can also cause soil erosion and degrade water quality, potentially impacting fish and vegetation ORVs.

Effects under Alternative A

Under Alternative A, 400 acres of Segment 2 and 600 acres of Segment 3 would be within an SRMA. Recreation opportunities include camping, picnicking, hiking, hunting, fishing, white water rafting, sailing, mountain biking, nature study, rock collecting, sightseeing, and photography. Recreation management along this segment of the East Fork Carson River would also enhance its recreational ORVs.

Effects under Alternative B

The three eligible segments along the East Fork Carson River would be determined to be not suitable for inclusion in the NWSRS and would be released from interim management protection. The East Fork Carson River Segments 1, 2, and 3 would be managed similar to adjacent reaches of the river. Approximately 400 acres of Segment 2 and 600 acres of Segment 3 would be within an SRMA. ORVs would still have a limited amount of protection based on SRMA management. The ORVs in 400 acres of Segment 1 within the Carson Iceberg WSA would also be protected under WSA management.

Effects under Alternative C

Under Alternative C all three segments would be determined suitable for NWSRS. WSR segments and ORVs would be protected under NWSRS authorities. However, for those segments that are located within an SRMA, ORVs would be further protected outside of designated corridor boundaries.

Effects under Alternative D

Impacts would be the same as described under Alternative C.

Effects under Alternative E

Impacts would be the same as described under Alternative C.

WSRs: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Motorized and mechanized vehicle use could impact ORVs and tentative classification of WSR study segments. Closing areas to motorized or mechanized travel would indirectly protect areas from impacts associated with uses such as dispersed camping along river banks, firewood cutting and incompatible recreation activities. These impacts include vegetation trampling, disturbance of wildlife habitat, soil erosion and runoff, and noise. Closure of areas to motorized and mechanized travel would only provide indirect protection of all ORVs. Designating routes for certain motorized and mechanized uses would help protect ORVs to a lesser degree. Where routes remain open to motorized or mechanized travel, the use of the routes would still impact ORVs.

Effects under Alternative A

Segment 1 of the East Fork Carson River is within the Carson Iceberg WSA; therefore, OHV use would be limited to cherry-stemmed roads and primitive routes, except in emergency situations consistent with policy established in BLM Manual 6330. These limitations would help protect ORVs, but impacts would still occur due to motorized and mechanized uses.

Effects under Alternative B

WSRs in Segment 1 would overlap with WSA management in the Carson Iceberg and would have travel management areas with limitations or closures for motorized or mechanized use; however, the BLM would not manage the remaining WSRs with limitations or closures for motorized or mechanized use. Impacts on ORVs from OHV travel include; vegetation trampling, wildlife habitat disturbance, and soil erosion would be the greatest under this alternative due to the lack of restrictions on travel management.

Effects under Alternative C

The fewest impacts would occur to Segment 1 of any alternative due to WSAs being limited to cherry-stemmed roads and ways and primitive routes, for motorized and mechanized travel. Segments 2 and 3 would not be protected by an overlapping WSA. Impacts from travel management including construction of new roads and would be subject to site-specific analysis to determine if activities are compatible with suitable WSRs. Implementation of mitigation measures would reduce the potential for adverse impacts.

Effects under Alternative D

Impacts would be the same as described under Alternative C.

Effects under Alternative E

Impacts would be the same as described under Alternative C.

WSRs: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives

Under all alternatives a common goal is to protect NWSRS-eligible river segments, in accordance with the Wild and Scenic Rivers Act and BLM guidance (BLM Manual 6400). Where WSR study segments are determined eligible or suitable for inclusion in the NWSRS, the BLM would ensure that identified ORVs would not be diminished and the ORV, free-flowing nature or tentative classification of the segment is maintained. Continuing to manage segments as eligible (Alternative A) or a determination of suitability (Alternatives C, D, and E) would result in direct protection of the ORVs, free-flowing nature, and tentative classification of the segments. Where segments are determined not suitable for inclusion in the NWSRS, management of other resources could provide indirect protection to the free-flowing nature and ORVs identified. This would still be present even if the segment is not suitable and is released from further WSR study.

Effects under Alternative A

The East Fork Carson River Segment 1 would be managed to protect the ORVs, free-flowing nature, and tentative classification as Wild. Segment 2 would be managed to protect the ORVs, free-flowing nature, and tentative classification as Recreational. Segment 3 would be managed to protect the ORVs, free-flowing nature, and tentative classification as Scenic. These three segments of the East Fork of the Carson River are identified as eligible for inclusion in the NWSRS. The segments would be protected for their ORVs, free-flowing nature, and water quality under interim management until a determination of suitable is made.

Effects under Alternative B

Al three segments along the East Fork Carson River would be determined not suitable for inclusion in the NWSRS and would be released from further study. The identified ORVs would potentially be impacted by multiple uses, as described in the effects of other resources in this section.

Effects under Alternative C

The BLM would determine the three river segments along the East Fork Carson River to be suitable for inclusion in the NWSRS. These segments would receive direct protection for the identified ORVs, free-flowing nature, and tentative classification based on use restrictions, implementation of mitigation measures, and ensuring uses are compatible with WSR management.

Effects under Alternative D

Impacts would be the same as those under Alternative C, except the tentative classification for Segment 3 would be Recreational and not Scenic. The difference in the tentative classification would have minimal impacts on Segment 3, but would allow river access facilities to be located near the river. The

Hangman's Bridge river access site along Segment 3 would be improved under Alternative D. Any facilities would have to be screened from view from the river, protect river values, and harmonize with the natural and cultural settings as close as possible (BLM 2012o).

Effects under Alternative E
Impacts would be the same as those under Alternative C.

WSR: Cumulative Effects

Past and Present Actions
Past and present actions in the cumulative impacts analysis area impacting WSR management include surface-disturbing activities such as minerals exploration and development, renewable energy, lands and realty development activities, and recreation. Impacts have also resulted from trampling and sedimentation associated with livestock grazing, wild horse and burros, and wildlife.

Reasonably Foreseeable Actions
There are no reasonably foreseeable future projects that would impact the segments. However, if major projects were proposed, and there were no systematic analysis of impacts on river-related values, in accordance with the WSR Act, there could be significant cumulative impacts on river-related values.

Climate change may also affect the fish and recreational ORVs by changing the flows through the segments that support the fish habitat and the water-related recreational activities that the segments support. To the extent that climate reduces the instream flow, either through evaporation or changes in precipitation, the ORVs could be impacted. Effects would be the same under all alternatives.

In addition, activities such as livestock grazing, wild horse and burro, and wildlife use are expected to continue and could have impacts on the segments.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Future Actions – All Alternatives
Past actions and events contributing to cumulative effects within or next to rivers have resulted primarily from surface-disturbing activities and population growth. Use of natural resources within the planning area planning area is expected to remain at current or slightly increased levels. As a result, surface-disturbing activities affecting rivers could continue. However, the BLM would maintain discretionary authority over most land uses and would permit only those actions that would not impair or conflict with river systems, reducing cumulative effects on these areas. As the population increases, activity and use within or next to rivers also increases. An increasing population could mean that housing would continue to be built closer to rivers, thereby affecting the quality of natural and cultural resources near rivers.

4.5.6 Wilderness Study Areas

Wilderness Study Areas (WSAs) are public lands that were found to have wilderness characteristics in accordance with Section 603 of FLMPA and the BLM's wilderness review process but have not been designated as wilderness by Congress. After initial and extensive surveys of public lands in Nevada in 1979 and 1980, 110 WSAs were designated in November of 1980. WSAs meet the minimum criteria for wilderness characteristics: size, naturalness, and an outstanding opportunity for solitude or primitive and unconfined recreation. During the inventory process any unique or supplemental values were noted.

There are nine WSAs that are completely or partially within the decision area: the Augusta Mountains, Burbank Canyons, Carson-Iceberg, Clan Alpine Mountains, Desatoya Mountains, Gabbs Valley Range, Job Peak, Slinkard, and the Stillwater Range. This chapter discusses the impacts from proposed management actions of other resources and resource uses on these WSAs. Existing conditions are described in **Section 3.4.5**, Wilderness Study Areas. The size of each of the nine WSAs is described in **Table 2-1**, Comparative Summary of Alternatives. BLM policy is to protect the wilderness characteristics of all WSAs in the same or better condition than they were on October 21, 1976 until Congress determines whether they should be designated as wilderness (BLM 2012e). Since the authority to establish or release WSAs lies solely with Congress, no new WSAs will be established under any alternative, nor will any WSA be released under any alternative.

Summary

Overall, impacts on WSAs are similar under all alternatives because the BLM policy for WSAs as detailed in Manual 6330 requires the management of wilderness characteristics in a nonimpairment manner. All alternatives have limitations and closures to surface-disturbing activities. Management actions differ between alternatives in the event a WSA were released from wilderness consideration by Congress.

Under Alternative B, if a WSA is released from wilderness consideration, management emphasis would be on multiple uses as a priority over protecting wilderness characteristics.

Alternative B would provide for the least amount of protection to wilderness characteristics compared to other alternatives. Under Alternatives C, D, and E, if a WSA is released, mitigation measures to retain outstanding opportunities for solitude or primitive and unconfined recreation would be developed. Under Alternative C, minerals and transportation and travel management decisions include more indirect protection of wilderness characteristics than Alternatives B, D, and E should the WSA be released.

Management for the following resources would not result in an effect on WSAs: air quality, climate, soil and water, vegetation, fish and wildlife, special status species, wild horses and burros, wildfire ecology, cultural resources,

paleontological resources, caves and cave resources, forestry and woodland products, livestock grazing, renewable energy, Back Country Byways, national trails, back country wildlife conservation areas, tribal interests, public health and safety, and interpretation and environmental education.

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on WSAs:

- The nine WSAs in the planning area will continue to be managed according to BLM Manual 6330, Management of Wilderness Study Areas (BLM 2012e), until Congress either designates or releases all or portions of the WSAs from further consideration.
- Managing the WSAs according to BLM policy will protect their wilderness characteristics in a manner that will not "impair the suitability of WSAs for preservation as wilderness" (FLPMA Section 603[c]). This is the "nonimpairment standard."
- Management of the WSAs is subject to valid existing rights and grandfathered uses under all alternatives, consistent with BLM policy.
- Grazing in the WSAs is permitted at the levels that were authorized in 1976, and changes to grazing practices would have to meet the nonimpairment standard. Maintenance of range improvements (e.g., troughs and corrals) that existed in 1976 is permissible but any new improvement will need to meet the nonimpairment standard.
- Grazing management practices may not be changed solely because they are impacting wilderness characteristics.
- Impacts on the WSAs from implementing management actions for other resources, resource uses, and special designations would be considered negligible since any action will be required to meet the nonimpairment standard to be authorized.
- Motorized and mechanized travel within the WSA will only be allowed on primitive routes identified at the time of the WSA designation.
- If Congress releases a WSA from wilderness consideration, the area will be inventoried for wilderness characteristics and a determination made if wilderness characteristics exist at that time.

Indicators

The following indicators were used to assess the degree of impacts on WSAs:

- Changes in the inventoried wilderness characteristics (naturally appearing, opportunities for solitude or primitive and unconfined recreation, and unique or supplemental values) within the WSAs
- Changes in apparent naturalness resulting from management actions or vegetation manipulations that made the area appear less natural
- Impacts on opportunities for solitude or primitive and unconfined recreation—as measured by the amount and type of visitor use
- Severity of disturbances or changes in unique and supplemental values or cultural resources; status of indigenous species that are listed, or are candidates for listing, as threatened or endangered

Nature and Type of Effects

In the WSAs, impacts normally come from recreational use, vegetation treatments, wildfires, and the installation, maintenance, and use of range/wildlife improvements allowed under BLM policy. There could be indirect impacts from management of other resources that would protect wilderness characteristics in the WSAs, such as overlapping acres of WSAs with WSRs or areas of critical environmental concern.

Managing the WSAs to protect their wilderness characteristics would protect wilderness values through application of the minimum tool requirement and analysis for all surface-disturbing activities to ensure actions would not impair the WSAs' wilderness characteristics.

BLM policy states that mining and mineral leasing uses can continue in the manner and to the degree that they were being conducted at the time the FLPMA was passed, as long as they do not cause unnecessary or undue degradation of the lands. While this clause allows for a natural progression of development, new impacts cannot be of a significantly different type than the impacts involved with the pre-FLPMA activity.

Grazing activities and related range improvements in WSAs may continue in the same manner and degree as on the date the FLPMA was enacted (October 21, 1976), even though the activity may impair wilderness suitability (BLM 2012e). Structures, such as fences, stock trails, springs, and stock ponds, in the WSA would continue to be maintained even though continued maintenance and presence of structures can impact the areas apparent naturalness.

Fire is managed in WSAs to allow the frequency and intensity of the natural fire regime to play its inherent role in the ecosystem. This means both allowing fire where ecosystems evolved in the presence of fire and preventing unnatural spread of fire in ecosystems that evolved without broad-scale fires. Wildfire suppression would prevent catastrophic destruction of vegetation and would preserve wilderness characteristics in these areas over the long term. Fire suppression restrictions, such as on the use of heavy equipment or retardant,

could limit the effectiveness of suppression actions. However, resource damage from suppression equipment would be reduced. Minimum impact suppression tactics would minimize unanticipated effects on wilderness characteristics during fire suppression.

Some WSAs overlap or are next to stream segments eligible for or suitable for inclusion in the NWSRS or other special management areas, such as ACECs or SRMAs. Management of these other areas could also indirectly protect wilderness characteristics of the WSAs due to their protective measures. This is because they often include complementary management objectives.

Below is a comparison of the effects from each resource on WSAs under Alternatives A, B, C, D, and E.

WSAs: Effects from Visual Resources Management

Effects Common to All Alternatives

While the nine WSAs in the decision area are recognized, they will be managed as VRM Class I, in accordance with BLM policy. This means that any changes to the characteristic landscape would be very low and would not attract attention. The effect of the VRM Class I objective on WSAs helps retain their naturalness.

Effects from Visual Resource Management if WSA is released from Wilderness Consideration by Congress

Effects under Alternative A

Areas released from wilderness consideration would be assigned a new VRM classification based upon the visual resource inventory and management objectives for the area.

Effects under Alternative B

Under Alternative B, the Burbank Canyons, Carson Iceberg, Desatoya Mountains, Gabbs Valley Range, Job Peak, Slinkard, and the Stillwater Range areas would be managed under the VRM Class II objectives. The Clan Alpine area would be managed under the VRM Class III objective. VRM Class II designation would allow for greater retention of the existing landscape character with minimal changes while the VRM Class III designation for the Clan Alpine would allow for a greater change in landscape character and a higher range of disturbance from resource use or related activities. The retention of existing scenic values would be greater than Alternative A since VRM objectives for all areas except the Clan Alpine area would be at least a Class II designation.

Effects under Alternative C

Under Alternative C, effects would be similar to those described under Alternative B, except the Carson Iceberg area would be managed under VRM Class I objectives rather than Class II, and the Clan Alpine area would be managed under VRM Class II objectives rather than Class III. In addition,

management actions relating to mineral leasing, mineral disposal, and range management in these areas would be to emphasize the protection of wilderness characteristics over other resource uses, which will also provide a higher level of protection for visual resources. This alternative would provide greater protection of scenic values over Alternative B since the management actions for the Carson Iceberg, Clan Alpine, and Desatoya areas would be also provide additional protection of scenic values.

Effects under Alternative D

Effects on visual resources under Alternative D would be similar to those described under Alternative B. This would emphasize the protection of wilderness characteristics over other resource uses, which would provide greater protection of the scenic values in the area. All other areas previously designated as WSAs would be managed for the highest resource value or use, which would allow greater changes to the landscape and the scenic values of the area.

Effects under Alternative E

Under Alternative E, effects would be similar to those described under Alternative B, except the Carson Iceberg area would be managed under VRM Class I objectives rather than Class II, and the Clan Alpine area would be managed under Class II objectives rather than Class III. In addition, management actions relating to mineral leasing, mineral disposal, and range management, would be to emphasize the protection of wilderness characteristics over other resource uses which will also provide a level of protection for visual resources. In addition, the portion of the Job Peak area that falls within the Fox Peak Cultural ACEC would be managed under the management plan for the ACEC, which will afford additional protection of scenic values of this area. This Alternative would provide greater protection of scenic values than Alternative B since the management actions for the Carson Iceberg, Clan Alpine, Desatoya, and Job Peak areas would also provide additional protection of scenic values.

WSAs: Effects from Geology and Mineral Management

Effects Common to All Alternatives

Under all alternatives, the BLM would continue to maintain WSAs as closed to mineral material disposal, fluid mineral leasing, and nonenergy solid mineral leasing. The continuation of these closures would protect the apparent naturalness and overall wilderness characteristics of the WSAs. However, any valid existing right or grandfathered use on the date of approval of the FLPMA (October 21, 1976), would be recognized. Examples of valid existing rights are a mineral lease or a valid mining claim (BLM 2012e). If released by Congress, most alternatives allow for these areas to retain their outstanding opportunities for solitude or primitive and unconfined recreation by developing mitigation measures and managing certain areas for specific characteristics.

Effects under Alternative A
Impacts would be the same as the *Effects Common to All Alternatives*.

Effects under Alternative B
Impacts would be the same as the *Effects Common to All Alternatives* until a WSA is released by Congress. If released, these areas would be managed as adjacent BLM-administered lands not currently under WSA designation with an emphasis on resource development. The degree of impact would depend on the type and intensity of development, but any surface-disturbing activities are expected to lower the apparent naturalness and any outstanding opportunities for solitude and primitive and unconfined recreation. This alternative would allow for greater mineral development than Alternative A.

Effects under Alternative C
Impacts would be the same as those described under *Effects Common to All Alternatives.* This alternative would provide the greatest protection to WSAs from mineral development due to these areas being closed to nonenergy mineral leasing, mineral material disposal, and fluid mineral leasing and being recommended for withdrawal from locatable mineral entry. Also, the BLM would develop mitigation measures to retain outstanding opportunities for solitude or primitive and unconfined recreation.

Effects under Alternative D
Impacts would be the same as the *Effects Common to All Alternatives* except this area would be managed with a VRM Class II designation, which would further restrict mineral development and close the area to fluid mineral leasing. This alternative would have similar effects as described under Alternative B.

Effects under Alternative E
Impacts would be the same as those described under *Effects Common to All Alternatives.* VRM designation in the Carson Iceberg area would be managed as VRM Class I, which would not allow any surface disturbance such as mineral development and the Clan Alpine, Desatoya, and Job Peak areas would be managed as VRM Class II, which would restrict mineral development activities. These areas would also be closed to fluid mineral leasing. The Job Peak area that falls within the potential Fox Peak ACEC would also be recommended for withdrawal from locatable mineral entry. This alternative would allow for mineral development but would be more restrictive than Alternative B.

WSAs: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives
Although varying to a different degree between alternatives, the closures and limited use on primitive routes and trails in the WSAs would protect the wilderness characteristics. This is accomplished by restricting activities that

could impact natural appearance and opportunities for solitude and primitive/unconfined recreation.

Motorized travel is limited to primitive routes that were documented during the inventory process and identified at the time the WSAs were designated unless subsequent planning decisions provided additional limitations or closures.

Primitive routes within WSAs are not maintained in any way for general access. The only provision is where a permittee is allowed to repair a specific site to allow for continued access to an authorized facility. Any use is generally limited to a non-impairing level.

Routes appearing to be within the WSA were cherry-stemmed out and are technically outside of the WSA.

No new trails or related structures will be allowed within the WSA unless they meet the nonimpairment standard.

Should a WSA be released from consideration by Congress, travel restrictions will revert to designations based on other existing management decisions for the area or will be designated during the travel planning process.

Effects under Alternative A

Travel within WSAs is currently limited to primitive routes and trails, There is the potential for impacts on wilderness characteristics from motorized travel on primitive routes that could impact natural appearance and opportunities for solitude and primitive/unconfined recreation for visitors recreating without motorized travel. Under Alternative A, the closed to motorized travel designation for the Burbank Canyons Scenic Area will remain in effect over the same area in the event that the WSA is released from wilderness consideration.

Effects under Alternative B

Motorized and mechanical travel would be limited to primitive routes identified at the time the WSA was designated. No new trails would be permitted unless they meet the nonimpairment standard. Effects on travel management would be similar to those described under Alternative A, except motorized and mechanized travel in the Burbank Canyons area would be managed as limited to designated routes if the WSA is released from wilderness considerations.

Effects under Alternative C

WSAs would be closed to motorized and mechanized use (administrative motorized use would be permitted). Closing WSAs to motorized and mechanized use would protect the wilderness characteristics by restricting activities that could impact natural appearance and opportunities for solitude and primitive/unconfined recreation. If the Carson Iceberg WSA and the portion of the Job Peak WSA within the potential Fox Peak ACEC are released from wilderness consideration, the areas would remain closed to motorized travel.

Effects under Alternative D
Effects from Comprehensive Travel and Transportation Management on WSAs under Alternative D are the same as the effects under Alternative B.

Effects under Alternative E
Effects from Comprehensive Travel and Transportation Management on WSAs under Alternative E are the same as the effects under Alternative B.

WSAs: Effects from Lands and Realty

Effects Common to All Alternatives
Under all alternatives, new authorizations must meet the nonimpairment criteria. Most new land use authorizations would qualify as new disturbance and would not be authorized. There would be no surface disturbance, permanent new development, or ROWs allowed in WSAs that do not meet the nonimpairment standards. The absence of any surface disturbances would enhance and protect the apparent naturalness of WSAs.

BLM-administered lands within WSAs may not be disposed of with the exception of mining patents and certain land exchanges.

Existing ROWs may continue to be renewed if they are still being used for their authorized purpose.

Effects under Alternative A
Impacts would be the same as those under *Effects Common to All Alternatives*.

Effects under Alternative B
Impacts would be the same as those under *Effects Common to All Alternatives*.

Effects under Alternative C
If the WSAs were released from wilderness consideration by Congress, the following WSAs would be managed as ROW exclusion areas: Carson Iceberg, Clan Alpine, and the Desatoya Mountains. The absence of ROWs and other land use authorizations would help preserve the apparent naturalness of these areas and would allow for outstanding opportunities of solitude.

Effects under Alternative D
If the WSAs were released from wilderness consideration by Congress, the Carson Iceberg WSA would be managed as a ROW avoidance area. If ROWs were located on these lands, there would be impacts on the size of the area, naturalness, and primitive and unconfined recreation. Depending on the extent of the ROWs, wilderness characteristics could be eliminated.

Effects under Alternative E
Impacts from Alternative E are the same as effects under Alternative D, except a portion of Fox Peak Cultural ACEC, which includes area overlapping with Job

Peak WSA (43,300 acres) would be managed as a ROW exclusion area. This would help preserve the apparent naturalness of these areas on Job Peak and would allow for outstanding opportunities of solitude.

WSAs: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives

Management of the East Fork Carson River Segment 1, which overlaps the Carson Iceberg WSA, could also indirectly protect wilderness characteristics of the WSA due to the protective measures. Management of the eligible or suitable East Fork Carson River Segment 1 would be complementary to management of the WSA.

Effects under Alternative A

There are 410 eligible acres within the Carson Iceberg WSA. Managing the segment to maintain the free-flowing nature, wild classification, and ORVs would complement the wilderness characteristics, especially naturalness.

Effects under Alternative B

No acres would be determined to be suitable for inclusion in the NWSRS, so there would be no WSRs that overlap or impact WSAs.

Effects under Alternatives C, D, and E

There would be 410 acres within the Carson Iceberg WSA that are suitable for inclusion in the NWSRS. Managing the segment to maintain the free-flowing nature, wild classification, and ORVs would complement the wilderness characteristics, especially naturalness. The East Fork Carson River Segment 1 would also be managed, in many ways, according to interim management policy for WSAs (e.g., VRM Class I, ROW exclusion area, closed to mineral material disposal and nonenergy mineral leasing, and no surface-disturbing activities). This would maintain the wilderness characteristics of the WSA in the area of overlap should the WSA be released from further consideration as Wilderness.

WSAs: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Where the WSA or is next to ACECs, ACEC management could indirectly protect wilderness characteristics due to the protective measures proposed for the ACECs, which are complementary to management objectives for WSAs. In the event that the WSA is released by Congress from wilderness consideration, ACEC management would continue to offer some indirect protection of wilderness characteristics should the ACEC overlap the WSA boundary that has been released.

Any management decisions made for an ACEC would remain in effect should the WSA be released from wilderness consideration.

Effects under Alternative A
There are currently no ACECs that overlap WSAs, so there are no impacts from ACECs on WSAs under Alternative A. Impacts would be similar to those described under *Effects Common to All Alternatives*.

Effects under Alternative B
A total of 55,400 acres of the Fox Peak Cultural, Namazii Wunu Cultural, and Tagim aša Cultural ACECs overlap WSAs. The impacts would be the same as those described under *Effects Common to All Alternatives*.

Effects under Alternative C
A total of 91,700 acres of the Clan Alpine Greater Sage-Grouse, Desatoya Greater Sage-Grouse, Fox Peak Cultural, Namazii Wunu Cultural, Pine Nut Bi-State Sage Grouse, and Tagim aša Cultural ACECs overlap WSAs. The impacts would be the same as those under *Effects Common to All Alternatives*.

Effects under Alternative D
A total of 45,100 acres of the Fox Peak Cultural and Tagim aša Cultural ACECs overlap WSAs. The impacts would be the same as those under *Effects Common to All Alternatives*.

Effects under Alternative E
A total of 43,300 acres of the Fox Peak Cultural ACEC overlaps the Job Peak WSA. The impacts would be the same as those under *Effects Common to All Alternatives*.

WSAs: Effects from Wilderness Study Areas

Effects Common to All Alternatives
Under all alternatives, no surface disturbance, permanent new development, or ROWs are allowed in WSAs if they do not meet the nonimpairment criteria. These restrictions would preserve the apparent naturalness, outstanding opportunities for solitude and primitive and unconfined recreation, and any supplemental values within the WSAs.

If Congress releases a WSA from wilderness consideration, the area would be inventoried for wilderness characteristics and a determination made if wilderness characteristics exist at that time.

All WSAs would be managed according to VRM Class I objectives.

Effects under Alternative A
There would be no impacts because there are no specific actions that are likely to affect WSAs. The WSAs would continue to be managed in accordance with BLM Manual 6330.

Effects under Alternative B

There would be no impacts because there are no specific actions that are likely to affect WSAs. The WSAs would continue to be managed in accordance with BLM Manual 6330. If released, the areas currently being managed as WSAs would be managed for their highest resource values. However, it is possible that the lands would be available for motorized and mechanized travel on designated routes. This action would impact the solitude and natural characteristics in these areas.

Effects under Alternative C

Impacts on WSAs would be the similar as those described under Alternative B, except that all WSAs would be closed to motorized and mechanized travel. If Congress releases a WSA from wilderness consideration, wilderness characteristics would be preserved for the long term in certain areas because Alternative C would protect visual characteristics: the Carson Iceberg, Clan Alpine, and the Desatoya Mountains. Mitigation measures would be developed in these areas to retain outstanding opportunities for solitude or primitive and unconfined recreation. Also, motorized SRPs would not be authorized in the aforementioned areas. The Carson Iceberg would also be closed to motorized travel, except for administrative purposes, which would preserve the apparent naturalness, solitude, and opportunities for primitive recreation.

Effects under Alternative D

Impacts on WSAs would be the same as those under Alternative B, unless the WSA were released by Congress from wilderness consideration. If released, wilderness characteristics would be preserved for the long term in certain areas such as the Carson Iceberg, due to visual and other characteristics in this area. Mitigation measures would be developed in this area to retain outstanding opportunities for solitude or primitive and unconfined recreation.

Effects under Alternative E

Impacts on WSAs would be the same as those under Alternative B, unless the WSA were released by Congress from wilderness consideration. If released, wilderness characteristics would be preserved for the long term in certain areas because Alternative E would protect visual and other characteristics. The only area included for this protection if released from wilderness consideration is the Carson Iceberg. Mitigation measures would be developed in this area to retain outstanding opportunities for solitude or primitive and unconfined recreation. Also, a portion of Job Peak (43,300 acres) that overlaps with the Fox Peak Cultural ACEC would be managed as part of the ACEC; this could offer some indirect protection of wilderness characteristics if Job Peak were released from wilderness consideration.

WSAs: Cumulative Effects

Past and Present Actions

Few discernible impacts have occurred on WSAs based on past, present, and reasonably foreseeable future actions relating to livestock and wild horse and burro grazing, except in areas of concentrated grazing impacting, water sources, wilderness characteristics, and visitor experiences. These impacts have been reduced based on managing to achieve land health standards and through permit requirements. Minerals, renewable energy development, and ROW use restrictions would result in limited or prohibited development within WSAs, subject to valid existing rights.

Reasonably Foreseeable Actions

There are no reasonably foreseeable future projects that would impact the WSAs. However, impacts on recreational OHV use would remain at current levels based on travel management limitations to existing roads and trails. Areas where grazing closures occur may improve the wilderness experiences for some users.

Incremental Cumulative Impact – Combined Past, Present, Reasonably Foreseeable Future Actions – All Alternatives

Incremental effects would be limited to recreation, with improved visitor experiences for those seeking solitude or wilderness experiences. Impacts on recreational motorized OHV use would remain at current levels based on travel management limitations to existing roads and trails. There would be no additional impacts from other resources and uses defined under past, present and reasonably foreseeable actions.

4.6 SOCIAL AND ECONOMIC FEATURES

This section describes the impacts on social and economic features of the planning area and includes the following subsections:

- Tribal interests
- Public health and safety
- Interpretation and environmental education
- Facilities and transportation management

4.6.1 Tribal Interests

This section presents potential effects from management actions on Native American traditional cultural properties (TCPs), traditional cultural uses, and tribal economic interests in the planning area. The CCD administers public lands within the aboriginal territory of people identified based on commonality and differences in language and culture as Washoe, Northern Paiute, and Western Shoshone. Six tribal governments have reservations within the planning area,

and four additional tribes have reservation lands beyond the planning area boundary. These ten tribes are all recognized by the federal government.

Summary

As described in **Section 3.5.1**, the planning area contains a number of TCPs and natural, medicinal, and sacred resources and places valuable to the cultural heritages of the tribes within the planning area. Traditional cultural properties are rooted in the community's history and are important in maintaining cultural identity.

The boundaries of these resources and impact areas are often difficult to assess. Resources tied to particular locations and that meet the criteria for eligibility can be listed on the NRHP. Some TCPs have values that do not have a direct property referent and may not manifest themselves by distinguishable physical remains but still are subject to consideration in planning. It is the continuity of their significance and importance to the maintenance of contemporary traditions that is important.

While many TCPs are well known, some locations or resources may be privileged information that is restricted to specific practitioners or clans. For tribes, maintaining confidentiality and customs regarding traditional knowledge may take precedence over identifying and evaluating these resources, resulting in information being unavailable for inclusion in the NEPA analysis.

Proposed management actions that could impact or increase the risk of impacts on TCPs and traditional cultural uses are as follows:

- Actions that expose traditional resources to intense fire
- Actions that affect the visual, atmospheric, or aural setting of TCPs and sacred sites
- Actions that affect access to TCPs or use areas and actions and actions that affect the economic development potential of reservation lands

Overall socioeconomic effects from management actions are discussed in **Section 4.6.4**, Social and Economic Conditions and Environmental Justice; effects on tribal economic interests on reservation lands are likely similar to those of other residents in rural low-income parts of the planning area.

Under all alternatives, the BLM would continue to manage the sensitive tribal information collected through consultation. This information would facilitate the avoidance or mitigation of impacts resulting from future projects, including visual effects on sacred sites and TCPs. In addition, because planned actions would be subject to review as federal undertakings under the Section 106 process, there would be requirements for tribal consultation and consideration and mitigation of impacts on tribal interests for site-specific actions.

Tribal consultation would be completed to address anticipated impacts resulting from authorized and planned activities; even so, unauthorized or unplanned activities such as wildland fire, recreation events, unauthorized collection, and vandalism could lead to impacts on tribal resources.

Overall, Alternative C, with its emphasis on resource conservation and protection, would best protect TCPs and sacred sites and uses.

There would be no impacts on tribal interests based on proposed management of the following resources: WSAs, BCWCAs, Back Country Byways, public health and safety, and facilities and transportation management.

Methods of Analysis

Methods and Assumptions

Tribal interests considered in this analysis are TCPs and sacred sites, culturally important natural resources, traditional uses and practices, tribal access, and economic rights established by treaty and economic considerations of tribes and tribal reservations within the planning area. Traditional uses and practices in the planning area include gathering and harvesting plants, pinyon pine nuts, medicines, and other materials; hunting; and ceremonial and religious practices.

This section evaluates the management actions in Chapter 2 and provides a qualitative analysis of how these actions could affect the tribal interests described above.

The following assumptions were considered in the analysis:

- TCPs are places associated with the cultural practices or beliefs of a living community. These sites are rooted in the community's history and are important in maintaining cultural identity. Contemporary Native American groups maintain social and cultural ties to the land and resources of the CCD. There may be areas of importance to contemporary Native Americans that are not readily identifiable outside of those communities and that may only be revealed through consultation.
- Management actions that protect natural and cultural resource values would also protect traditional Native American religious values, use areas, sacred sites, and ancestral ceremonial locations.
- Measures that withdraw land or restrict access or surface development to protect natural or cultural resources can provide direct and indirect protection of TCPs and sacred sites from disturbance, incompatible activities, and unauthorized activities.
- Intrusions to the visual, atmospheric, or aural setting can extend a considerable distance from the location of the resource.

- Population growth, urban encroachment, and development on adjacent lands would increase the risk of impacts on TCPs and traditional uses through recreation, visitation, vandalism, and changes in setting.
- The BLM, as a federal agency, would continue to maintain government-to-government relationships with federally recognized tribes. Consultation would continue with Native American groups to identify any TCPs or resource uses and to address impacts. Through this process, effects would be minimized or eliminated, although residual effects would be possible.
- Native Americans or other traditional communities may have concerns about federal impacts on cultural resources, religious practices, or natural resource gathering that may occur because of federal actions. In cases where these concerns might be present, consultation would occur with the potentially affected group or groups.
- There are no assets in the planning area that are formally held in trust for tribes by BLM.
- Management actions that close areas to mineral operations and ROWs or propose surface disturbance restrictions would protect the integrity of Native American traditional use areas, sacred sites, and ceremonial locations.
- Closing areas to motorized travel would protect the integrity of Native American use areas, sacred sites, and ceremonial locations from physical damages caused by motorized vehicles and reduce access to sensitive areas.
- Variance acres for utility scale solar energy would impact Native American use areas, depending on the number of acres delineated.
- Tribal interests and traditional cultural resources are identified primarily through consultations with Indian tribes recognized by the federal government on a government-to-government basis (Executive Order 13084 and Executive Memorandum of April 29, 1994, on Government-to-Government Relations with Native American Tribal Governments).

Indicators

The use of indicators in NEPA analyses should provide information on determining the extent or degree to which a tribal interest, resource, or setting is damaged, its physical integrity is lost, or it is otherwise adversely affected by a proposed action. However, unlike cultural resources, which have legal criteria for determining the impacts, the impacts on areas or resources of tribal interest and the severity of impacts depends on the perspective and context of the tribe

or affected group. In other words, significant impacts would be determined by Indian people defining what is culturally or spiritually important to them.

The following indicators were used to assess the degree of impacts on tribal interests:

- The extent to which the action affects TCPs
- The extent to which the action affects traditional cultural uses
- The extent to which the action affects reservation economic development

Nature and Type of Effects

The nature and type of most effects on tribal interests are general and unquantifiable. In general, activities that create new development or surface-disturbing uses in areas considered sensitive to a tribe could decrease opportunities for tribes to maintain traditional cultural practices. These include granting ROWs for road and highway construction, mineral and energy development, vegetation treatments, motorized use, and livestock grazing. In addition, natural processes that are impossible to control likely add to the human-caused impacts listed above, including climate change, drought, and lightning-caused fires. The general impacts on tribal interests that could result through the implementation of each alternative analyzed in this EIS are described below.

Tribal Interests: Effects from Air Quality Management

Effects Common to All Alternatives

Airborne particulates and emissions can impact the visual and atmospheric setting of TCPs and sacred sites in areas where these resources are present. All of the alternatives include general provisions to reduce and control airborne particulates and emissions. Ensuring compliance with federal, state, and local air quality laws, regulations, and standards would ensure air quality is maintained on reservations. Effects of all of the alternatives on tribal resources would be similar.

Tribal Interests: Effects from Climate Management

Effects Common to All Alternatives

Potential changes in local ecosystems associated with effects of climate change may alter the availability of plants, wildlife, or other natural resources for traditional uses. Using adaptive management, such as restoration of natural systems, construction of infrastructure, and water conservation, to address climate change would reduce climate change-induced risks, such as flooding and invasive and exotic species. It would also reduce the potential for wildfire spread and would maintain the integrity of traditional use areas, sacred sites, and ceremonial locations.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Soil Resources

Effects Common to All Alternatives
Maintaining and improving vegetation cover and improving soil structure would reduce soil loss due to wind and water erosion. Implementing BMPs and mitigation measures would reduce soil erosion potential and maintain soil stability. Applying CSU and NSO fluid lease stipulations would also reduce soil erosion potential. Areas important to Native American traditional uses, sacred sites and areas, ceremonial locations, and archaeological sites would be protected from soil erosion.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Water Resources

Effects Common to All Alternatives
Maintaining satisfactory watershed conditions and water quality would maintain streams, creeks and areas important to Native Americans within priority watersheds. Management actions that protect, maintain, and improve existing water quality and quantity of springs would serve to protect sacred sites and

ceremonial locations used by Native Americans. Implementation of SOPs, BMPs, and mitigation measures would also protect surface and groundwater resources that are important to Native Americans.

Effects under Alternative A

Impacts would be similar to those described under *Effects Common to All Alternatives*. Identifying and giving special consideration to watersheds during activity plan development would prevent accelerated soil loss, watershed degradation, flood and sediment damage, and important wildlife habitat destruction, which would also maintain areas important for Native American uses.

Effects under Alternative B

Identifying priority watersheds and waters supply areas would give special consideration to these areas. Impacts would be similar to those identified under Alternative A.

Effects under Alternative C

Alternative C would implement use restrictions to protect priority watersheds. Native American uses and values would be protected from disturbances related to salable and solid mineral leasing, ROWs, and by NSO stipulations applicable to fluid minerals.

Effects under Alternative D

Impacts would be similar to those described under Alternative C; however, surface disturbance would be considered on a case-by-case basis, as determined by a set of management criteria. Native American uses and values would have a lower degree of protection compared to Alternative C.

Effects under Alternative E

Impacts would be similar to those described for Alternative D.

Tribal Interests: Effects from Vegetation Resources

Effects Common to All Alternatives

Managing for healthy, diverse, and productive vegetation communities would maintain the integrity of Native American use areas and traditional cultural sites. Preventing the introduction or the spread of invasive and noxious plants would minimize impacts in the long run; however, vegetation treatments to eliminate some species may adversely affect a Native American traditional resource. An emphasis on collaboration with federal, state, tribal, county governments and other conservation groups for restoration and weed control would be beneficial and would ensure input from tribal governments.

Effects under Alternative A

Impacts would be similar to those described under *Effects Common to All Alternatives*.

Effects under Alternative B

Revegetation of disturbed areas would focus on using plant species that have a high degree of success, including nonnative plant species. Native plants important to Native Americans for medicinal and religious use may not be considered in revegetating areas, limiting the availability of these plants. Alternative B would allow removal of sagebrush when there is a resource or resource use of higher priority. Fewer restrictions would be applied for the removal of sagebrush under this alternative.

Access to and availability of sagebrush could be restricted and could affect Native American religious and ceremonial uses. Alternative B would convert 20,000 acres of low-density pinyon-juniper areas into restored sagebrush habitat per year for the first decade of the RMP or until approximately 200,000 acres have been restored. More sagebrush would be available for ceremonial use.

Effects under Alternative C

Only native plants would be used to seed areas and would include species important to Native Americans. Alternative C would manage large intact sagebrush communities by limiting ground disturbance. The availability of sagebrush and undisturbed lands would be greater compared to Alternative B and would better provide for Native American uses and values. Alternative C would remove 3,500 acres annually of low-density pinyon-juniper, resulting in fewer acres converted into sagebrush as compared to Alternative B.

Effects under Alternative D

Alternative D allows native and nonnative plant species to be considered for revegetation if used to provide site stability and ecological function. Plants important to Native Americans would not necessarily be seeded. Management of sagebrush would be emphasized by creating future stands of sagebrush within urban interface areas. Depending on the location of tribal lands to urban interface areas, more sagebrush would be available for Native American use over time. Alternative D would develop sagebrush restoration strategies. The amount of sagebrush restored would depend on the size of proposed planning areas.

Effects under Alternative E

Alternative E would be similar to Alternative D, except that this alternative would favor native species to provide site stability and ecological function. The potential for reestablishment of plants that are important to Native Americans would be higher. Management of sagebrush would include creation of future stands, while allowing a selective removal of sagebrush on a case-by-case basis. The availability of sagebrush for Native American ceremonial use would slowly increase over time under this alternative.

Impacts would vary based on the location and size of areas where sagebrush is removed. Alternative E would remove 8,500 acres annually of low-density pinyon-juniper in order to expand sagebrush areas. The potential sagebrush

restoration areas would be smaller compared to Alternative A and larger than Alternative C.

Tribal Interests: Effects from Fish and Wildlife Management

Effects Common to All Alternatives
Management objectives and actions that would improve wildlife habitat are important to Native American cultures and values. Management of ACECs to protect important wildlife habitat would also protect areas containing important Native American religious values. Protecting sage-grouse habitat would be important in protecting Native American traditional use areas.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Special Status Species Management

Effects Common to All Alternatives
Impacts would be similar to those described under wildlife management. Protecting and improving special status species habitat by implementing use restrictions, protective buffers, and management of special designation areas would also protect traditional use areas important to Native Americans.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives
Managing HMAs where habitat conditions (forage, water, cover, space) are adequate to support healthy populations of wild horses and burros would also maintain healthy Native American traditional use areas.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives
Protecting values at risk from catastrophic impacts of wildfire would also protect important Native American traditional use areas. Implementing fuel treatments would reduce the potential for catastrophic fire spread and would protect areas containing important natural and cultural resource values. ESR projects would reestablish hydrologic function and biologic integrity of areas in the long term, which would also help restore Native American traditional use areas where fire has occurred.

Effects under Alternative A
Impacts would be similar to those described under *Effects Common to All Alternatives*.

Effects under Alternative B
Alternative B would prioritize hazardous fuels reduction projects to protect infrastructure and improvements. Protecting areas containing important Native American values would have lower priority.

Effects under Alternative C

Alternative C would prioritize hazardous fuels projects to protect sensitive biological, cultural, and other natural resources. Protecting areas containing cultural values and corresponding Native American use values would be prioritized, affording a higher degree of protection to areas important to Native Americans. This alternative would also prioritize expansion of healthy vegetation ecosystems, which would further improve areas important to Native Americans.

Effects under Alternative D

Alternative D would prioritize hazardous fuels reduction projects to protect fire-safe communities. Protection of areas important to Native Americans would not be prioritized.

Effects under Alternative E

Alternative E would prioritize hazardous fuels reduction projects to protect sensitive biological, cultural, and other natural resources from wildfire. Fuel treatments would be used to create fire-safe communities and improve vegetation communities, wildlife habitats, and watershed and riparian areas. Areas important to Native Americans would have a lower degree of protection and would not expand healthy vegetation to the degree proposed under Alternative C.

Tribal Interests: Effects from Cultural Resources Management

Effects Common to All Alternatives

Compliance with the Section 106 process would help protect and ensure the sustainability of traditional use areas. Implementing the Native American Graves Protection and Repatriation Act would include consultation with appropriate tribes to address Native American human remains that have been excavated or when inadvertent discovery has occurred. Closing areas known to contain human burials to surface disturbance would protect burials and would protect important ancestral ties and values associated with burials.

Accommodating access and ceremonial use of identified Native American sacred sites and mitigating surface disturbance impacts and visual intrusions would ensure the physical integrity of these sacred sites are maintained.

Effects under Alternative A

Impacts would be the same as described under *Effects Common to All Alternatives*. Alternative A would manage one ACEC for the protection of cultural resource and associated Native American traditional use areas.

Effects under Alternative B

Alternative B would protect historic roads and trails that are NRHP eligible but not congressionally designated by implementing a 0.25-mile ROW avoidance buffer and by implementing mitigation measures on eligible or unevaluated trail

segments and associated sites. Traditional Native American use areas associated with historic roads or trails would also be protected.

Alternative B would protect within 0.125 mile of rock art sites by prohibiting surface-disturbing activities and visual intrusions if they adversely affect values, in accordance with the NRHP evaluation. These protective measures would also protect the integrity of rock art sites. Alternative B proposes managing eight ACECs for the purpose of protecting cultural resources. More traditional use areas would be protected as compared to Alternative A.

Effects under Alternative C

Alternative C would protect historic roads and trails that are NRHP eligible but not congressionally designated by implementing a 2.5-mile ROW avoidance buffer and by implementing mitigation measures on eligible or unevaluated trail segments and associated sites. Traditional Native American use areas associated with historic roads or trails would also be protected to a greater extent than under Alternative B.

Alternative C would protect within 1.0 mile of rock art sites by prohibiting surface-disturbing activities and visual intrusions if they adversely affect values in accordance with the NRHP evaluation. These protective measures would also protect the integrity of rock art sites to a greater extent, compared to Alternatives B and E. Alternative C proposed nine ACECs that would protect cultural resources. More traditional use areas associated with cultural resources would be protected compared to Alternative B.

Effects under Alternative D

Impacts would be the same as Alternative B. Alternative D proposes six ACECs that would protect cultural resources and associated traditional use areas. Fewer areas would be protected compared to Alternatives B and C.

Effects under Alternative E

Alternative E would protect historic roads and trails that are NRHP eligible but not congressionally designated by implementing a 1.0-mile ROW avoidance buffer and by implementing mitigation measures as eligible or unevaluated trail segments and associated sites. Traditional Native American use areas associated with historic roads or trails would be protected, but to a lesser extent than Alternative C.

Alternative E would protect within 0.5 mile of rock art sites by prohibiting surface-disturbing activities and visual intrusions if they would adversely affect values, in accordance with the NRHP evaluation. These protective measures would protect the integrity of rock art sites to a lesser extent than Alternative C. Alternative E proposes three ACECs that would protect cultural resources and associated traditional use areas. With the exception of Alternative A, this alternative proposes the fewest number of ACECs to protect cultural resources and traditional use values.

Tribal Interests: Effects from Paleontological Resources Management

Effects Common to All Alternatives
Proposing ACECs to protect paleontological resources would have an indirect effect of protecting traditional use areas that overlap with ACEC boundaries.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Visual Resources Management

Effects Common to All Alternatives
Management of VRM class objectives would provide protection of visual values and the scenic quality of existing landscapes and would help maintain the integrity of traditional Native American use areas. Higher levels of protection for visual resources would occur for areas managed as VRM class objectives I and II, and less protection would occur under objectives III and IV.

Effects under Alternative A
Alternative A would manage 564,100 acres under VRM Class I and 38,300 acres under VRM Class II. The integrity of traditional Native American use areas would be maintained in these areas.

Effects under Alternative B
Alternative B would manage 564,100 acres under VRM Class I and 56,800 acres under VRM Class II. The integrity of traditional Native American use areas would be maintained in these areas to a greater extent than Alternative A.

Effects under Alternative C
Alternative C would manage 981,900 acres under VRM Class I and 733,900 acres under VRM Class II. The integrity of traditional Native American use areas would be maintained to the greatest extent in these areas, compared to all other alternatives.

Effects under Alternative D
Alternative D would manage 564,100 acres under VRM Class I and 66,400 acres under VRM Class II. The integrity of traditional Native American use areas would be maintained in a manner similar to Alternative B.

Effects under Alternative E
Alternative E would manage 564,100 acres under VRM Class I and 513,600 acres under VRM Class II. The integrity of traditional Native American use areas would be maintained. This alternative provides the potential for the highest degree of protection of all alternatives except Alternative C.

Tribal Interests: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives
Designating caves and cave resources having cultural significance and issuing closure orders for caves and cave resources having cultural resources would protect Native American traditional use areas, ceremonial locations, and sacred areas. Providing special management attention to protect significant cave resources would also protect traditional Native American uses.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Forestry and Woodland Management

Effects Common to All Alternatives
Traditional Native American pinyon-nut gathering would be allowed, subject to limitations on the number of pounds harvested and commercial harvesting restrictions.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Managing grazing to achieve standards for rangeland health and completion of the Section 106 process would protect cultural resources and Native American traditional use areas from livestock grazing.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Effects from Geology and Mineral Management

Effects Common to All Alternatives
Mineral exploration and development would impact the integrity of Native American traditional use areas. Impacts would depend on the size, nature, and location of mineral exploration and development. Rehabilitating lands disturbed by mineral operations would serve to restore the integrity of Native American traditional use areas. Closing areas to locatable minerals would protect traditional use areas and petroglyphs important to Native Americans.

Effects under Alternative A
Alternative A recommends withdrawing an additional 3,700 acres to locatable mineral entry (in addition to the existing withdrawals on 194,900 acres). Withdrawal of these areas would maintain the integrity of traditional use areas and would protect landscape features and sacred sites that are important to Native Americans. Alternative A includes 839,100 acres that are closed to fluid

minerals leasing. Closure of these areas would maintain the integrity of traditional use areas.

Fluid minerals management would also apply NSO and seasonal restrictions, which would also maintain the integrity of traditional use areas. Salable minerals management would maintain the closure of 564,200 acres, maintaining the integrity of Native American traditional use areas within the closed footprint. Nonenergy leasing would be closed on 738,800 acres. The integrity of Native American use areas would be maintained within the closed footprint.

Effects under Alternative B

Alternative B recommends withdrawal of an additional 439,600 acres to locatable mineral entry. This would maintain the integrity of traditional use areas and would protect landscape features and sacred sites that are important to Native Americans much more than Alternative A. Alternative B would close 768,500 acres to fluid minerals. Impacts would be similar to those described under Alternative A; however, fewer acres would be protected. Fluid minerals management would also apply 404,600 acres with NSO stipulations. These restrictions would maintain the integrity of traditional use areas to a greater extent than Alternative A.

Alternative B management includes CSU stipulations applicable to fluid minerals on 2,120,200 acres. The integrity of traditional use areas within the CSU footprint would be maintained. Salable minerals actions would close 807,200 acres, maintaining the integrity of Native American traditional use areas within the closed footprint, with impacts similar to those described under Alternative A. Nonenergy leasing would close 981,900 acres. The integrity of Native American use areas would be maintained within the closed footprint, the same as Alternative A.

Effects under Alternative C

Alternative C recommends withdrawal of an additional 117,500 acres to locatable mineral entry. Withdrawal of these areas would maintain the integrity of traditional use areas and protect landscape features and sacred sites that are important to Native Americans and to a much greater extent than under Alternative A. Alternative C would close 2,081,700 acres to fluid minerals leasing, which would afford the greatest protection to Native American uses from fluid minerals leasing. Fluid minerals management would apply 1,039,200 acres with NSO stipulations. These restrictions would also maintain the integrity of traditional use areas to the greatest extent, compared to the other alternatives.

Alternative C management would also apply CSU stipulations on 1,242,800 acres. The integrity of traditional use areas within the CSU footprint would be maintained. Salable minerals management would close 3,004,800 acres, maintaining Native American traditional use areas within the closed footprint. This alternative would afford more protection to the integrity of Native

American traditional use areas compared to Alternative A. Nonenergy leasing would be closed on 2,960,800 acres. The integrity of Native American use areas would be maintained within the closed footprint. This alternative affords the greatest protection to traditional use areas.

Effects under Alternative D

Alternative D recommends withdrawing an additional 440,800 acres to locatable mineral entry. Withdrawal of these areas would maintain the integrity of traditional use areas and would protect landscape features and sacred sites that are important to Native Americans, protecting more acres than Alternative A. Alternative D would close 737,000 acres to fluid minerals leasing.

This alternative affords the fewest acres protecting Native American traditional use areas. Fluid minerals would also apply 864,800 acres with NSO stipulations. These restrictions would maintain the integrity of traditional use areas to a greater extent than Alternative A. Alternative D management includes CSU stipulations applicable to fluid minerals on 2,071,400 acres. The integrity of traditional use areas within the CSU footprint would be maintained. Salable minerals would close 807,700 acres, maintaining the integrity of Native American traditional use areas within the closed footprint. Impacts would be the same as under Alternatives A and B. Nonenergy leasing would be closed on 738,800 acres. The integrity of Native American use areas would be maintained within the closed footprint, similar to Alternative B.

Effects under Alternative E

Alternative E recommends withdrawing an additional 470,600 acres to locatable mineral entry. Withdrawal of these areas would provide the more potential to maintain traditional use areas and to protect landscape features and sacred sites that are important to Native Americans, compared to Alternative A. Alternative E would close 1,007,200 acres to fluid minerals leasing, providing greater protection of Native American use areas than Alternative A.

Fluid minerals management would also apply 1,151,600 acres of NSO stipulations. These restrictions would maintain the integrity of traditional use areas to a greater extent than Alternative A. Alternative E management includes CSU stipulations applicable to fluid minerals on 1,844,900 acres. The integrity of traditional use areas within the CSU footprint would be maintained. Salable minerals would close 1,778,700 acres, maintaining the integrity of Native American traditional use areas within the closed footprint. Protection of traditional use areas would be greater than under Alternative A. Nonenergy leasing would be closed on 1,785,900 acres. The integrity of Native American use areas would be maintained within the closed footprint and would provide a greater level of protection than Alternative A.

Tribal Interests: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Delineating SRMAs would allow for the intensive management of recreational and OHV activities in areas of existing use that may currently be impacting the integrity of traditional Native American use areas. Delineating ERMAs would allow for management at a less intense level since the recreational use is less. Both designations would provide for a higher level of management actions that would protect traditional uses and sites compared to areas without designations. Designation of RMAs is expected to increase recreation-related tourism which would benefit tribal communities and businesses.

Effects under Alternative A

Two existing SRMAs, totaling 67,700 acres**,** would continue to be managed at current levels, and no ERMAs are designated. No additional RMAs would be designated and recreation would be managed primarily through the SRP program. Dispersed recreational uses, including motorized travel, OHV activity, and nonmotorized uses would be addressed through SRPs or through ancillary management actions established for other resources. This alternative would provide the least protection to the integrity of traditional Native American uses since management actions and areas designated for motorized recreation use would be minimal and the least restrictive. Alternative A would manage two areas as SRMAs, totaling 67,700 acres.

Effects under Alternative B

Four new SRMAs would be designated and managed in addition to the two existing SRMAs, for a total of 76,100 acres. Eight ERMAs consisting of 1,678,520 acres would be designated and managed in addition to the six SRMAs. This alternative would emphasize recreation-based economic development and activities that would benefit local tribal communities and businesses through tourism and spending. Management of the RMAs would allow for greater protection of Native American traditional use areas and sites by regulating both organized and dispersed motorized and nonmotorized recreation throughout most of the planning area.

Recreation requiring stipulations to reduce impacts on other resources in and outside of RMAs would be managed though the SRP program. Alternative B would provide a high level of management, and management actions would provide for the greatest amount of economic development. Regulations and stipulations for protection of natural or cultural resources would more than Alternative A.

Effects under Alternative C

The two existing SRMA boundaries would be modified and one additional SRMA would be designated, for a total of 74,700 acres. Fifteen ERMAs would be designated, for a total of 1.52 million acres. The management of 18 RMAs would

increase protection of Native American values and sites since the second highest number of acres of all the alternatives would be under intensive or moderate level of regulation.

Management actions within the RMAs would be the most restrictive to protect natural resources and cultural values. Recreation requiring stipulations to reduce impacts on other resources or resource uses in and outside of RMAs would be managed though the SRP program, as under the other alternatives. The increased number of ERMAs would allow for more intense and specific tourism marketing, which would benefit local tribal communities and businesses though increased visitation and spending. This alternative would provide a high level of protection, while maintaining a high level of economic activity.

Effects under Alternative D

Four SRMAs would be designated and managed, for a total of 67,100 acres in addition to the fewest number of ERMAs (six) that would be designated, consisting of 292,620 acres. Emphasis in the ten RMAs would be on recreation occurring near or next to the urban interface. This alternative would provide for increased protection of Native American values and resources near urban areas but would not address recreation occurring in rural or dispersed areas to the extent of Alternatives B, C, and D. The economic benefits to rural or tribal communities and business would be less than expected under Alternative A.

Effects under Alternative E

Six SRMAs, totaling 106,100 acres, and fifteen ERMAs, totaling 2.08 million acres, would be designated and managed for recreational activities. This alternative would emphasize recreation-based economic development and activities that would benefit local tribal communities and businesses though tourism and spending, similar to Alternative B. Management of the RMAs would allow for greater protection of Native American traditional use areas and sites by regulating both organized and dispersed motorized and nonmotorized recreation throughout most of the planning area. Recreation requiring stipulations to reduce impacts on other resources in and outside of RMAs would be managed though the SRP program, as with other alternatives. Alternative E would provide for the highest level of management, while management actions would provide for the greatest amount of economic development. Regulations and stipulations for protection of natural or cultural resources would be the greatest of the alternatives.

Tribal Interests: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Comprehensive Travel and Transportation Management planning will protect Native American values by providing management decisions to restrict access to sensitive areas identified as needing to be closed to motorized travel, while

maintaining access needs to cultural sites and sacred areas required by tribal members.

Travel management decisions on open/closed/limited areas will be made in the RMP, while routes will primarily be designated during the travel management planning process. Future route designations to open/close/limit routes to motorized travel in culturally sensitive areas can be made or modified in the future through the travel management plan as needs are identified.

Effects under Alternative A

Under Alternative A, 3,840,300 acres currently designated as open to cross-country travel would remain the same, 37,198 acres would remain closed, and 924,300 acres would be designated as limited to existing routes or seasonal use. This alternative would have the greatest impact on Native American values, uses, and sites. This is because motorize travel would have the least management restrictions of any of the alternatives, and cross-country travel is not restricted to RMAs. This alternative would provide a high potential for economic benefits to tribal communities and business due to the limited restrictions on travel management.

Effects under Alternative B

A total of 95,300 acres would be designated as open to cross-country travel primarily in SRMAs and playas; 34,700 acres of sensitive or hazard areas would be designated as closed, and close to 4.68 million acres would be designated as limited to existing routes. Native American values, uses, and sites would receive considerably more protection from motorized travel and decreased access than under Alternative A. Economic benefits may be reduced compared to Alternative A due to the increased restrictions for motorized travel and OHV use.

Effects under Alternative C

Under Alternative C, 1,300 acres would be designated as open to motorized travel, nearly 1.79 million acres would be designated as closed, and 3.01 million acres would be designated as limited to existing routes. This alternative would provide the greatest protection of Native American values, uses, or sites since it has the highest amount of closure of any of the alternatives. Areas with intensive OHV use would be eliminated, and access to sensitive areas off of designated routes would not be permitted. This alternative may have the greatest impacts on economic benefits due to the restrictive travel designations.

Effects under Alternative D

Alternative D would designate 22,700 acres as open to motorized travel, would close 32,200 acres, and would leave nearly 4.75 million acres limited to existing routes. Effects of this alternative would be similar to Alternatives B and E.

Effects under Alternative E

Alternative E proposes designating 55,700 acres as open to motorized travel in SRMAs and playas; 30,300 acres would be closed, and nearly 4.72 million acres would be limited to existing routes within the planning area. This alternative would provide the best mix of managing motorized travel within the planning area to protect cultural resources and sites, while still providing for economic benefits from spending generated through tourism and OHV use.

Tribal Interests: Effects from Lands and Realty

Effects Common to All Alternatives

Land tenure adjustments could affect the setting of lands containing important Native American values if moved from public to private ownership. Acquiring lands to protect sensitive cultural resource values would also enhance the integrity of Native American use areas. Right-of-way avoidance and exclusion areas would protect Native American traditional use areas, sacred sites, and other religious values, as surface disturbance would be restricted or not allowed.

Effects under Alternative A

Alternative A proposes 564,100 acres as ROW exclusion areas. Traditional Native American use areas and sacred sites would be protected within these areas.

Effects under Alternative B

Acquiring lands based on the principle of no net gain for public lands would not provide opportunities to protect cultural resources or enhance Native American use areas. Alternative B proposes 580,000 acres as ROW exclusion areas. Traditional Native American use areas and sacred sites would be protected within exclusion areas. Impacts would be similar to those proposed under Alternative A. Alternative B proposes 1,195,800 acres as ROW avoidance areas. Fewer protections related to Native American uses would occur in avoidance areas compared to exclusion areas.

Effects under Alternative C

Acquiring lands or land rights that enhance resource values and provide for conservation easements, preservation of corridors, habitat for wildlife, and cultural resources would also protect and enhance Native American use areas. Alternative C proposes 2,675,800 acres of ROW exclusion areas. Traditional Native American use areas and sacred sites would be protected within exclusion areas, with substantially larger acreage compared to Alternatives A and B. Alternative C proposes 369,300 acres as ROW avoidance areas. Fewer protections related to Native American uses would occur compared to exclusion areas.

Effects under Alternative D

Alternative D would acquire lands or land rights for the following purposes:

- Enhance resource values
- Provide for conservation easements, preservation of corridors or habitat for wildlife, or protection of cultural resources
- Provide public access for recreation use or other uses
- Consolidate lands for more effective management

Protection of Native American use areas would be greater than under Alternatives A and B but less than under Alternative C. Alternative D proposes 564,100 acres as ROW exclusion areas. Traditional Native American use areas and sacred sites would be protected within exclusion areas. Impacts would be the same as described under Alternative A. Alternative D proposes 1,226,100 acres as ROW avoidance areas. Fewer protections for Native American uses would occur compared to exclusion areas. Under this alternative, approximately 32,900 acres would be eligible for transfer to the Bureau of Indian Affairs, based on congressional approval. This would provide additional opportunities for economic development.

Effects under Alternative E

Acquisitions to enhance resource values would be the same as Alternative D. Alternative E proposes 605,900 acres as ROW exclusion areas. Traditional Native American use areas and sacred sites would be protected within exclusion areas. More areas would be protected compared to Alternatives A, B, and D. Alternative E proposes 1,448,200 acres as ROW avoidance areas. Fewer protections relating to Native American uses would occur compared to exclusion areas. Under this alternative, approximately 30,700 acres would be eligible for transfer to the Bureau of Indian Affairs, based on congressional approval. This would provide additional opportunities for economic development.

Tribal Interests: Effects from Renewable Energy

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A proposes 905,900 acres as utility-scale solar development areas. Impacts affecting the integrity of Native American traditional uses, sacred sites, and values would occur should solar development proceed. Impacts would depend on the size, nature, and location of such development.

Effects under Alternative B

Alternative B proposes 773,400 acres as utility-scale solar development areas. Impacts on Native American traditional uses would be similar to those described under Alternative A. Alternative B also proposed 1,220,200 acres as ROW avoidance areas for wind energy development. Impacts on the integrity of

Native American use areas would be mitigated by avoiding sensitive areas or by applying grant stipulations.

Effects under Alternative C

Alternative C proposes 578,400 acres as utility-scale solar development areas. Impacts on Native American traditional uses would be lower than those described under Alternatives A and B, as fewer acres would be available for solar energy development. Alternative C also proposes 2,073,200 acres as ROW exclusion areas for wind energy development. Impacts on the integrity of Native American use areas would be mitigated by avoiding sensitive areas or by applying grant stipulations. Fewer impacts on traditional use areas would occur compared to Alternative B.

Effects under Alternative D

Alternative D proposes 672,100 acres as utility-scale solar development areas. Impacts on Native American traditional uses would be lower than under Alternatives A and B but higher than under Alternative C. Alternative D also proposes 1,228,100 acres as ROW avoidance areas. Impacts on the integrity of Native American use areas would be mitigated by avoiding sensitive areas or by applying grant stipulations. Impacts would be similar to Alternative B.

Effects under Alternative E

Alternative E would manage 629,900 acres as utility-scale solar development areas. Impacts on Native American traditional uses would be lower than Alternatives A, B, and D. Alternative E would also manage 956,900 acres as ROW avoidance areas and 629,900 acres as ROW exclusion areas. Impacts on the integrity of Native American use areas would be mitigated by avoiding sensitive areas or by applying grant stipulations. Fewer impacts on traditional uses would occur compared to Alternatives A, B, and D.

Tribal Interests: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

Managing areas as ACECs where special management attention is required to protect and prevent irreparable damage to important resources would protect the integrity of traditional Native American use areas and sacred sites. These resources are biological, historic, cultural, or scenic values, fish and wildlife, and other natural systems or processes. The degree of protection would vary based on the number of ACECs and acres proposed for management under each alternative. The Pah Rah High Basin Petroglyph ACEC would be managed as an ACEC under all of the alternatives.

Effects under Alternative A

Under Alternative A, six ACECs would continue to be managed, totaling 21,800 acres.

Effects under Alternative B

Under Alternative B, four ACECs would continue to be managed and nine would be proposed for designation, totaling 371,170 acres. The Black Mountain/Pistone Archaeological District ACEC, the Fox Peak Cultural ACEC, the Greater Sand Mountain ACEC, the Grimes Point Archaeological District ACEC, the Namazi Wunu Cultural ACEC, and the Tagɨm aša Cultural ACEC would be designated under this alternative providing more protection for traditional Native American use areas and sacred sites than under Alternative A.

Effects under Alternative C

Alternative C would continue to manage five ACECs and would propose the designation of an additional 18, totaling 786,270 acres. The Black Mountain/Pistone Archaeological District ACEC, the Fox Peak Cultural ACEC, the Greater Sand Mountain ACEC, the Grimes Point Archaeological District ACEC, the Namazi Wunu Cultural ACEC, and the Tagɨm aša Cultural ACEC would be designated under this alternative, providing more protection for traditional Native American use areas and sacred sites than under Alternative A.

Effects under Alternative D

Alternative D would continue to manage three ACECs and would propose the designation of an additional eight, totaling 180,000 acres. The Black Mountain/Pistone Archaeological District ACEC, the Fox Peak Cultural ACEC, and the Grimes Point Archaeological District ACEC would be designated under this alternative, providing more protection for traditional Native American use areas and sacred sites than under Alternative A.

Effects under Alternative E

Alternative E would continue to manage four ACECs and would propose the designation of an additional four, for a total of 82,770 acres. The Fox Peak Cultural ACEC and the Grimes Point Archaeological District ACEC would be designated under this alternative, providing more protection for traditional Native American use areas and sacred sites than under Alternative A.

Tribal Interests: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives

Engaging the public through education and increased awareness and understanding of public land would protect and ensure the integrity of traditional Native American use areas and help protect sacred sites.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Tribal Interests: Cumulative Effects
Past, present, and reasonably foreseeable future actions and conditions within the cumulative effects analysis area have affected and will likely continue to affect tribal interests. These are transmission lines, transportation/travel planning and development projects, vegetation treatments (including noxious weed and fuels treatments), geophysical projects, energy development projects (including oil and gas field development and infrastructure projects), and grazing allotment improvements (including fenceline construction and water developments).

All of the impacts described above in this tribal interest effects section would continue to occur into the future across all alternatives. With the trends of increasing mineral and energy development, transmission lines, and travel management planning and projects, there would be increased pressure on tribal resources, treaty and trust assets, and sacred sites. Impacts would be spread across the landscape; tribal interests, assets, resources, and sites located in areas outside of sage-grouse habitat would also be affected. The range of laws that require federal agencies to protect and preserve tribal trust assets, treaty rights, sacred sites, and other resources on lands under federal agency jurisdiction would provide some mitigation to the impacts; however, actions occurring on nonfederal lands (whether private or state jurisdiction) would have fewer protections, resulting in increased magnitude and severity of impacts in these areas.

As stated previously for federal undertakings, consultation would continue with Native American groups to identify any TCPs or resource uses and to address impacts. Through this process, effects would be minimized or eliminated, although residual effects would still be possible.

4.6.2 Public Health and Safety

The impact analysis affecting public health and safety management takes into consideration the direct, indirect, and cumulative effects of proposed objectives and management actions by resource or land uses as proposed under each alternative. The impact analysis includes impacts that may be both beneficial and adverse.

Based on review of all proposed alternatives, the following resources or uses do not have impacts on public health and safety.

- Paleontological
- Visual resource management
- ACECs
- Livestock grazing
- National Trails
- Back Country Byways
- WSRs
- BCWCAs
- Back Country Byways
- WSAs
- Tribal interests

Summary

Management of BLM-administered lands would take into account public safety to varying degrees under all alternatives. Public safety objectives and management strategies would protect people from natural or human-caused hazards on BLM-administered lands. Management to improve access or provide improvements such as public recreation facilities would also increase the use of BLM-administered lands and the need for public safety. Public safety hazards include abandoned mines, hot springs, hazardous materials, unexploded ordinance and explosives, and safety risks resulting from user conflicts.

Maintaining and improving roads would help mitigate the potential for unsafe road conditions. The Nevada BLM, in conjunction with the State of Nevada, initiated the Abandoned Mine Lands Program to remediate physical safety hazards from abandoned mines. This program includes placing warning signs and fencing and closing areas containing unsafe mine adits, shafts, and tunnels as well as backfilling unsafe mine openings or installing bat-compatible closure devices.

This section describes the direct, indirect, and cumulative impacts associated with public health and safety management.

Methods of Analysis

Methods and Assumptions

- The population of the western United States will continue to increase, which will likely increase the demand to use BLM-administered lands for recreation.
- Closing areas or applying surface use restrictions to mineral exploration and development will reduce access and the potential for exposure from hazards affecting public health and safety.

- Establishing RMAs and developing management plans for recreation will reduce the potential for conflict between recreation groups.
- A travel management designation of "open" to unrestricted motorized travel will improve access and increase the potential to expose more people to public hazards.
- A travel management designation of "closed" will eliminate motorized access and decrease potential exposure to hazardous conditions.
- SRMAs may increase visitation and concentrate recreational use, but will also allow for intensive management and thereby reduce the potential for user conflicts in popular and high use areas. SRMAs that provide sanitation facilities will maintain public health.
- Issuance of special recreation permits will reduce the potential for user conflicts during permitted activities.
- Special designations or delineation of areas will increase public awareness or use of areas, but they will also increase management and protection of special resources.
- Providing public education and interpretive opportunities will influence public visitation and reduce the potential for associated public health and safety risks.
- There will be stable or increased frequency for bombing ranges in the planning area by the Department of Defense.

Public Health and Safety: Effects from Air Quality Management

Effects Common to All Alternatives

Maintaining air quality through compliance with various federal, state, and local laws and regulations would ensure cleaner air and reduce the potential for air quality issues that would affect public health. Implementing BMPs and mitigation measures to implementation level projects would also minimize degradation of air quality and thus minimize health risks to the public.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Climate Management

Effects Common to All Alternatives
Implementing water management strategies associated with climate change to reduce flood risks would protect the public from severe precipitation and runoff.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Soil Resources

Effects Common to All Alternatives
Management of soils and road maintenance to reduce the potential for wind or water erosion of soils would improve public safety. Roads would be less vulnerable to erosion, allowing for more safe travel areas. Reducing wind erosion would lessen the potential for airborne fugitive dust, which may impair travelers' vision along roadways, trails, and highways. Requiring BLM-administered land users to develop erosion control plans, based on erosion potential and slope percentages, would include designs to reduce erosion and improve public safety.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Water Resources

Effects Common to All Alternatives
Management strategies to protect municipal water supplies within source water protections zones would help ensure safe drinking water for communities.

Effects under Alternative A and B
There would be no impacts to public health and safety from management of water resources under Alternatives A or B.

Effects under Alternative C
Alternative C would prohibit surface-disturbing activities within source water protection zones. Development of facilities within these zones would be prohibited. Any potential impacts on water quality from development or operations would not occur in these areas. This alternative provides for the highest level of protection of drinking water supplies.

Effects under Alternative D
Alternative D provides for development within source water protection zones if development is compatible with maintaining water quality. Compared to Alternative C, this alternative would provide a lower level of protection of safe drinking water to the public. This is because some uses would be allowed within source water protection zones, which could affect the quality of the waters by introducing toxins or pollutants.

Effects under Alternative E
Impacts would be similar to Alternative D.

Public Health and Safety: Effects from Vegetation Resources

Effects Common to All Alternatives
Fuel reduction projects would help reduce the potential for fire ignition, spread, and intensity and would provide for a higher level of protection and public safety from wildfire.

Effects under Alternative A
Same as those described under common to all alternatives.

Effects under Alternative B
Under Alternative B, 20,000 acres of low-density pinyon-juniper would be treated per year to achieve restoration of 200,000 acres of sagebrush-dominated communities. Alternative B also proposes to annually remove 8,500 acres of low-density pinyon-juniper areas and annually thin 6,500 acres of medium and high-density pinyon-juniper lands. Fuel treatments would reduce

fire intensity and spread, which would improve public safety. Having the highest number of acres to be treated would provide the highest level of public safety from wildfire, compared to other alternatives.

Effects under Alternative C
Alternative C would annually remove 3,500 acres of low-density pinyon pine and thin 1,500 acres of medium- to high-density pinyon pine. Fuel loadings would be higher compared to Alternative B. Fuel breaks would also reduce the potential for fire spread and provide for public safety but at much lower levels compared to Alternative B.

Effects under Alternative D
Management of fuels under Alternative D would focus on scenic, recreation, and wildlife habitat values and around communities. Managing fuels around communities would improve public safety based on the type of fuels treated and the number of acres treated.

Effects under Alternative E
Under Alternative E, 8,500 acres of low-density pinyon-juniper areas would be removed per year and 6,500 acres of medium- and high-density pinyon-juniper areas would be thinned. A greater level of public safety would be provided compared to Alternative C, as more acres would be treated.

Public Health and Safety: Effects from Fish and Wildlife

Effects Common to All Alternatives
Impacts would be similar to vegetation forestry and the wildland fire and ecology management sections. Proposed fuel treatments to reduce fuels would reduce the potential for catastrophic fire and would also provide for public safety. Habitat improvement projects would also serve to reduce fuels and indirectly provide for public safety by reducing the potential for wildland fire spread.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Special Status Species Management

Impacts would be the same as described under *Effects from Fish and Wildlife*.

Public Health and Safety: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

Public access restrictions during wild horse and burro gathers would provide for public safety and protection from potential injuries from wild horse and burros, vehicles, and aircraft traffic. Management of wild horses and burros under all alternatives would also reduce risk of vehicle impacts.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C

Alternative C would result in no unique impacts.

Effects under Alternative D

Alternative D would result in no unique impacts.

Effects under Alternative E

Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Wildland fire management under all alternatives would affect public safety by reducing the likelihood that the public would be injured from wildfire. Fuel treatments would reduce the potential for fire ignition and spread. Access restrictions during fire suppression would protect the public. ESR treatments would emphasize public safety. Treatments, such as removing burned or dead trees would reduce public safety hazards. Issuing fire restrictions would also reduce the potential for human-caused fire and would provide public safety benefits.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effect under Alternative D
Under this alternative, there would be greater emphasis on fire management and fuels treatments in the urban interface, which would promote public safety in or next to congested areas.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Cultural Resources Management

Effects Common to All Alternatives
Cultural resource management to include the protection of historic mine areas or structures may affect the safety of visitors to these areas. Installing interpretive warning signs, fencing, and barriers from unsafe building and mine shafts would promote public safety.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives
Use restrictions to protect unique cave formations, bats, and cultural resources would reduce cave visitation and the potential for the public to be injured while accessing caves. Installing gates or security fencing would also protect the public. Installing safety and warning signs would further serve to protect the public by informing them of potential hazards and avoidance areas.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Forestry and Woodland Product Management

Impacts would be the same as described under *Effects from Vegetation Management.*

Public Health and Safety: Effects from Geology and Mineral Management

Effects Common to All Alternatives
Restricting public access during mineral exploration and development would protect the public from unsafe areas and operating mining equipment. Securing hazardous mining conditions would reduce hazards to the public and improve public safety. Reclamation activities that include reclaiming abandoned mine sites would also reduce hazards to the public.

Effects under Alternative A
Alternative A would maintain withdrawal of 194,900 acres of federal mineral estate from locatable mineral entry. It would also replace pre-FLPMA Classification and Multiple Use Act segregations with FLPMA withdrawals. This would result in withdrawing 3,700 acres of currently segregated lands from locatable mineral entry. Management of fluid minerals would close 839,100 acres and apply NSO stipulations to 700 acres; no areas would be subject to CSU stipulations. Salable minerals management would close 564,200 acres, and nonenergy leasable minerals would close 738,800 acres. This alternative closes the fewest acres and the fewest surface restrictions, resulting in the potential for more mineral operations. Compared to other alternatives, Alternative A has the potential for more public safety hazards from minerals development.

Effects under Alternative B
Compared to Alternative A, Alternative B would propose to withdraw 439,600 acres to locatable minerals. Management of fluid minerals would close 768,500 acres, apply NSO stipulations to 404,600 acres, and subject 2,120,200 acres to CSU stipulations. Salable minerals management would close 807,200 acres, and nonenergy leasable minerals would close 981,900 acres. This alternative reduces the number of acres closed to fluid minerals but increases the number of NSO acres applicable to fluids. Nonenergy leasing would close the same number of

acres as Alternative A. Alternative B would provide for a higher degree of public safety compared to Alternative A, as more areas would be closed or have restrictions on mineral development.

Effects under Alternative C

Alternative C recommends an additional 117,500 acres be withdrawn to locatable minerals. Management of fluid minerals would close 2,081,700 acres, would apply NSO stipulations to 1,039,200 acres, and would subject 1,242,800 acres to CSU stipulations. Salable minerals management would close 3,004,800 acres, and nonenergy leasable minerals would close 2,960,800 acres. This alternative affords the greatest number of acres as closed and the most acres with surface restrictions. This would restrict the potential for mineral operations and would provide for a higher degree of public safety.

Effects under Alternative D

Alternative D recommends an additional 440,800 acres be withdrawn to locatable minerals. Management of fluid minerals would close 737,000 acres, would apply NSO stipulations to 864,800 acres, and would subject 2,071,400 acres to CSU stipulations. Salable minerals management would close 807,700 acres, and nonenergy leasable minerals would close 981,900 acres. Impacts on public safety would be similar to Alternative A, with the exception that a greater number of acres with CSU stipulations would provide a higher level of public safety.

Effects under Alternative E

Alternative E recommends withdrawal of an additional 470,600 acres to locatable minerals. Management of fluid minerals would close 1,007,200 acres, would apply NSO stipulations to 1,151,600 acres, and would subject 1,844,900 acres to CSU stipulations. Salable minerals management would close 1,778,700 acres, and nonenergy leasable minerals would close 1,785,900 acres. This alternative affords a higher level of public safety from locatable minerals and a higher level of public safety from leasable minerals than the other alternatives, except Alternative C.

Public Health and Safety: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Delineating SRMAs and ERMAs would increase public safety of areas by reducing the potential for conflict between recreation groups. The existing areas where discharge of firearms is prohibited—American Flat Mill, Pine Nut Road No. 2, and the Moonrocks—would continue to protect the public from the discharge of firearms. Management of SRMAs where sanitation facilities are provided would maintain public health. Increased visitation and recreation would increase the number of individuals exploring the surrounding areas and the potential for hazards.

Effects under Alternative A

Alternative A would manage two areas as SRMAs. Although additional use could occur in these areas, additional management of these areas would lower the potential to affect public health and safety due to user conflict.

Effects under Alternative B

Alternative B would manage six areas as SRMAs, protecting recreation opportunities and promoting regional economic development. This alternative would also designate 1,678,300 acres as ERMAs. If public use were to increase, there would be potential effects on public safety due to user conflicts; however, this alternative would also reduce potential impacts on public health through the installation of facilities.

Effects under Alternative C

Alternative C would manage three areas as SRMAs and would designate 1,528,800 acres as ERMAs. A lower degree of concentrated public use would occur in the three SRMA and ERMA areas, as protection of cultural and natural resources would be emphasized. Alternative C would also decommission and rehabilitate roads, reducing access and the type of recreation use in ERMAs.

Effects under Alternative D

Alternative D would manage four areas as SRMAs in order to protect recreation opportunities, with an emphasis on issues unique to the urban interface. This alternative also proposes the fewest acres (292,600) as ERMAs. Management of some ERMA areas would include off-road motorcycle use. The impacts on public safety from potential user conflicts would be higher than under Alternative A.

Effects under Alternative E

Alternative E would manage six locations as SRMAs and 2,085,700 acres as ERMAs. Alternative E also proposes issuance of nonmotorized competitive special recreation permits. Concentrated public use would increase the potential for user conflicts. These impacts would be reduced, as this alternative also provides mitigation of user conflicts.

Public Health and Safety: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Trails and travel management would affect public health and safety where it inadvertently allows access to hazardous sites. Public safety could be jeopardized due to exposure to hazards, including areas containing abandoned mines and illegal hazardous materials dump sites. Cross-country travel would also expose the public to surface conditions that have potential travel hazards, resulting in injuries from rollovers or collisions. Designating and maintaining specific travel routes would improve the potential for safe travel by public recreation users.

Effects under Alternative A

Alternative A proposes 3,840,300 acres as "open" to unrestricted cross-country travel, almost all of which would be outside of RMAs. Public exposure to safety hazards, such as abandoned mines, would be the highest compared to other alternatives, as more areas of BLM-administered lands would be accessible. Cross-country travel would also increase the potential for OHV travel accidents and injuries to users. Alternative A has the highest potential of impacts applicable to public safety of the alternatives.

Effects under Alternative B

Travel management under Alternative B proposes 95,300 acres as open to unrestricted cross-country vehicle use; any cross-county travel would be restricted to RMAs or designated playas. The management of each RMA should address and mitigate for any potential hazard that is identified. Therefore, the potential for exposure to hazardous sites or conditions would be substantially reduced compared to Alternative A.

Effects under Alternative C

Travel management under Alternative C proposes 1,300 acres as open to unrestricted cross-country vehicle use, and any cross-county travel would be restricted to RMAs or designated playas. The management of each RMA should address and mitigate for any potential hazard that is identified. Therefore, the potential for exposure to hazardous sites or conditions would be substantially reduced, compared to Alternative A.

Effects under Alternative D

Travel management under Alternative D proposes 22,700 acres as open to unrestricted cross-country vehicle use. The degree of public safety afforded would be higher and exposure to hazards would be lower, compared to Alternative A.

Effects under Alternative E

Travel management under Alternative E proposes 55,700 acres as open to unrestricted cross-country vehicle use. Public safety and exposure to hazards would be similar to Alternative B, but with 39,600 fewer acres open.

Public Health and Safety: Effects from Lands and Realty

Effects Common to All Alternatives

Granting ROWs would provide additional public access and increase the potential for exposure into hazardous areas affecting public health and safety. These potential impacts would be reduced based on permit requirements, such as grant stipulations and maintenance requirements that would provide public safety.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Renewable Energy

Effects Common to All Alternatives
Granting ROWs for energy development would improve public access and the potential for exposure into hazardous areas. Geothermal projects may present hazards from hot springs, affecting public safety. Hazards would be remediated based on implementing grant stipulations, mitigation measures, fencing, maintenance requirements, and access restrictions.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
Designating ACECs would increase public awareness and the potential for visitors to areas containing high resource values. Increased visitation could increase public exposure to hazards in surrounding areas and damage resources from increased populations.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Public Health and Safety

Effects Common to All Alternatives
Identifying naturally occurring or human-made public safety hazards and taking appropriate action to protect public health and safety would reduce public exposure to safety hazards. Providing safety information would ensure the public is informed and aware of potential health and safety risks. Identifying locations of hazardous materials and unexploded ordnance, along with taking steps to mitigate impacts or remove hazardous materials and ordnance, would provide for public and safety. Remediating and installing signs at dangerous locations, such as mine shafts, adits, hot springs, and other dangerous areas, would protect public health and safety and reduce the potential for injuries. Closure of Harvey's Place within the Indian Creek RMA would reduce potential health and safety risks associated with discharged, filtered, secondary treated wastewater. Closure of American Flat Mill (10 acres), Pine Nut Road No. 2, and Moonrocks to discharge of firearms would also protect the public.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There are no management actions related to Interpretation and Environmental Education under Alternative A.

Effects under Alternative B
Alternative B provides for public education and interpretive opportunities that stress awareness of multiple use strategies, emphasizing resource use and economic development. Public use and visitation would be encouraged, resulting in higher visitation potential and increasing the potential for public exposure to health and safety risks. However, the public education opportunities would also promote increased understanding and awareness of the hazards they could encounter and how to handle them.

Effects under Alternative C
Alternative C provides education and interpretive opportunities that emphasize preservation and protection of resource. Public use and visitation would be discouraged in areas in order to preserve and protect important resource values. Lower visitation potential would occur, along with a lower potential for public exposure to health and safety risks, But it would also decrease the potential for public education and awareness of hazards on public lands.

Effects under Alternative D
Providing education and interpretive opportunities that balance multiple use and resource protection would encourage visitation and protect visitation in sensitive resource areas. Alternative D also emphasizes conflict resolution, reducing the potential for conflicts between users.

Effects under Alternative E
Impacts would be similar to Alternative D.

Public Health and Safety: Effects from Facilities and Transportation Maintenance

Effects Common to All Alternatives
Installing facilities and implementing transportation maintenance would promote public health through providing sanitation facilities and would provide public safety by reducing unsafe road conditions for travelers.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Public Health and Safety: Cumulative Impacts

Past and Present Actions
There are no quantifiable impacts on public safety from past and present management of climate change and livestock grazing. This is because few management actions have been implemented that affect public health or safety. Management to control invasive, nonnative, and noxious plants pose health risks from chemical treatments. These risks have been reduced by implementing mitigation measures, following label instructions, and complying with BLM policy.

Past lands and realty actions have had few impacts on public health and safety. Communication towers have improved public safety, as more areas are available to improved communication. Minerals development has improved access into areas with active exploration and mining. Fencing and installing signs in areas has reduced public safety risks. Past and present actions from renewable energy have had minimal impacts on public health and safety, as the number of renewable energy projects being implemented is relatively low.

Recreation management impacts on public health and safety has improved safety and health by providing facilities and sanitation in areas. As demands for public use of the lands increases, the potential for user conflicts has increased, posing safety and health issues. Recreation management to reduce conflict between users has provided for a higher degree of public safety.

Travel management as open to unrestricted motor vehicle travel allows the most public access into potentially hazardous areas or conditions. Cross-country travel also increases the risk for OHV accidents on BLM-administered lands. Past and present management has afforded the most acres as open to unrestricted motorized travel.

Vegetation management has had few impacts on public health and safety. Fuel treatments aid in reducing the potential for fire spread, protecting the public from large fires. Wildlife management would have no discernable impacts on public health and safety. Past and present management of wild horses and burros includes restricting access to the public during gathers and reducing

public exposure and safety risks from horses, vehicles, and aircraft. Fire management provides for public safety by prioritizing suppression to provide for public safety. Military use of public lands has increased the potential for user conflicts and safety concerns.

Reasonably Foreseeable Actions

Reasonably foreseeable future actions relating to climate change and livestock grazing would have no quantifiable impacts on public health and safety. Future actions relating to invasive, nonnative, and noxious weed management would increase the potential for health risks. This is because more areas would be treated with herbicides as expansion of nonnative noxious weeds continues.

Lands and realty reasonably foreseeable future actions would have similar impacts as past and present actions on public safety and health management. Mineral development impacts would be similar to those past and present actions. The dependence for renewable energy would increase facilities on BLM-administered lands. Public health and safety impacts would be commensurate with the number of facilities and locations developed and would remain low.

Foreseeable recreation management actions increasing the number of facilities for public use would provide for public health. Travel management would include more access restrictions and fewer acres available to unrestricted cross-country travel. Route designations would provide a route numbering or naming system that would allow the public to better locate their positions on public lands, increasing traveler safety. Public exposure to hazards would be lower.

Increasing demands on vegetation treatments would reduce fuels and provide for public safety. Reasonably foreseeable future actions applicable to wildlife management would have no discernable impacts on public health and safety.

Reasonably foreseeable future actions for wild horse and burro management would be the same as past and present management.

Reasonably foreseeable future actions include increasing management suppression priorities and fuel treatments. These would increase as WUI areas.

Continued military training and increased numbers or frequency would also increase user conflicts in and around training areas.

Incremental Cumulative Impact – Combined Past, Present, and Reasonably Foreseeable Actions under All Alternatives

There would be no incremental impacts from climate change or from livestock grazing on public health and safety. Incremental impacts from invasive, nonnative, and noxious weed management would increase exposure to chemical pesticides. Impacts would depend on the number of areas treated over time. Incremental impacts from lands and realty management would have minimal impacts on public health and safety. Incremental impacts from minerals

management would depend on the number of acres identified as open to mineral development. Closed areas would have fewer public safety risks from operations. Incremental effects from renewable energy would be low.

Incremental recreation management would provide for public health and would depend on the number of recreation facilities installed and management of areas to reduce user conflicts.

Travel management incremental effects would reduce the potential for public safety hazards. These would be offset by the increase in the number of people visiting BLM-administered lands.

Incremental effects from vegetation management have few impacts on public safety and would depend on the number and location of fuel treatments. There would be no discernable impacts on public health and safety based on wildlife management. Incremental impacts from wild horse and burro management would be the same as past, present, and reasonably foreseeable future actions. Public safety would depend on the number of gathers held.

Incremental effects from fire management would depend on the number and size of WUI areas that need protection. Further population growth and use of the BLM-administered lands would continue to impact suppression priorities.

Continued training by the military on public lands would increase the potential for user conflicts in areas that are used and around existing training areas and bombing ranges.

4.6.3 Interpretation and Environmental Education

This section discusses impacts on interpretation and environmental education activities from proposed management actions of other resources and resource uses. Existing conditions are described in **Section 3.5.3,** Interpretation and Environmental Education.

Summary

For all alternatives, the BLM would continue to provide opportunities for environmental education through its current programs. Interpretive opportunities would be provided through outreach programs, appropriate signs in high-use areas, and the development of distinct interpretive areas. All programs would stress the importance of environmental literacy, stewardship, and multiple use management. Depending on the theme of the alternative, interpretation and environmental education efforts focused on multiple use management would be emphasize different resources and resources uses.

Under Alternative A, current resource management actions would continue in their current form. Interpretation and environmental education would continue to be implemented as they are now. Impacts may occur in the future if management actions fail to protect natural resources, and interpretation and

environmental education could need to change their locations and primary messaging.

Under Alternative B, greater emphasis would be placed on resource use, and fewer natural resource protections would be put in place compared to Alternative A. This may increase the amount of land available for these uses, and outreach opportunities regarding responsible resource uses and their connection to the history of the region may increase. This may also decrease the availability and accessibility of these resources, and opportunities for interpretation, and environmental education concerning ecosystem services and ecosystem functions may also decrease.

Under Alternative C, greater emphasis would be placed on resource protection compared to Alternative A. This may increase the opportunities for interpretive sites and environmental education opportunities relating to ecosystem services and ecosystem function. Having more protected areas may also increase opportunities for expanding current interpretive and educational programs to new locations with unique ecological features. This may also decrease the opportunities available for interpretive and educational efforts related to responsible resource use due a decreased amount of land available for these uses.

Under Alternative D, a greater emphasis would be placed on BLM-lands within the urban interface compared to Alternative A. Changes in land tenure would be used to reduce conflicts between adjacent landowners. Depending on the ecological and resource values of exchanged lands, ecological and resource use outreach opportunities may stay the same, may be decreased by the loss of previously managed lands, or may increase by the addition of newly managed lands. All exchanges would be focused in areas at the urban interface. This would provide an opportunity to focus outreach on areas near population centers, but it may exclude important interpretative and educational opportunities that exist outside of this interface area.

Under Alternative E, a mix of management actions would be used to provide an intermediate level of resource management and use. Impacts may moderately improve interpretive and educational opportunities for both resource management and use across the entire planning area.

For each resource or resource use, individual impacts that are in addition to those described above are discussed in the corresponding sections.

Resources that would have no significant impact on interpretation and environmental education are air quality management, climate management, wildland fire ecology and management, visual resources management, forestry and woodland products management, backcountry wildlife conservation areas, tribal interests, and public health and safety.

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on interpretation and environmental education:

- Interpretive and environmental educational opportunities depend on the availability and accessibility to BLM-managed resources.
- The scale of resource use may increase or decrease the need for interpretive and environmental education services.
- Interpretive and environmental education focus outreach toward the public and therefore would be used in areas with high visitor use.
- The BLM will finalize the district-wide environmental education and interpretive strategy and its long-term interpretive plan, which will guide future interpretative and environmental education.

Indicators

The following indicators were used to assess the degree of impacts on interpretation and environmental education:

- Opportunities available for interpretation or environmental education about a specific resource or resource use
- Protection levels or public accessibility to BLM-managed resources
- Acres, special management, or facilities available for specific resource uses

Nature and Type of Effects

Resource management direction that increases public access increases opportunities for education and interpretation. Designation of areas such as RMAs provides opportunities for education and interpretation related to specific recreational experiences. Designation or management to protect unique and sensitive resources (such as ACECs, WSRs, and WSAs) may limit access to or uses in certain sensitive areas, but it provides an opportunity for education and interpretation of the resource for which the designation was made.

When broad-based management actions are related to interpretation and environmental education, it may be more difficult to implement projects due to a wide-array of options and lack of focus on a specific area. When specially managed areas are created, such as ACECs or historic districts, they provide specific locations and topics for outreach and may be more likely to be implemented.

Interpretation and Environmental Education: Effects from Soil Resources

Effects Common to All Alternatives

Under all alternatives, any proposed activities that are located in sensitive soils (e.g., hydric, saline, biological crusts, or highly erodible soils) would incorporate BMPs and other mitigation measures to minimize soil erosion and maintain soil stability. Depending on the location, accessibility, and visitor use of these sites, interpretive or educational installations could be created to showcase unique areas and the importance of protecting the sensitive resource.

Effects under Alternative A

In High Erosion Susceptibility Areas OHV use is causing sedimentation and erosion issues. Interpretive signs could be installed or educational materials could be distributed to educate the motorized recreation community on how to prevent further erosion by limiting use to designated roads and trails.

Effects under Alternative B

Alternative B would provide no new opportunities for interpretation and environmental education. (For interpretation and environmental education opportunities related to erosion for Alternative B, see *Effects from Comprehensive Travel and Transportation Management.*)

Effects under Alternatives C, D, and E

Alternatives C, D, and E would provide increased protections for biological soil crusts, compared to Alternative A. This could increase environmental education opportunities on the ecological function of this type of sensitive soil.

Interpretation and Environmental Education: Effects from Water Resources

Effects Common to All Alternatives

Under all alternatives, watershed function would be defined so the BLM could make management decisions based on cumulative effects within watersheds and or neighboring watersheds. This may include collaborating with other federal agencies, tribal governments, the States of Nevada and California, counties, and local municipalities on management of municipal watersheds. This would provide broad-based opportunities to expand interpretive and education programs about watershed science and management.

Effects under Alternative A

Current management actions would limit BLM-authorized activities in degraded or degrading watersheds, allowing for some opportunities for interpretation and environmental education on watershed science and management.

Effects under Alternative B

Alternative B would have no additional opportunities for interpretation and environmental education than those under *Effects Common to All Alternatives*.

Effects under Alternatives C, D, and E

Alternatives C, D, and E would manage for water conservation through restoration projects. It may provide more opportunities than Alternative A for interpretation and environmental education at restored sites.

Interpretation and Environmental Education: Effects from Vegetation Resources

Effects Common to All Alternatives

Under all alternatives, the BLM would manage for healthy forests, woodland and rangeland vegetative communities, and riparian areas. Broad-based interpretive and educational efforts would have expanded opportunities to emphasize the importance of properly functioning ecosystems as part of youth and adult outreach activities and materials. Additionally, management actions would focus on minimizing the introduction and spread of invasive and noxious plants, another important educational topic for properly functioning ecosystems.

Effects under Alternative A

Alternative A would continue working toward improving rangeland health and riparian areas, increasing ground cover to prevent soil erosion, and coordinating with the Navy on invasive weed management. There would be no additional opportunities for interpretation and environmental education from those identified in *Effects Common to All Alternatives*.

Effects under Alternatives B, C, D, and E

Alternatives B, C, D, and E would have a greater emphasis on vegetative restoration and rehabilitation than Alternative A. This may allow for additional interpretation and environmental education opportunities at restored sites.

Interpretation and Environmental Education: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Under all alternatives, management actions would support partnership opportunities for state and nonprofit groups to assist with monitoring, identification, and protection of fish, wildlife, and plants. This would provide additional broad-based opportunities to engage public volunteers in ecosystem science and management education.

Effects under Alternative A

Alternative A would provide no additional opportunities for interpretation and environmental education from those identified in *Impacts Common to All Alternatives*.

Effects under Alternatives B, C, D, and E

Alternatives B, C, D, and E would allow for habitat improvement projects, including the removal of invasive species. This could allow for additional

interpretation and environmental education opportunities at improved sites. As part of the management of bats, the BLM would close access to caves in the event of a white-nose syndrome outbreak or other transmittable disease, providing another opportunity to provide educational materials to those who recreate in and around caves. Management actions would also dictate that the BLM work with the Swan Lake Nature Study Area Advisory Board to increase educational outreach activities and opportunities.

Interpretation and Environmental Education: Effects from Special Status Species Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A would continue to manage one ACEC for the protection of special status plants species and one ACEC for special status wildlife species. Alternative A would also support the reintroduction of sensitive and endemic species. The management of such areas and actions would provide some opportunities for interpretation and environmental education about the habitat and management of special status and sensitive species.

Effects under Alternative B

Alternative B would establish three ACECs for special status plants, one ACEC for special status wildlife, and additional protections for the Greater Sage-Grouse, allowing for slightly more interpretation and environmental education opportunities than would be available under Alternative A. As part of the management of bats, the BLM would close access to caves in the event of a white-nose syndrome outbreak or other transmittable disease. This would be another opportunity to provide educational materials to those who recreate in and around caves, as compared to Alternative A.

Effects under Alternative C

Alternative C would establish five ACECs for special status plants and seven ACECs for special status wildlife and would support the reintroduction of special status species to appropriate areas. It would create additional protections for the Greater Sage-Grouse, allowing for substantially more interpretation and environmental education opportunities than would be available under Alternative A. Impacts of management for bats would be as discussed under Alternative B.

Effects under Alternative D

Alternative D would establish three ACECs for special status plants and no ACECs for special status wildlife. It would create additional protections for the Greater Sage-Grouse, allowing for similar interpretation and environmental education opportunities as would be available under Alternative A. Impacts of management for bats would be as discussed under Alternative B.

Effects under Alternative E

Alternative E would establish two ACECs for special status plants and no ACECs for special status wildlife. It would support the reintroduction of special status species to appropriate areas and additional protections for the Greater Sage-Grouse. This would allow for slightly more interpretation and environmental education opportunities than would be available under Alternative A. Impacts of management for bats would be as discussed under Alternative B.

Interpretation and Environmental Education: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

Under all management actions, the BLM would manage for healthy animals in balance with other uses and the productive capacity of their habitat within HMAs. All alternatives would provide opportunities for interpretation- and environmental education-related BLM-management actions within HMAs and wild horse and burro adoption events. The number of opportunities would be related to the number and acreage of HMAs under each alternative.

Effects under Alternative A

Alternative A would maintain or improve the conditions of 1,235,200 acres of public rangeland for wild horses and burros within 19 HMAs, providing various opportunities for interpretation and environmental education.

Effects under Alternative B

Alternative B would manage 13 HMAs, consisting of 996,500 acres of wild horse and burro habitat, providing fewer opportunities for interpretation and environmental education than Alternative A. Alternative B would also allow working with the Lahontan State Park to allow wild horses access to water and food within the park. This may provide additional opportunities for interpretation and environmental education efforts related to wild horse and burros compared to Alternative A.

Effects under Alternative C

Alternative B would manage 12 HMAs consisting of 1,090,000 acres of wild horse and burro habitat, providing fewer opportunities for interpretation and environmental education than Alternative A. Alternative C would seek innovative solutions through a cooperative relationship with local communities and other organizations regarding wild horses and burros outside HMAs. This may provide additional opportunities for interpretation and environmental education related to wild horses and burros compared to Alternative A.

Effects under Alternative D

Alternative D would manage 13 HMAs, consisting of 996,500 acres of wild horse and burro habitat, providing fewer opportunities for interpretation and environmental education than Alternative A.

Effects under Alternative E

Alternative E would manage 12 HMAs, consisting of 1,070,200 acres of wild horse and burro habitat, providing fewer opportunities for interpretation and environmental education than Alternative A. Additional effects would be the same as those identified under Alternatives B and C.

Interpretation and Environmental Education: Effects from Cultural Resources Management

Effects Common to All Alternatives

Under all alternatives, management of cultural resources would promote opportunities for educational and interpretive uses of cultural resources. The number of opportunities available for interpretive and educational work would depend on the cultural resources and protections provided under each alternative, such as specially managed areas and ACECs for cultural resource protection.

Effects under Alternative A

Alternative A would manage one ACEC for the protection of cultural resources, would develop public outreach and education efforts focused on conservation ethics, and would promote interpretation at the following locations:

- Grimes Point Archaeological District
- Hidden Cave
- Pony Express Stations at Sand Springs and Cold Springs
- Cold Springs Telegraph and Stage Stations
- New Pass Overland Stage Station

All of these efforts would provide opportunities for interpretation and environmental education about the cultural resources in the planning area.

Effects under Alternative B

Alternative B would establish eight ACECs for the protection of cultural resources. It would manage historic roads and trail that that are eligible for listing on the NRHP but are not congressionally designated, and it would protect rock art sites, NRHP-listed properties and districts, National Historic Landmarks, and TCPs. These efforts would provide many additional opportunities for interpretation and environmental education efforts related to cultural resources compared to Alternative A.

Effects under Alternative C

Management actions under Alternative C would be similar to those identified under Alternative B, with the exception that nine ACECs would be established and that educational and research opportunities would be promoted at areas

with high cultural site density. Effects would be the same as those identified under Alternative B.

Effects under Alternative D
Management actions under Alternative D would be similar to those identified under Alternative C, except that only six ACECs would be established. These efforts would provide some additional opportunities for interpretation and environmental education related to cultural resources compared to Alternative A.

Effects under Alternative E
Management actions under Alternative E would be similar to those identified under Alternative C, except that only three ACECs would be established. In addition, 15,900 acres would be designated as the Wyemaha Archaeological District for the protection of cultural resources. Part of the management of this area includes providing educational opportunities, establishing interpretive site tours, and developing an interpretive center. These efforts would provide substantially more opportunities for interpretation and environmental education of cultural resources compared to Alternative A.

Interpretation and Environmental Education: Effects from Paleontological Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would provide for the management of one ACEC for the protection of paleontological resources and a broad-based goal of managing paleontological resources for educational use. These would provide limited opportunities for interpretation and environmental education related to paleontological resources.

Effects under Alternative B
Alternative B would establish two ACECs for the protection of paleontological resources and would develop currently known paleontological resources for uses in public education. This would provide additional opportunities for interpretation and environmental education related to paleontological resources compared to Alternative A.

Effects under Alternative C
Effects would be the same as those identified under Alternative B.

Effects under Alternative D
Management actions under Alternative D would be similar to those identified under Alternative B, except that only one ACEC would be established for the protection of paleontological resources. This would provide additional

opportunities for interpretation and environmental education related to paleontological resources compared to Alternative A.

Effects under Alternative E
Effects would be the same as those identified under Alternative B.

Interpretation and Environmental Education: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives
Under all alternatives, management would pursue partnership and volunteer site steward involvement for site monitoring and protection. It would promote visitor awareness of the potential risks in cave environments and would designate the following as having cultural, biological, educational, or scientific significance: Hidden Cave, Burnt Cave, Cowboy Cave, Fish Cave, Eastgate Shelter, Picnic Cave, Salt Cave, Spirit Cave, Dynamite Cave, Topia Cave, and other caves as identified. These broad-based management actions would provide some educational opportunities to involve the public through volunteer activities and outreach materials.

Effects under Alternative A
Alternative A would provide no additional interpretation and environmental education opportunities from those identified in *Effects Common to All Alternatives.*

Effects under Alternative B
Alternative B would allow for the development of public education and outreach programs to foster an appreciation and understanding of caves, as well as cultural and biological cave resources. This would provide some additional broad-based opportunities for interpretation and environmental education related to caves and cave resources compared to Alternative A.

Effects under Alternative C
Effects would be the same as those identified under Alternative B.

Effects under Alternative D
Effects would be the same as those identified under Alternative B.

Effects under Alternative E
Alternative E would be the same as Alternative B, with opportunities to increase public education and interpretation at Hidden Cave. This would provide some additional broad-based and site-specific opportunities for interpretation and environmental education efforts related to caves and cave resources compared to Alternative A.

Interpretation and Environmental Education: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Under all alternatives, livestock grazing may be considered part of the heritage of an area. This may provide opportunities for interpretation about the culture and the history of livestock grazing, as well as environmental education opportunities on the management of livestock regardless of the acres available for livestock grazing.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Interpretation and Environmental Education: Effects from Geology and Mineral Management

Effects Common to All Alternatives
Under all alternatives, management actions would maintain the integrity of important noneconomic geologic resources consistent with other land use objectives. Depending on the geologic value and uniqueness of these geologic resources, interpretive or educational materials could be created for specific sites.

Effects under Alternative A
Alternative A would provide no additional opportunities for interpretation and environmental education about geology and minerals management than those identified under *Effects Common to All Alternatives*.

Effects under Alternative B
Alternative B would allow for reclamation or restoration of disturbed lands, which could allow for additional interpretation and environmental education opportunities at reclaimed sites compared to Alternative A. Also, with the focus of this alternative being resource use and economic development, having more mineral extraction operations in place may allow for increased educational

materials on extractive resources and processes, such as geothermal and locatable minerals, compared to Alternative A.

Effects under Alternative C
Alternative C would allow for reclamation or restoration of disturbed lands, which could allow for additional interpretation and environmental education opportunities at reclaimed sites compared to Alternative A.

Effects under Alternative D
Effects would be the same as those identified under Alternative C.

Effects under Alternative E
Effects would be the same as those identified under Alternative C.

Interpretation and Environmental Education: Effects from Recreation and Visitor Services

Effects Common to All Alternatives
Under all alternatives, management actions would increase public awareness of recreation opportunities and experiences through interpretation, education, and stewardship principles. Management actions would also support the planning and implementation of recreational trails in cooperation with city and county governments. They would support partnerships for cooperative funding, stewardship, monitoring, operations, and maintenance for trails. These collaborative efforts would provide opportunities for interpretation and education through volunteer efforts, signs along the trails, and outreach events related to recreation and visitor services.

Effects under Alternative A
Alternative A would provide few additional opportunities for interpretation and environmental education, other than those identified in *Effects Common to All Alternatives*, including constructing an interpretive trail at Jumbo Postpile and developing a day use picnic area with interpretation kiosk at Red Rocks Scenic Area.

Effects under Alternative B
Alternative B would provide a moderate to significant increase in opportunities for interpretation and environmental education compared to Alternative A. Additional opportunities are as follows:

- Managing the Alpine SRMA for interpretation and environmental education
- Providing educational materials for abandoned mine lands at Sand Mountain SRMA

- Designating 102 Ranch and Mustang ERMAs for casual use and dispersed recreation opportunities that emphasize environmental education and interpretation
- Providing interpretive and educational materials for unique or significant historical and cultural features and sites in the Middlegate SRMA
- Developing educational and interpretive signs for trail systems and historical sites
- Providing educational materials for abandoned mine lands in the Mina ERMA
- Developing educational and interpretive signs for trail systems in the Pine Nut ERMA

The development and management of target shooting ranges could also provide additional opportunities for interpretation and education on the impacts of shooting on the surrounding ecosystems.

Effects under Alternative C

Alternative C would provide a moderate increase in opportunities for interpretation and environmental education compared to Alternative A. Additional opportunities are as follows:

- Managing the Alpine SRMA for interpretation and environmental education
- Designating 102 Ranch and Mustang ERMAs for casual use and dispersed recreation opportunities that emphasize environmental education and interpretation
- Designating the Faye-Luther ERMA for day use recreation, including interpretation
- Developing educational and interpretive signs for trail systems in the Pine Nut ERMA.

The development and management of target shooting ranges could also provide additional opportunities for interpretation and education on the impacts of shooting on the surrounding ecosystems.

Effects under Alternative D

Alternative D would provide a moderate to significant increase in opportunities for interpretation and environmental education compared to Alternative A. Additional opportunities are as follows:

- Managing the Alpine SRMA for interpretation and environmental education

- Developing educational and interpretive signs for trail systems in the Hungry Valley SRMA
- Designating 102 Ranch and Mustang ERMAs for casual use and dispersed recreation opportunities that emphasize environmental education and interpretation
- Designating the Faye-Luther ERMA for day use recreation opportunities, including interpretation
- Developing educational and interpretive signs for trail systems in the Pine Nut ERMA

The development and management of target shooting ranges could also provide additional opportunities for interpretation and education on the impacts of shooting on the surrounding ecosystems.

Effects under Alternative E

Alternative E would provide a significant increase in opportunities for interpretation and environmental education compared to Alternative A. Additional opportunities are as follows:

- Managing the Alpine SRMA for interpretation and environmental education
- Developing educational and interpretive signs for trail systems in the Hungry Valley SRMA
- Managing the Sand Springs Pony Express Station and NHT for historical interpretation
- Providing educational materials to recreationists for abandoned mine lands at Sand Mountain SRMA
- Designating 102 Ranch and Mustang ERMAs for casual use and dispersed recreation opportunities that emphasize environmental education and interpretation
- Designating the Faye-Luther ERMA for day use recreation opportunities, including interpretation
- Developing a day use rest stop picnic area with an interpretive kiosk in the Lassen Red Rock RMZ
- Developing educational and interpretive signs for trail systems in the Pine Nut ERMA
- Developing the Jumbo Post Pile Interpretive Trail and trailhead as well as a Jumbo Post Pile site plan, to include site boundary, parking area, interpretive plan, and sign plan, and trailhead kiosk in the Virginia Range ERMA

The development and management of target shooting ranges could also provide additional opportunities for interpretation and education on the impacts of shooting on the surrounding ecosystems.

Interpretation and Environmental Education: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives
Where OHV use is causing sedimentation and erosion issues, or where OHV operators are using riparian corridors, interpretive signs or educational materials could be distributed to educate the motorized recreation community of how to prevent further erosion by limiting use to designated roads and trails.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Interpretation and Environmental Education: Effects from Lands and Realty

Effects Common to All Alternatives
The acquisition of lands that improve the management of BLM-administered lands or resource values may increase the continuity or overall value of a resource in an area. Situations where an acquisition includes a unique resource or improves the continuity of a unique resource may provide an opportunity for interpretation and environmental education. Disposal of BLM-administered lands tend to have little or no resource value and would not have a significant impact on interpretation and environmental education. However, if disposed lands include unique or sensitive resource, this may decrease outreach opportunities.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Interpretation and Environmental Education: Effects from Renewable Energy

Effects Common to All Alternatives
Under all alternatives, renewable energy projects could be a focus of interpretative and educational efforts on new methods of energy production. The more acres that are available for solar and wind projects, the greater the potential for a utility-scale renewable energy project and associated outreach efforts.

Effects under Alternative A
Alternative A would manage 905,900 acres as solar variance, allowing utility-scale solar development on these lands.

Effects under Alternative B
Alternative B would manage 773,400 acres as solar variance, allowing utility-scale solar development on these lands; 1,220,200 acres would be managed as ROW avoidance areas for wind projects. There would be fewer acres available for both solar and wind projects, and potentially fewer opportunities would be available for interpretation and environmental education compared to Alternative A.

Effects under Alternative C
Alternative C would manage 578,400 acres as solar variance, allowing utility-scale solar development on these lands; 2,073,200 acres would be managed as ROW exclusion areas for wind projects. There would be fewer acres available for both solar and wind projects, and potentially fewer opportunities would be available for interpretation and environmental education compared to Alternative A.

Effects under Alternative D
Alternative D would manage 672,100 acres as solar variance, allowing utility-scale solar development on these lands; 1,228,100 acres would be managed as ROW avoidance areas for wind projects. There would be fewer acres available for both solar and wind projects, and potentially fewer opportunities would be available for interpretation and environmental education compared to Alternative A.

Effects under Alternative E

Alternative E would manage 629,900 acres as solar variance, allowing utility-scale solar development on these lands; 956,900 acres would be managed as ROW avoidance areas, and 629,900 acres would be managed as ROW exclusion areas for wind projects. There would be fewer aces available for both solar and wind projects, and potentially fewer opportunities would be available for interpretation and environmental education compared to Alternative A.

Interpretation and Environmental Education: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A would manage for six ACECs, none of which specifically call for interpretation or environmental education efforts. Depending on the management priorities and resources within the ACEC, interpretive or educational activities or materials could be created for these ACECs. Examples of these priorities and resources are unique geologic features, cultural resources, and paleontological resources.

Effects under Alternative B

Alternative B would provide a significant increase in opportunities for interpretation and environmental education compared to Alternative A. Additional opportunities are as follows:

- Providing research and educational opportunities in Black Mountain/Pistone Archaeological District ACEC, Fox Peak Cultural ACEC, Grimes Point Archaeological District ACEC, Namazii Wunu Cultural ACEC, Pah Rah High Basin Petroglyph ACEC, and the Tagɨm aša Cultural ACEC
- Working with local community and tribal entities to establish interpretive tours in the Black Mountain/Pistone Archaeological District ACEC, Grimes Point Archaeological District ACEC, and the Pah Rah High Basin Petroglyph ACEC
- Allowing geological research and educational opportunities
- Providing for on-site interpretation of the geological features
- Developing parking/day use area and interpretative kiosks in the Incandescent Rocks Scenic ACEC
- Providing for interpretation and educational opportunities in the Ruhenstroth Paleontological ACEC and the Virginia City National Landmark Historic District ACEC
- Developing self-guided interpretive signs and trail systems

- Pursuing development of docent-led interpretive programs through Mineral County or educational institutions in the Stewart Valley Paleontological ACEC

Effects under Alternative C

Alternative C would provide a low to moderate increase in interpretation and environmental education opportunities compared to Alternative A. Additional opportunities are as follows:

- Managing the Sand Springs Pony Express Station and Pony Express NHT for historical interpretation and maintaining the Sand Springs Interpretive Trail in the Sand Springs Desert Study Area ACEC
- Providing: research and educational opportunities in the Stewart Valley Paleontological ACEC
- Partnering with community groups and local government to support preservation and interpretation of the historic resources in the Virginia City National Landmark Historic District ACEC

Effects under Alternative D

Alternative D would provide a significant increase in interpretation and environmental education opportunities compared to Alternative A. Additional opportunities are as follows:

- Providing for research and educational opportunities in the Black Mountain/Pistone Archaeological District ACEC, Fox Peak Cultural ACEC, Grimes Point Archaeological District ACEC, and the Tagɨm aša Cultural ACEC
- Working with local community and tribal entities to establish interpretive tours in the Black Mountain/Pistone Archaeological District ACEC and the Grimes Point Archaeological District ACEC
- Allowing geological research and educational opportunities
- Providing onsite interpretation of the geological features
- Developing parking/day use area and interpretative kiosks in the Incandescent Rocks Scenic ACEC
- Developing a public education/outreach program to increase public appreciation and understanding of cultural resources in the Pah Rah High Basin Petroglyph ACEC
- Developing interpretation in areas with high paleontological values in the Ruhenstroth Paleontological ACEC
- Developing a public education/outreach program designed to increase public appreciation and understanding of these cultural resources and tribal heritage in the Tagɨm aša Cultural ACEC

- Partnering with community groups and local government to support preservation and interpretation of the historic resources in the Virginia City National Landmark Historic District ACEC

Effects under Alternative E

Alternative D would provide a moderate increase in opportunities for interpretation and environmental education opportunities compared to Alternative A. Additional opportunities are as follows:

- Providing for research and educational opportunities in Fox Peak Cultural ACEC, Grimes Point Archaeological District ACEC, and the Stewart Valley Paleontological ACEC
- Working with local community and tribal entities to establish interpretive tours in the Grimes Point Archaeological District ACEC
- Allowing geological research and educational opportunities and providing interpretation of the geological features in the Incandescent Rocks Scenic ACEC
- Developing public education/outreach program designed to increase public appreciation and understanding of cultural resources in the Pah Rah High Basin Petroglyph ACEC
- Developing interpretation in areas with high paleontological values in the Ruhenstroth Paleontological ACEC

Interpretation and Environmental Education: Effects from Back Country Byways

Effects Common to All Alternatives

Under all alternatives, management actions would partner with state and local agencies to develop new or modify existing Back Country Byways to allow for public exploration of Nevada's unique history, culture, and landscapes and providing opportunities for interpretive or educational efforts along the byways focused on these topics.

Effects under Alternative A

Management actions under Alternative A for National Historic Trails would continue to manage 67 miles of the Fort Churchill Back Country Byway, providing for interpretation and environmental education opportunities along this route.

Effects under Alternative B

Alternative B would designate the Fort Churchill, Marietta, and New Pass to Hawthorne Back Country Byways, providing a moderate increase in interpretation and environmental education opportunities compared to Alternative A. Additional opportunities are as follows:

- Providing interpretation of the historical mining features of Candelaria and Marietta Mining Districts, along with the Marietta Wild Burro Range and Teels Marsh in the Marietta Back Country Byway
- Providing interpretation for historical and archaeological features along the New Pass to Hawthorne Back Country Byway

Effects under Alternative C

Management actions under Alternative C would be similar to those identified under Alternative B; however, the interpretation of the Marietta Back Country Byway would focus on the natural and scenic values of Teels Marsh and the Marietta Wild Burro Range, while the interpretation for the New Pass to Hawthorne Back Country Byway would focus on the natural and scenic values of Lodi Valley and the Gillis Mountain Range.

Effects under Alternative D

Alternative D would designate no Back Country Byways, providing no opportunities for interpretation and environmental education. There would be far fewer opportunities for outreach as compared to Alternative A.

Effects under Alternative E

Management actions under Alternative E are similar to those under Alternative B. Effects would be the same as those identified under Alternative B.

Interpretation and Environmental Education: Effects from National Trails

Effects Common to All Alternatives

Under all alternatives, management for National Historic Trails would work toward establishing collaborative partnerships with the National Park Service, National Trails Centers, partner groups, interest groups, interested individuals, local communities, and other stakeholders to implement Pony Express and California Trail-related projects. These partnerships would provide many opportunities to create interpretive and educational materials related to these national trails.

Effects under Alternative A

Alternative A would promote visitation, interpretation, and development of the Sand Springs and Cold Springs Pony Express Stations. It would maintain the current self-guided interpretive trails and informational signs at the Sand Springs and Cold Springs Pony Express Stations. These would provide continued interpretation and educational opportunities for these National Historic Trails. There are no management actions for the Grimes Point National Recreation Trail under Alternative A.

Effects under Alternative B
Alternative B would provide more opportunities for interpretation as compared to Alternative A. Additional opportunities are as follows:

- Installing interpretative signs along National Historic Trails
- Using interpretation and education to help mitigate damage to segments of the California National Historic Trail
- Developing interpretive materials for the petroglyphs along the Grimes Point National Recreation Trail

Interpretation and education on the Sand Springs and Cold Spring Pony Express Stations would be covered under cultural resources for this alternative.

Effects under Alternative C
Alternative C would provide fewer opportunities for interpretation compared to Alternative A. The only opportunity would be developing interpretive materials for the petroglyphs along the Grimes Point National Recreation Trail. Interpretation and education on the Sand Springs and Cold Spring Pony Express Stations would be covered under ACECs and cultural resources for this alternative.

Effects under Alternative D
Management actions under Alternative D would be similar to those under Alternative B, except the Sand Springs and Cold Spring Pony Express Stations would have no management actions. This would provide fewer opportunities for interpretation and education compared to Alternative A.

Effects under Alternative E
Management actions under Alternative E would be similar to those under Alternative B, except that management actions for Sand Springs and Cold Spring Pony Express Stations would be covered under SRMAs and cultural resources for this alternative. Effects would be the same as those identified under Alternative B.

Interpretation and Environmental Education: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage three segments of the East Fork Carson River as eligible for inclusion as Wild, Recreational, or Scenic Rivers under the NWSRS. If these segments become designed as a WSR in the future, then it would provide additional opportunities for interpretation and education on the NWSRS and the unique features of these segments of river.

Effects under Alternative B

Alternative B would determine that the three segments of the East Fork Carson River are not suitable for inclusion in the NWSRS and release them from special management. This would provide no opportunities for interpretation and education on the NWSRS and the unique features of these segments of river, much fewer opportunities than Alternative A.

Effects under Alternative C

Alternative B recommends the three segments of the East Fork River as suitable for inclusion in the WSR System. Nomination of these segments as suitable would provide additional opportunities for education and would likely increase the level of visitor use to the river, further enhancing educational opportunities.

Effects under Alternative D

Effects would be the same as those identified under Alternative C.

Effects under Alternative E

Effects would be the same as those identified under Alternative C.

Interpretation and Environmental Education: Effects from Wilderness Study Areas

Effects Common to All Alternatives

Under all alternatives, WSAs would be managed to retain their wilderness characteristics, providing opportunities for interpretation and education on the wilderness classification process and unique features within each WSAs. Group sizes and motorized use limitations under all alternatives would somewhat limit access to WSAs, but opportunities exist particularly for educational experiences related to more primitive recreation. If WSAs become designated as Wilderness, then these types of opportunities would continue to exist. If they were released from consideration, they may lose some of their wilderness characteristics and interpretive and educational opportunities.

Effects under Alternative A

Lands classified as WSAs would continue to be managed under BLM policy for WSAs, which includes limited motorized use and closures to new mineral development. No special management would be in place for the area should the WSAs be released from consideration; therefore, no opportunities for education and interpretation would exist in this circumstance.

Effects under Alternative B

Under Alternative B, WSAs would be managed under BLM policy for WSAs, as discussed in Alternative A. Should the WSAs be released from consideration, VRM Class II designation would provide some protection for the natural setting and primitive recreation values; however, lack of special designation would likely decrease visitation and related opportunities for education.

Effects under Alternative C
Impacts would be as described for Alternative B, with additional protective measures to limit development in WSAs should they be released from consideration. Protection of these areas would continue the ability to use WSAs as special areas for education and interpretation.

Effects under Alternative D
Impacts would be as described under Alternative C.

Effects under Alternative E
Impacts would be as described under Alternative C.

Interpretation and Environmental Education: Cumulative Impacts
The focus of interpretation and environmental education would be placed on enhancing the visitor experience on CCD lands. Also emphasized would be educating current and future generations on land management issues, adapting as needed to changes in the region and available opportunities. The population of the region, in particular the greater Reno area, is expected to continue growing, creating a stronger need and more opportunities for interpretive and educational outreach programs related to recreation, cultural, and historical issues. The progression or intensification of natural processes, such as wildland fires, invasive species, and climate change, may also create a stronger need for these types of programs.

4.6.4 Social and Economic Conditions

Summary
Social and economic impacts would occur with the implementation of any of the alternatives. Potential impacts include changes in the following:

- Employment and income
- Tax revenue for local, state, and federal government entities
- Demand for housing and government services

In addition, management actions could alter public attitudes and opinions concerning use of BLM-administered lands. This section describes potential impacts on socioeconomics from management actions. Existing conditions are described in **Section 3.4.3**, Socioeconomics.

Under Alternative A, current management practices would continue, and there would be no changes to the social and economic indicators below. Impacts may occur if there were drastic changes within the planning area and management actions were not updated accordingly. Under Alternative B, resources use and economic development would be prioritized and would provide the most resources and areas available for economic development. Development also would provide the highest level of opportunity for extractive and land intensive

industries, such as energy development and motorized recreation. It would provide the fewest surface acres of occupancy restrictions, special stipulations, and exclusion areas to protect water resources, cultural and paleontological resources, soil resources, wildlife habitat, and vegetation. This could also reduce nonmarket values, such as open space, scenic values, and solitude.

Alternative C would preserve and protect ecosystem health, with the most acres under management restrictions, which could enhance nonmarket values but could also hinder market-based economic activities. Alternative D focuses on the interface between BLM-administered lands and urban environments. It would increase management actions in this zone, with related changes to market and nonmarket economic factors also.

Alternatives D and E fall in between Alternatives B and C in terms of land use opportunities and resource protections. They would allow for some extractive resource uses and related economic impacts but would provide some protection for nonmarket factors.

Under all alternatives, the BLM would continue to consider socioeconomic impacts of site-specific actions and incorporate socioeconomic issues into future analyses of environmental, social, and economic impacts, such as the NEPA-required analyses for site-specific actions.

None of the alternatives would directly change population or demand for housing, schools, public facilities, or public services, such as police enforcement or access to hospitals, for the general public or environmental justice populations.

Methods of Analysis

Methods and Assumptions

Impact analyses and conclusions are based on the existing and projected population, employment, income, housing, earnings, social values, and economic contribution of public lands, as described in the Carson City District Socioeconomic Baseline Report and in **Chapter 3** of this document. The following assumptions were used to assess the impacts on social and economic conditions:

- Restrictions in land available for implementing SOPs, BMPs, or mitigation measures to protect other resources could indirectly affect socioeconomics by increasing costs or precluding development.
- Travel management decisions could increase or decrease motorized and nonmotorized recreation or economic opportunities on public lands. Improved access may benefit local economic activity, while

reduced access may result in a negative impact on the local economies.

- Increased population growth and relocation would increase economic activity and improve local economies, but it could alter the local social setting and strain public services, depending on the rate and level of growth.
- Changing ownership from public lands to private lands (land tenure adjustments) would expand state and local tax bases and encourage development. This could improve the local economies but may also impact the quality of life for local residents who value public land use and reduce revenues generated from recreational uses of public lands.
- Closing areas for certain uses could negatively impact local economies.
- Restrictions and closures specifically to protect threatened or endangered species could reduce economic activities in the closed areas or could increase operational expenses. Measures to protect threatened and endangered species, however, may contribute to long-term persistence of the species and provide nonmarket benefits.

Indicators

Key indicators that are used in the social and economic impact analysis are as follows:

<u>BLM-Administered Land Contributions</u>

- Recreation use (e.g., recreation visitor days, visitor use numbers, SRP permits, and fees)
- Land disposal (e.g., land swaps with local communities)
- Grazing AUMs
- Geothermal production
- Minerals (salable, other leasables, and locatables)
- Environmental/ecological restoration (acres)
- Land use and ROWs (acres)
- Ecosystem services

<u>Social and Economic Contributions</u>

- Population (growth projections)
- Changing demographics (selected indicators)
- Employment (numbers by sector)

- Income (personal income)
- Ethnic and racial characteristics of the region
- Open space (land enhancement value and attracting nonlabor income)

Nature and Type of Effects

Socioeconomic impacts from the proposed actions in the planning area are principally related to management actions that change the level of permitted resource use, including recreation, livestock grazing, and renewable energy development. Changes in levels of use can directly and indirectly affect the number of jobs and amount of money spent in the local region related to resource uses. Actions from resource programs or constraints (as described for each alternative) that impact surface uses (e.g., surface-disturbing activities that impact the amount of land available for grazing) are included by implication.

In addition to economic impacts, management actions can also result in nonmarket impacts on social values and sense of place. Market and nonmarket impacts are further discussed by resource below.

Recreation

Impacts from recreation on BLM-administered land at the state level in 2012 were estimated at $332.7 million, and total impacts (direct, indirect, and induced) were estimated at $547.6 million (BLM 2012m). Due to the location of the planning area near urban areas, recreation plays an important role in the local economy by contributing directly through the purchase of access fees, special use permits, and the services of local guides and outfitters, and indirectly through the purchase of commodities, such as gasoline, accommodations, and food and beverage. In addition, access to recreation plays a role in attracting and retaining area residents and enhancing quality of life.

Recreation in the area is projected to continue to increase as the local population increases. Spending and economic impacts from recreation vary based on the type of activities that visitors engage in as spending patterns vary by activity. Visitor spending was estimated at $182 per overnight visit for OHV use, $343 of biking, $276 for hiking, $250 for hunting, and $104 for primitive camping in Forest Service National Visitor Use Surveys (Forest Service 2005).

Changes in spending and visitor experience would result from the number, type, and acreage of RMAs. SRMAs are intensely managed for specific recreation and visitor services and therefore are expected to attract more recreationists, to have a greater economic impact from purchases of goods and services, and to fulfill visitors' social values, such as an improved recreation experience and greater access to facilities. Recreation within ERMAs is managed less intensively commensurate with other resource uses. Management focus is directed towards an undeveloped character and dispersed activities, which may attract fewer recreationists.

Economic benefits to the local economy would be less than realized for SRMAs but would fulfill the demand for other recreational and social values, such as solitude, open spaces, and fewer regulations. ERMAs focus on dispersed recreation with an undeveloped character, with little management, aside from custodial actions. Fewer types of RMAs are expected to have greater economic and social impacts than areas outside of RMAs, which are not managed for recreation but may allow for it.

Hunting, fishing, and wildlife viewing also contribute to the local and regional economy. Management actions that protect fish habitat could improve fisheries for recreation, which can bring visitor expenditures into the local economy; similarly, actions improving wildlife habitat can improve wildlife watching and hunting, both of which can inject tourist dollars into the local economy. In 2011, Nevada accounted for 1,400,000 participant days for fishing, 748,000 for hunting, and 1.6 million for wildlife watching, with total direct expenditures of over $1 billion (**Table 4-24**, Hunting and Fishing Activities and Economic Contributions).

Table 4-24
Hunting and Fishing Activities and Economic Contributions

Activity	Participants	Participant Days	Expenditures (Total)	Expenditures (Average per Participant)
Fishing	147,000	1,400,000	$138,800,000	$899
Hunting	43,000	748,000	$204,137,000	$3,897
Wildlife watchers	643,000	1,619,000	$682,028,000	$1,035

Source: USFWS 2011
Note: Includes participation by in-state residents and out-of-state visitors.

While recreation opportunities provided to area residents are important, their expenditures may not represent new money introduced into the economy. If opportunities on BLM-administered lands were not present, it is likely that residents would participate in other local recreation, so this money would still be retained in the local economy.

The impacts of recreation on BLM lands may not be fully captured based on the dollars spent on recreation. Visitors may receive additional "value" from public land recreation. One measure of this value is the amount that consumers would be willing to pay above the actual visitor fees, known as consumer surplus. These costs have been calculated in other regional studies for various activities. Consumer surplus was estimated at $36 for OHV use, $173 for biking, $61 for hiking, $70 for hunting, and $13 for primitive camping per day (Rosenberg 2012). The value of recreation could change as visitor experience changes with different management priorities.

Mineral and Energy development, including Renewable Energy

Mining and energy development are historic and current industries in the planning area economy. Use of planning area lands for mining contributes to the local and regional economy through the purchase of goods and services in the local economy by employees and for the physical mining operation. Mining employs local and regional labor, mainly the goods and services sectors supplying the mining operations, and contributes to local and regional income.

Including BMPs or mitigation measures in a project could increase construction or implementation costs for mineral and renewable energy development as well as transmission lines, potentially increasing expenditures at local businesses. In addition, the continued use of project area lands for mining would allow for the continued collection of mineral royalties, a portion of which would be returned to the counties of origin. Reclamation of projects, such as mining, could provide for increased recreation opportunities, and grazing or OHV, in revegetated and recontoured areas.

Should population increase as a result of increases in mineral development, this may result in social impacts on communities, such as increased crime and increased strain on public services. Impacts on public services include the potential for crowded schools and a greater demand for medical care and local law enforcement. Communities would experience increased costs in order to support growth resulting from project activities.

Closing areas to or withdrawing them from mining would directly limit the potential for economic development based on mining. Such restrictions as seasonal use limitations and special stipulations could increase the costs of operations and potentially alter the demand for employment. This could be reflected in a reduction in income, employment, and expenditures. If costs of operations were to increase to the extent that mining would be economically prohibitive, restrictions would decrease mining operations and thereby income, employment, and local expenditures.

Ensuring mineral development operations do not hamper existing public access would allow other uses of public lands to continue and maintain existing socioeconomic benefits.

In addition to increasing the operations costs of commercial activities, closures and restrictions would protect sensitive resources that have nonmarket socioeconomic values. As identified in previous sections, unique geologic features, caves and cave resources, and paleontological resources represent a draw for current and future visitors. These amenities also draw residents who enjoy natural areas or who live in the area for its scenic, cultural, historic, and natural qualities.

Wetlands, riparian areas, and wildlife habitat supports diverse wildlife that could bring in visitors and visitor expenditures to the CCD and secure the existence

of a valued resource for the future. Improving wildlife habitat can improve wildlife watching and hunting, both of which can inject tourist dollars into the local economy. Wetlands provide such nonmarket values as nutrient retention, water filtration, flood control, and erosion protection. Fish habitat supports recreational fisheries, which can bring visitor expenditures into the local economy. Both fish and wildlife habitat protection can improve biodiversity; this can provide nonmarket value to current generations and option and bequest benefits to future generations.

Commercial operations would experience increased costs to comply with VRM management objectives under all alternatives. These increased costs would be associated with such activities as moving, shaping, or painting facilities to blend with the surrounding viewshed. Operational costs would increase based on the designated VRM class in which the commercial operations would occur. VRM management would preserve valued viewsheds that draw recreational visitors, who also generate expenditures, income, and employment in the local economy.

All alternatives would make lands available for disposal to improve the efficiency of managing high resource value lands. This could improve management of the industries that provide income and employment in the planning area and could improve management of sensitive resources with high nonmarket values. Development on these disposed lands could increase the tax base and provide employment and income in the local economy. This could enable local governments to better handle the increasing pressures of population, for public services and facilities, and for recreation. Converting public lands to private may temporarily reduce open land property values.

Renewable energy development would not occur in ROW exclusion areas. This could decrease in the potential for economic growth, based on development of this resource.

The planning area sits atop one of the most active geothermal resources in Nevada and is considered to have a high potential for future geothermal development. The CCD currently manages 148 geothermal leases, 5 associated power plants, and an active geothermal power production of 183 megawatts (MW) (BLM 2013f). While many of the high potential areas have already been developed, it is still foreseeable for the area to develop five 15-MW geothermal power plants over the next 20 years (BLM 2013g).

Geothermal development can be broken down into three generally sequential phases: exploration, development and production, and reclamation and abandonment. The exploration phase includes surveying and drilling temperature gradient wells. Such activities as gradient well drilling and seismic surveys could provide temporary jobs for residents near geothermal resources. Expenditures for fuel, lodging, food, and other needs would provide a stimulus to the local economy. Other land uses would generally not be impacted during the exploration phase; therefore, no long-term economic impact on these uses

would occur. No long-term increases in population would occur in this phase, and demand for schools would not increase. The impacts on socioeconomics during this phase would be low throughout the project area.

Development and production activities usually center around drilling operations, construction, and operations. There would likely be construction employment for installing access roads, pipelines, transmission lines, drill sites, and power plants, though the level would vary depending on the resource potential. The type of employment and number of available jobs would also vary as the construction proceeds. Well and transmission line construction jobs would be temporary. Due to the variation in jobs available at different stages in construction, average employment would vary at any one time.

Expenditures for equipment, materials, fuel, lodging, food, and other needs would stimulate the local economy for the duration. The level of these impacts would vary depending on the size of the project and the socioeconomic conditions of the local community. Some of the secondary impacts would occur in the local communities in which geothermal development occurs, while others would occur at a regional or national level.

Some economic impacts could occur should income and employment associated with ranching, recreation, hunting, mining, or other land use activities be altered by geothermal development. Constructing geothermal facilities would alter the landscape and nonmarket values of the immediate area; however, the extent of impact would vary with each project. In the short term, other land uses and income derived from these uses could be displaced by geothermal development. In the long term, many other land uses could be compatible with geothermal use due to the small footprint of geothermal plants; however, aesthetic values would be permanently altered.

Another possible impact would be to broaden the economic base of the communities within the region of influence of geothermal development. This impact is particularly relevant in rural communities where employment sectors have typically been limited and unemployment rates are high.

The operations phase typically lasts for several decades. During operations, jobs would continue to be available, but they would be fewer than during construction. The operation of power plants may require the in-migration of workers for certain occupational categories. The population growth and need for additional infrastructure in a community would depend on specific projects and communities. However, impacts would generally be less than those seen during the initial construction of the drilling operations phase, where a greater number of workers would be required.

Reclamation activities include abandoning the well after production ceases and reclaiming all disturbed areas. All disturbed lands would be reclaimed in accordance with BLM standards. The closeout phase would likely involve

additional construction jobs for reclaiming disturbed areas. As in other phases, expenditures for equipment, materials, fuel, lodging, food, and other needs would stimulate the local economy. BMPs would be used to minimize dust, noise, and other disturbance next to communities so that potential effects on nonmarket values would be avoided. Reclamation could increase aesthetic values and bring back income to local industry that supports use of that land for recreation and other uses.

Restrictions applied to mining operations, energy development, and commercial recreation could increase operational costs or preclude development to protect WSAs. These increased costs would result in lower incomes for these operations and potential reductions in expenditures within local economies; however, protecting the resources for which the WSAs were designated also would protect their values for visitors and area residents, which could exceed the reduction in incomes and expenditures.

Withdrawal from mineral entry would be petitioned and could occur for portions of ACECs with mineral potential. Under all alternatives, is not likely that the change in population that would result from changes in energy and mineral sector employment would result in a significant overall population change. In addition, the housing vacancy rate in the planning area (18.9 percent average) would likely accommodate any changes in housing demand resulting from population changes due to energy development. However, concentrated development could impact community economy or social structure at the local level. These impacts are based on current conditions and available technology in the energy market. Actual activity in renewable energy or mining sectors cannot be projected, so these estimates may not be an accurate portrayal of actual impacts. In addition, changes in population, housing markets, or other community factors could alter impacts on housing availability and affordability at the local level.

Crushed stone and sand and gravel removal by county and state governments is authorized under free use permits, meaning that the BLM receives no revenues or lease fees. No fees are collected from the removal of salable and locatable minerals; however, royalties from coal and oil and gas production are distributed back to local governments and represent an important BLM-associated income stream in planning area counties. Impracticalities exist in predicting actual levels of production, market prices, and the resulting royalties paid. This makes it difficult to accurately assess the resulting input from these fees into the local economy.

State-wide livestock grazing represents an important economic sector. Direct contributions from BLM-administered lands in 2012 were $939 million, and total contributions (direct, indirect, and induced) were estimated at $1.342 billion (BLM 2012j). Locally, agriculture represents approximately one percent of jobs in the planning area counties, based on 2010 numbers (Headwater Economics

2012). These numbers include all agricultural activity, including farming and ranching on private and BLM-administered lands.

BLM-administered land available for livestock grazing represents an important component of the grazing for local ranchers. The level of permitted grazing (as measured by AUMs) affects the number of jobs and level of income related to grazing in the planning area. In addition, should management actions reduce or eliminate grazing, permittees would likely need to locate alternative sources of forage. The cost of replacing BLM-administered lands with private grazing lands can be estimated. In 2012, the average fee per AUM on private lands was $13.00 in Nevada and $17.30 in California, as compared with the federal grazing fee of $1.35 per AUM (BLM 2012j).

The permitted level of AUMs may not be an accurate portrayal of actual impacts. Factors such as drought, financial limitations on operators, market conditions, and the implementation of grazing practices designed to improve range conditions are important to consider. Also, impacts may not be evenly distributed across all portions of the planning area. Should permitted AUMs be reduced in allotments that were not billing at full capacity, then economic impacts associated with that particular allotment and permittee could be minimal.

In addition, management actions that impact the ability of permittees to access allotments, restrict management practices, or change grazing schedules may impact operational costs for permittees. Resting burned areas from livestock grazing would temporarily increase operational costs for ranchers. These costs include finding alternative range to graze or buying hay to feed livestock. Likewise, restrictions on permittees' ability to construct or improve range improvements can limit their ability to effectively distribute livestock and increase operational costs. Economic impacts from these management actions would include changes in tax revenue from livestock sales and in the money spent on supplies.

Public land managed for livestock grazing provides both market values and nonmarket values, including open space and western ranch scenery, which provide value to some residents and outside visitors. In addition, some of the lifestyle value of ranching is likely to be captured in markets (e.g., property values of ranches next to public lands).

Conversion of ranch lands to residential or other uses can impact the economic and social setting of the local area. The sale of these agricultural lands provides financial liquidity to ranchers but it generally results in increased building of fences, houses, and sometimes other structures (e.g., barns), changing the visual landscape. Under all alternatives, this trend would be likely to continue because it is fundamentally related to the nature of the ranching business (profit margins are generally low and can turn negative in drought or other adverse conditions, and for most ranchers, their primary financial asset is the land itself).

Alternatives that could lead to increased costs for area ranchers could serve to increase this trend.

Nonmarket Values

In addition to market values described above, nonmarket values are important to the well-being of visitors, residents, and others outside the planning area. These values include natural amenities, quality-of-life factors (such as view and open space), recreation opportunities, and ecosystem services. Nonmarket values relate to things that people value but are not generally bought or sold in a marketplace. Nonmarket values are difficult to quantify, and insufficient data exists to assess the impacts of management actions. However, the fact that no monetary value is assigned to these values does not lessen their importance in the decision-making process. Some of the value associated with open space and other features can be captured in markets. For example, the price of a house that overlooks a pristine mountain range might be higher than the price of a house identical in almost every respect but overlooking a cement factory. However, the ability to see an open landscape while driving along a highway is not likely to be captured in the market.

Preservation of rare or unique species and habitats can have a value to residents and society as a whole. The value of these species' existence is known as nonuse valuation. While no studies have specifically investigated the nonuse valuation specific to the Greater Sage-Grouse, a literature search conducted by the Forest Service and the BLM, in coordination with the Nevada Greater Sage-Grouse EIS planning, demonstrated a range of total economic value of protecting habitat for similar species at $14.69 to $58.49 annually per household (BLM 2013d).

Some changes in management could affect both market and nonmarket values. For example, development that substantially alters the visual characteristics of the landscape might, over time, result in fewer tourists visiting the area and spending money in local hotels, restaurants, and shops. This decline in tourism would result in adverse impacts on employment and income. Such development also could reduce the satisfaction of residents who value open space and, therefore, would result in adverse impacts on nonmarket values. Conversely, new development also would generate jobs and income, and the net effect—if all values were to be expressed in the same metric (dollars)—could be positive or negative.

Setting aside certain areas for protection, such as ACECs and other special management (such as managing areas as VRM Class I) would further maintain and perhaps enhance the nonmarket values associated with natural amenities protected on these lands. In particular, wilderness has been correlated with rapid population, income, and employment growth relative to nonwilderness counties. Services jobs are increasingly mobile, and many entrepreneurs locate their businesses in areas with a high quality of life (Lorah and Southwick 2003).

In addition, wilderness has been linked with increased local property values (Phillips 2004). It appears that other special protection areas, such as ACECs, lands managed to protect wilderness characteristics, and VRM Class I areas, could also attract new residents and tourists to the area. This in turn would contribute to area economic activity. In some cases, land protection directly reduces employment growth; however, it has been shown that natural amenities can offset job losses due to increases in net migration (Eichman et al. 2010). Natural amenities and quality of life have been increasingly recognized as important factors in the economic prospects of many rural communities in the West (Rudzitis and Johnson 2000). In addition, nonlabor income is intimately tied to natural amenities. Rural county population change, the development of rural recreation, and retirement destination areas are all related to natural amenities (McGranahan 1999).

Recently, models have been created to assess the economic benefits of ecosystem services so that these economic values can be incorporated into the planning process. A study based in the Pike San Isabel National Forest of Colorado's Front Range determined the total value of ecosystem services to be $2,208 per acre per year in 2008 dollars (Bacigalupi 2010).

Ecosystem services benefits vary across specific habitats and with site-specific conditions; due to the complexity and cost of implementing site-specific nonmarket valuation methods, quantifying these values is beyond the scope of this analysis. However, the BLM recognizes that changes in nonmarket values would be likely as a result of management actions, and the severity of impacts would depend on the level of resource protection and development under each alternative. In general, alternatives that emphasize resource development over conservation likely would result in more impacts on nonmarket values and perceived quality of life in the community.

Social and Economic Conditions: Effects from Air Quality Management

Effects Common to All Alternatives

Management actions under all alternatives would require all projects on BLM-administered lands to comply with national, state, and local standards related to air quality, including those for dust abatement and prescribed burns. This would result in operational costs for development but would minimize air pollution, resulting in improvement of nonmarket values, as discussed under *Nature and Type of Effects*.

Effects under Alternative A

Site-specific limitations on surface-disturbing activities would limit soil disturbance and related air pollution in areas with sensitive soils, preserving these areas for future visitor use and related economic input to the local economy.

Effects under Alternatives B, C, D, and E

Specific dust and particulate control measures, as described under project BMPs (**Appendix B**), could increase operations costs for construction, mining, and renewable energy activities compared to Alternative A. However, such actions would minimize air pollution from these sources, improving air quality and nonmarket values, which in conjunction with other benefits, could help ensure continued visitation in the planning area and continued visitor expenditures in the local economy.

Social and Economic Conditions: Effects from Climate Management

Effects Common to All Alternatives

Climate change could increase the intensity of natural weather patterns and events, such as drought, flooding, and wildfires. Under all alternatives, there may be increased costs for fighting wildfires, managing exotic species, constructing new infrastructure to mitigate flood risks or increase depleted freshwater resources, or restoring sensitive aquatic ecosystems. The costs to respond to these types of changes or events would increase financial stress on local and statewide resources. The costs may be more pronounced in rural areas with smaller tax bases, particularly communities that depend on public land resources for their livelihood, such as ranching communities.

Effects under Alternative A

There are no management actions under Alternative A for climate management, leaving the planning area more vulnerable to impacts that may occur under climate change. While current management practices include management for forests and some exotic species, a lack of preparation for persistent and catastrophic climate events in the future may substantially increase costs for response and relief.

Effects under Alternatives B, C, D, and E

Alternatives B through E would promote planning and management to mitigate the effects of climate change in the future. Putting mitigation in place may help reduce the impacts of persistent and catastrophic climate events in the future, decreasing associated response and relief costs, compared with Alternative A.

Social and Economic Conditions: Effects from Soil Resources

Effects Common to All Alternatives

Under all alternatives, management actions would incorporate BMPs or other mitigation measures for proposed activities on sensitive soils, with the level of protection varying by alternative.

Effects under Alternative A

Alternative A would continue to reduce soil loss and losses in ground cover, as well as limit OHV use in areas of severe erosion hazard susceptibility. These erosion control measures would have a similar effect on those identified under

Nature and Type of Effects, with projects continuing to be built and adding revenue and jobs to local economies.

Effects under Alternative B
Alternative B would apply more restrictive requirements on surface-disturbing projects as detailed in project BMPs (**Appendix B**). These requirements would add additional costs to surface-disturbing projects compared with Alternative A. If the costs of these requirements were high enough, it could reduce the size or prevent the construction of a project. The decrease in size or abandonment of potential projects could limit or prevent revenue and jobs from contributing to local economies.

Effects under Alternative C
Alternative C would be similar to Alternative B but slightly more restrictive, particularly in areas with biological soil crusts. Impacts would be similar to those identified under Alternative B but would increase restrictions on development in specific areas, with the potential for decreased development, jobs, and income.

Effects under Alternative D
Impacts would be similar to those identified in Alternative B.

Effects under Alternative E
Effects under Alternative E would be the same as those identified for Alternative B.

Social and Economic Conditions: Effects from Water Resources

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would delineate at-risk or critical watersheds for special consideration when developing an activity plan. It also would eliminate OHV use in sensitive water resource areas. These management actions would have limited economic impacts on regional or local economics. However, the lack of specific management for these areas could result in degradation of these aquatic ecosystems or sensitive watersheds, impacting nonmarket values like water clarity and vibrant ecosystems for open space.

Effects under Alternative B
To protect public drinking water, Alternative B would prioritize watersheds that include wellhead protection zones. Managing municipal watersheds as recharge areas would allow for population and development growth in communities that depend on water rights and water supplies. Managing priority watersheds for multiple uses and managing wellhead protection zones as avoidance areas could allow continued use of these areas for grazing, recreation, and minerals

development. This would result in continued revenue to local communities, jobs, and tax revenues associated with ranching. It also would increase local expenditures by recreational visitors and employment and expenditures associated with mining operations.

These effects would be realized only to the extent that these multiple uses occur in priority watersheds and wellhead protection zones. Alternative B also would foster economic growth and development, which would benefit employment and incomes in the planning area and areas outside of the planning area by allowing water importation and exportation projects.

Effects under Alternative C

Alternative C would prioritize watersheds and any associated endangered species habitat by closing areas to mineral development, implementing surface use stipulations, and prohibiting surface-disturbing activities. This would limit the use of these areas for surface-disturbing activities, including recreation, livestock grazing, mineral extractions, and ROWs.

These restrictions could result in diminished revenue to local communities, jobs, and tax revenues associated with ranching, diminished local expenditures by recreational visitors, and diminished employment and expenditures associated with mining, contingent on the extent of the resources that would be affected.

Alternative C would foster economic growth and development by allowing water importation and exportation projects, while sustaining perennial yield. Management for flood and drought protections would also help prevent catastrophic water situations that could adversely affect agriculture and livestock grazing operations. These effects would be realized only to the extent that these multiple uses occur in identified watersheds under this alternative. Management actions would prioritize water use for wildlife and related habitat as well as water quality for residential populations. This could improve the conditions of nonmarket values, like clean water and vibrant ecosystems for open space.

Effects under Alternative D

Alternative D would prioritize watersheds containing municipal water supply within 1,000 feet of municipal well heads. It would accomplish this by restricting areas to mineral development, implementing surface use stipulations, and restricting surface disturbance. Impacts of these restrictions would be as described under Alternative C, but they would be limited to the 1,000-foot radius and therefore would be decreased in intensity.

Effects under Alternative E

Effects under Alternative E would be similar to those under Alternative D.

Social and Economic Conditions: Effects from Vegetation Resources

Effects Common to All Alternatives

Woodlands Management

Under all alternatives, management actions for woodlands likely result in maintenance or improvement of forestry and woodland resources in the long run, benefiting wildlife and the woodland ecosystem, providing opportunities for recreation, wildlife and wild horse and burro viewing, and harvest of products to varying degrees depending on alternative.

Rangeland Management

All alternatives provide for grazing on rangeland, with varying levels of permitted use. The continued availability of rangeland for grazing would maintain ranchers' contributions to the local economy through expenditures on equipment, supplies, and services and employment. In addition, continued grazing would maintain the social environment of the rural population. Implementing mitigation measures and ESR treatments may temporarily close areas to certain uses, such as livestock grazing and recreation, which would have short-term economic impacts.

Riparian and Wetlands Management

Under all alternatives, management actions that preserve the continued health of wetland and riparian areas would continue to provide a nonmarket benefit by continuing to make habitat available for biological diversity and consequent wildlife and wild horse and burro watching, as well as providing ecosystem services, as discussed under *Nature and Type of Effects*.

Invasive Species

Under all alternatives, management actions controlling the spread of noxious weeds would promote land health, including preservation of habitat for native species with potential benefits for visitors interested in wildlife and wild horse and burro viewing and recreation in a natural setting. In addition, control of invasive species would provide for improved forage conditions for livestock grazing with potential for improved livestock health and increased market prices for permittees.

Effects under Alternative A

Forestry and Woodland Management

Alternative A would preserve the stand of white pines for visitors and would provide related economic impacts from visitor spending.

Rangeland Management

Alternative A would emphasize maintenance of rangeland health standards, providing forage for livestock grazing permittees and in the long term supporting economic activity from livestock grazing.

Restoration

Lack of management actions for restoration would limit costs for grazing operations but would not improve land health and related economic benefits in the long term.

Riparian and Wetlands Management

Lack of specific management actions for riparian and wetlands management may degrade habitat in the long term and would not support habitat improvement for visitor, wild horse and burros and wildlife use, and related economic benefits. In addition, degradation of riparian areas in the long term would reduce nonmarket benefits of ecosystem services, as described under *Nature and Type of Effects*.

Invasive Species

Under Alternative A, treatment priority would be based on resources at risk and on reducing economic impacts in these areas first. Lack of specific guidance for other components of the invasive species program in the RMP may result in varying degrees of protection, levels of impact, and related economic effects throughout the planning area.

Effects under Alternative B

Forest and Woodlands

Under Alternative B, thinning of pinyon-juniper woodlands would promote healthy woodlands in the long term, with an emphasis on providing a source of material for personal harvest, commercial use, and biomass. As a result, local community members would have access to an inexpensive fuel wood source and local business would have economic opportunities.

Rangeland Management

Under Alternative B, resting burned areas of rangeland vegetation from grazing for two growing seasons could increase costs to ranchers and reduce income for permittees. This would apply to the extent that these reductions would require permittees to lease additional private land, purchase additional forage, or reduce livestock numbers over the long term. These impacts on ranchers could affect local communities that depend on tax revenue from livestock sales, jobs, and supply purchases. These effects would be short term until burned areas were open again to grazing.

Restoration

Under Alternative B, actions to promote selection of appropriate material may support improvement of restoration treatments, resulting in minimal restrictions and related costs to permittees and other land users, but with potential for improved land health in the long term.

Riparian and Wetlands Management

Alternative B would emphasize achievement of PFC for 75 percent of riparian area. Achieving PFC could increase operational costs and restrict uses. The local economy and social values could be affected if a reduction in the area or type of recreation resulted in a decrease in visitors or in a locally valued recreation type, such as OHV use. If road closures or route relocations inhibited access to minerals and mining, costs to these operations could increase. These costs could be passed along to the local economy in terms of decreased employment or income. In the long term, achieving PFC would support nonmarket benefits of the riparian and wetlands ecosystem, as discussed under *Nature and Type of Effects*.

Invasive Species

Under Alternative B, actions to control weed spread from land use activities, such as ROW development, mineral material extraction, and other surface-disturbing activities, would limit the degradation of native habitats and related market and nonmarket economic costs. Regulations could result in some additional costs to operators.

Effects under Alternative C

Forest and Woodlands

Alternative C would provide the most protective measures for woodland habitat. Measures restricting commercial harvest would limit economic opportunities from woodland products. In addition, measures restricting livestock grazing could increase costs to permittees should livestock relocation or changes in grazing practices be required. However, habitat improvement should benefit woodland habitat in the long term for wildlife and wild horse and burro viewing and recreation.

Rangeland Management

Under Alternative C, the emphasis on restoration of habitat for native species could result in some limitations on resource uses, with economic costs for the local economy. The effects of resting burned areas would be as described under Alternative B; however, the likely increase in exclusion could require permittees to lease additional private land, purchase additional forage, or reduce livestock numbers over the longer resting period.

Restoration

Restoration, including ESR, would promote long-term improvement of land health, which also could improve the health of grazing livestock. Improved livestock health could reduce costs to ranchers for maintaining livestock and could increase their sale price. Restoration, including exclusion of grazing from site-specific areas, would increase operational costs for commercial users to control weeds. These costs could reduce the amount of goods and services

purchased; the level of impact would depend on site-specific ecological conditions.

Riparian and Wetlands Management

Alternative C would have impacts similar to those discussed under Alternative B, but increased limitations on economic activities would be more likely to affect ranching costs, recreation, and mining as a result of higher PFC objectives. This could diminish revenue to local communities and lower tax revenues associated with these operations. However, Alternative C would provide greater protection to riparian and wetlands areas, the preservation of which would benefit society, as described above under *Nature and Type of Effects*.

Invasive Species and Noxious Weeds

Under Alternative C, regulations would be in place to limit weed spread from surface disturbance, with impacts as discussed under Alternative B. An emphasis on public education and use of native species may further increase costs for operators but would also improve habitat in the long term, with related nonmarket benefits, as discussed under *Nature and Type of Effects*

Effects under Alternative D

Forest and Woodlands

Under Alternative D, forest and woodlands management would allow product extraction for commercial and personal use. As a result, local residents and businesses would have some economic opportunities for harvest, however at a reduced scale compared to Alternative B. As discussed under Alternative C, vegetation treatments may maintain or improve woodland habitat, preserving the ecosystem for human use wildlife and wild horse and burro preservation with nonmarket benefits.

Rangeland

Under Alternative D, impacts would be similar to those described under Alternative B. However, management actions would emphasize the restoration of habitat for native species, assisting with preservation and resulting in nonmarket benefits.

Restoration

Under Alternative D, impacts would be similar to those described under Alternative C.

Riparian and Wetlands

Under Alternative D, impacts would be similar to those described under Alternative C, with a goal of 85 percent PFC. Some level of disturbing activities in riparian areas would be permitted as under Alternative B, reducing the level of impacts on recreation and travel access and related economic activities.

Invasive Species and Noxious Weeds

Under Alternative D, impacts would be similar to those described under Alternative B, with an emphasis on treatments in the urban interface zone. This would result in a difference in costs for operators, depending on the location in the planning area.

Effects under Alternative E

Forest and Woodland

Impacts under Alternative E would be similar to those described under Alternative D.

Rangeland Management

Alternative D impacts would be similar to those described under Alternative B, but exclusion of livestock could be extended past two years for habitat preservation, with increased impacts on costs for livestock permittees and local businesses supporting livestock operations.

Restoration

Impacts would be similar to those described under Alternative C.

Riparian and Wetlands Management

Impacts would be similar to those described under Alternative D.

Invasive Species

Impacts would be similar to those described under Alternative B.

Social and Economic Conditions: Effects from Fish and Wildlife Management

Effects Common to All Alternatives

Protecting fish and wildlife would involve use restrictions and implementation of mitigation measures and BMPs under all alternatives. This could affect the economic contribution of grazing, minerals operations, recreation, or renewable energy development, depending on the alternative, the types of restrictions, and the extent of the restrictions.

Effects under Alternative A

Under Alternative A, managing wildlife habitat to provide big game populations would foster continued economic growth from recreation and hunting.

Effects under Alternative B

Under Alternative B, disturbance of important big game habitat, such as lambing and calving areas and winter range, would be mitigated, improving habitat conditions for wildlife and enhancing hunting and wildlife viewing. Restrictions would, however, also reduce economic activity from surface-disturbing land uses compared to Alternative A. Limitations on development to protect

migratory birds and raptors and related impacts on economic activity would also occur for migratory birds and raptors. Protective measures for bats would limit recreation in some caves, having a minor economic impact.

Effects under Alternative C

Alternative C would be the most protective for wildlife habitat of all alternatives. Restrictions on development and land use would be similar to those described under Alternative B but would include additional limitations on use. Disturbance from land use authorizations would be prohibited in sensitive habitat locations for important wildlife areas.

Preservation of habitat would provide enhanced habitat for fish and wildlife and could result in enhanced opportunities for hunting and fishing, increasing spending for these activities in the local area. However, restrictions on surface disturbance and use under Alternative C would affect the economic output from mineral development, lands, and realty actions. In addition, restrictions on livestock grazing and limitations on domestic sheep grazing would impact economic contributions to the local economy from livestock grazing.

Effects under Alternative D

Under Alternative D, protective measures for sensitive wildlife habitat would emphasize preservation of habitat for wildlife in the urban interface zone, with mitigation of disturbance in other portions of the planning area. As a result, limits on economic activities and opportunities for enhanced hunting and wildlife viewing would be highest in the urban interface.

Effects under Alternative E

Under Alternative E, timing limitations and other restrictions for wildlife protection would be similar to those described under Alternative C, with some exceptions allowed for development. Impacts would be similar to those described under Alternative C.

Social and Economic Conditions: Effects from Special Status Species Management

Effects Common to All Alternatives

All alternatives would impose restrictions to protect special status species, which could inhibit livestock grazing, mining, recreation, and renewable energy development. These restrictions could increase the costs of operations, decrease the incomes of operators, discourage some recreationists, and decrease expenditures within the local economy. Avoiding the listing of species as threatened and endangered by implementing management actions designed to prevent listing would impose fewer restrictions on ranching, mining, recreation, and renewable energy activities, which otherwise could be curtailed to protect threatened and endangered species. Protecting threatened and endangered species also could increase operational costs for these uses. Therefore, avoiding listing would allow for the continued economic contribution of these activities

without the associated costs of additional protection measures. Protecting special status species would also benefit biodiversity, which would provide nonmarket benefits, as described under *Nature and Type of Effects.*

Effects under Alternative A

Under Alternative A, management actions would support reintroduction of Lahontan cutthroat trout, bighorn sheep, and other endemic species into suitable, potential, and historic habit, providing enhanced nonmarket benefits from preservation of these species. Restricting activities that might disturb Greater Sage-Grouse between February 15 and May 15 would result in some limited restrictions on development and an associated reduction in economic activity.

Effects under Alternative B

Under Alternative B, restrictions in place to protect Carson wandering skipper habitat would have minimal impact on economic activities due to the small area excluded from development. Nonmarket benefits of preservation of the species could occur, as discussed under *Nature and Type of Effects*.

Management actions to protect Greater Sage-Grouse would include vegetation treatments to enhance habitat and restrictions on surface-disturbing activities within 0.6 mile of important habitat areas, as well as ROW avoidance and CSU stipulations for PPMAs. Impacts would occur throughout the planning area but would be highest for communities near PPMAs.

As discussed under *Nature and Type of Effects*, such restrictions would impose limitations on mineral, renewable energy, and ROW development. If ROW restrictions discourage energy development, the potential for economic growth based on this industry also could be limited, depending on whether the restrictions would occur in areas of high potential. Due to the unpredictability of energy and mineral development, exact costs of stipulations cannot be determined. Stipulations and other limitations would increase costs for developers; increased costs could reduce earnings and decrease expenditures within the overall economy, affecting economic growth, income, and employment.

Under Alternative B, time of year and time of day restrictions on travel could restrict some recreation in PPMAs. A reduction in visitor use could impact the local economies that depend on visitors and tourists to visit the area and spend money on lodging, food, fuel, and other services.

As discussed under *Nature and Type of Effects*, preservation of the Greater Sage-Grouse has nonmarket values. In addition, implementing management actions that would avoid listing species as threatened and endangered would reduce future costs, as described under *Effects Common to All Alternatives*.

Effects under Alternative C

Under Alternative C, management actions would impose restrictions on development for a large portion of the planning area. Restrictions include prohibiting fluid mineral leasing on 2,081,700 acres and establishing a ROW exclusion area in PPMAs. Impacts would be as described under *Nature and Type of Effects* and under Alternative B, but at an increased scale, with likely impacts on local communities and the region, with level of intensity dependent on the market prices for renewable energy and locatable minerals that would not be developed under this alternative.

Travel restrictions would be of the same nature as described under Alternative B; however, they would include timing limitations on all motorized and mechanized travel. This would increase impacts on recreation and associated economic activity, compared with Alternative A. In addition, livestock grazing would be eliminated in PPMAs and PGMAs, with impacts on both individual permittees and local business supplying the ranching industry.

Effects under Alternative D

Impacts under Alternative D would be similar to those described under Alternative B; however, ROW avoidance areas would be extended to PPMA and PGMA (a 42 percent increase in acres). Economic impacts from the restrictions on ROW development would be similarly increased. Mineral development would be limited by NSO stipulation. Impacts would be similar to Alternative B, but with increased restrictions on surface disturbance and development and related increase in intensity of economic impacts.

Effects under Alternative E

Impacts under Alternative E would be similar to those described under Alternative B.

Social and Economic Conditions: Effects from Wild Horse and Burro Management

Effects Common to All Alternatives

Under all alternatives the management of wild horses and burros would be supported, preserving this social and historical value. Failure to remove horses or burros when herd populations exceed appropriate management levels (AMLs) could result in conflicts with livestock grazing operations near or in wild horse management areas; permittees may need to adjust management, at increased time or costs. Conversely, management of wild horses and burros for AML would reduce conflicts with livestock operations and would lower operational costs for permittees. Similarly, management for AML would reduce conflicts with wildlife, particularly large game, potentially increasing economic impacts from hunting as well as nonmarket values of wildlife viewing. Overall, impacts on the local economy would likely be minimal under all alternatives.

Effects under Alternative A

Maintaining AMLs through removing excess animals and using contraceptives should prevent an increase in conflicts with livestock and wildlife and maintain current operational costs for permittees.

Effects under Alternatives B, C, D, and E

Under Alternatives B through E, HMAs would be evaluated in Rangeland Health Evaluation or Herd Management Area Plans. A carrying capacity analysis would be completed and AMLs could be adjusted based on site-specific conditions and to meet Standards and Guidelines for Rangeland Health. Improving land health and reducing potential conflicts between wild horses and burros and livestock by adjusting AMLs could improve livestock health, potentially lower operations costs, and result in higher livestock sales prices for ranchers. In addition, adjusting AMLs would reduce conflicts with wildlife, increasing market and nonmarket benefits.

Social and Economic Conditions: Effects from Wildland Fire Ecology and Management

Effects Common to All Alternatives

Under all alternatives, wildland fire management would actively reduce fuels across the CCD, reducing the risk of catastrophic wildland fires. These types of protections could protect public infrastructure and private buildings from wildfire, ensuring continued employment and productivity, reducing public funds spent on fighting wildfires, and producing other indirect economic benefits. If catastrophic wildfires were prevented, this could also allow continued recreation, prevent air quality degradation, and improve nonmarket values across the region.

Effects under Alternative A

Alternative A would allow for rehabilitation activities after a wildland fire. These could stabilize soils, establish hydrologic function, enhance biological integrity, limit the establishment of invasive plants, and reestablish native species. All of these play a role in enhancing natural ecosystems, strengthening nonmarket values, and improving the health of the land, providing long-term economic benefits for ranching, for wildlife habitat for hunting and viewing, and for wild horse and burro habitat viewing. Implementing wildland fire protection plans would protect the economic base of communities.

Effects under Alternatives B, C, D, and E

Alternatives B through E would be the same as Alternative A, with the exception that emergency stabilization and burned area rehabilitation projects would be prioritized, as outlined in **Table 2-1.** Management actions would also include developing wildland prevention education programs. The effects would be the same as those identified under Alternative A.

Social and Economic Conditions: Effects from Cultural Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage one ACEC for the protection of cultural resources, would pursue withdrawal of locatable minerals from three cultural and recreation sites, and would promote interpretation and visitation at five locations. These limited management actions would not have a large impact on the regional or local economy. Due to a lack of protection, visitor or commercial use might degrade cultural resources over time, damaging nonmarket values, such as cultural appreciation.

Effects under Alternative B
Alternative B would provide a moderate level of additional protection for cultural resources as compared to Alternative A. This alternative would protect certain sensitive cultural resources, by imposing small ROW avoidance areas, prohibiting surface-disturbing activities and visual intrusion, requiring CSU for fluid minerals, and managing eight ACECs to protect cultural resources. These protections would limit some minerals development and could increase some operations costs. But they would still allow for economic gains in the regional and local communities, including increased expenditures, income, and employment. To a limited extent, interpretive and educational signs would be constructed, potentially attracting more visitors to the area and increasing related spending in local economies. Nonmarket values, such as cultural appreciation, could moderately increase over time due to a moderate protection of cultural resources.

Effects under Alternative C
Alternative C would provide a high level of additional protections for cultural resources compared to Alternative A. This alternative would include large ROW avoidance areas and ROW exclusion areas around sensitive resources, prohibiting surface-disturbing activities and visual intrusion, requiring NSO for fluid minerals, closing areas to mineral material disposal, and managing nine ACECs for the protection of cultural resources. Prohibiting fluid and solid minerals surface occupancy and mineral material disposal to protect cultural resources could limit economic development. This would be based on mineral operations, increased operations costs, and reduced expenditures, income, and employment. Education and interpretation in high cultural site density areas would attract more visitors to the area and would increase related spending in local economies. Nonmarket values, such as cultural appreciation, would increase over time due to the high levels of protection for cultural resources.

Effects under Alternative D
Management actions under Alternative D would be similar to those under Alternative B, except that only six ACECs would be managed for the protection of cultural resources. The effects would be the same as those identified under Alternative B.

Effects under Alternative E
Alternative E would provide a high level of additional protections compared to Alternative A. This alternative would entail the following:

- Require ROW avoidance areas
- Prohibit surface-disturbing activities and visual intrusion
- Require NSO for fluid minerals
- Manage three ACECs for the protection of cultural resources
- Restrict the Virginia City National Historic Landmark District from minerals and wind energy development
- Designate the Wyemaha Archaeological District for the protection of cultural resources

Prohibiting fluid and solid minerals surface occupancy and mineral material disposal to protect cultural resources could result in the following:

- Limit economic development based on mineral operations
- Increase operations costs
- Reduce expenditures, income, and employment in some areas surrounding the Virginia City National Historic District and the Wyemaha Archaeological District

Other areas would still benefit from the economic gains of multiple use areas. Education and interpretation in high cultural site density areas would attract more visitors to the area and increase related spending in local economies. Nonmarket values, such as cultural appreciation, would increase over time due to the high levels of protections for cultural resources and improved visitor experience.

Social and Economic Conditions: Effects from Paleontological Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage one ACEC for the protection of paleontological resources and implement a broad management action for the protection and

preservation of paleontological resources. This would have minimal socioeconomic impacts on local communities.

Effects under Alternatives B, C, D, and E
Alternatives B through E would manage one or two ACECs for the protection of paleontological resources and would require mitigation measures to be developed or field inventories to be conducted to protect known and high potential paleontological resources. This may require ground-disturbing project operators to spend more money on conducting inventories and implementing such measures; however, it would most likely translate into increased expenditures in local communities. The economic impacts would be minimal.

Social and Economic Conditions: Effects from Visual Resources Management

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage 706,300 acres as VRM Class III and IV, the most restrictive classes. Compared to the availability of VRM Class I and II lands, the costs to commercial operations would be relatively low and would have minimal socioeconomic impacts on local communities.

Effects under Alternative B
Alternative B would manage 620,900 acres as VRM Class I and II. Operational costs under Alternative B could be slightly higher due to the small increase of these lands compared to Alternative A. However, Alternative B would preserve views over a greater area, which could be more valuable to the public over the long term, including both the local population and visitors to the CCD, than the negative effects of increased commercial operations costs.

Effects under Alternative C
Alternative C would manage 1.7 million acres as VRM Class I and II. Operational costs under Alternative C could be substantially higher compared to Alternative A. This is because more lands would be managed under these classes. Projects conducted in these areas would have more restrictions and would incur higher operation costs. However, Alternative C would preserve views over a greater area, which could be more valuable to the public, including both the local population and visitors to the CCD, than the negative effects of increased commercial operations costs.

Effects under Alternative D
Alternative D would manage 630,500 acres as VRM Class I and II. Effects would be similar to those identified under Alternative B.

Effects under Alternative E
Alternative E would manage 1,077,700 acres as VRM Class I and II. Effects would be similar to but slightly greater than those identified under Alternative B.

Social and Economic Conditions: Effects from Caves and Cave Resources Management

Effects Common to All Alternatives
Implementing law enforcement patrols and mitigation measures to protect caves and cave resources would vary based on site-specific situations. Avoiding caves and cave resources may increase costs to ROW holders, including mining and energy operations. Preservation of this resource would provide nonmarket values such as open space and functioning ecosystems.

Effects under Alternative A
Management actions under Alternative A would have a similar effect on those identified under *Effects Common to All Alternatives.* The costs identified would have a minimal impact on the local economy.

Effects under Alternative B
Alternative B would restrict surface-disturbing activities near Dynamite Cave and Hidden Cave by implementing a 0.25-mile ROW avoidance buffer, closing the area to mineral materials disposals, and applying a CSU for fluid minerals within 500 feet of the caves. This would limit the flexibility of some surface-disturbing activities and could increase operational costs to protect these resources compared with Alternative A. However, since these actions cover a very small area surrounding only these two caves, it is not likely that there would be a significant economic impact.

Alternative B increases education and outreach efforts at these caves, potentially attracting visitors to the area and increasing outside spending in local communities.

Effects under Alternative C
Alternative C would restrict surface-disturbing activities near Dynamite Cave and Hidden Cave by implementing a 0.5-mile ROW exclusion buffer, closing the area to mineral materials disposal and fluid minerals leasing, recommending the area for withdrawal from locatable mineral entry, and restricting motorized travel within 500 feet of the cave. This would prevent or severely limit the flexibility of some surface-disturbing activities and could increase operational costs to protect these resources compared with Alternative A. Depending on the mineral or renewable energy resources in the area, this could have a noticeable impact on energy development in the area. However, Alternative C would provide the greatest area of protection for these caves, which could also provide the maximum realization of the nonmarket values of this resource.

Alternative C also increases education and outreach efforts at these caves, potentially attracting visitors to the area and increasing outside spending in local communities.

Effects under Alternative D
Effects under Alternative D would be the same as those identified under Alternative B.

Effects under Alternative E
Effects under Alternative E would be the same as those identified under Alternative C.

Social and Economic Conditions: Effects from Forestry and Woodland Product Management

Effects Common to All Alternatives
None of the alternatives would have measurable socioeconomic impacts on employment or income because the amount of forest land within the planning area, and the associated economic activity, is relatively small. Under all alternatives some degree of public harvest of woodland products, such as firewood and posts and poles, would be permitted.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Social and Economic Conditions: Effects from Livestock Grazing Management

Effects Common to All Alternatives
Livestock grazing on public lands would continue under all alternatives, ensuring that tax revenues from livestock sales, jobs, income, and ranching-related expenditures in the local economy would continue and that livestock grazing receipts would be returned to counties. In addition, the social setting of the rural ranching lifestyle would be maintained under all alternatives.

Effects under Alternative A

Under Alterative A, the current level of 4,796,600 acres available to grazing and 151,200 acres of permitted AUMS would be retained, preserving the current level of economic input to the local economy. Not providing forage banks would provide no alternative source of forage for permittees impacted by fire or drought. This could increase costs for permittees. Year-round grazing would provide management options for permittees and would reduce operational costs; however, it could contribute to the failure of allotments to meet land health standards and therefore increase long-term management costs. Should allotments fail to meet land health standards, nonmarket values, such as vegetation conditions and forage for wildlife, wild horses, and burros, would be impacted, which indirectly impacts recreation, hunting, and wildlife viewing.

Effects under Alternative B

Alternative B would keep approximately 4,797,200 acres available to livestock grazing and 151,200 permitted AUMS, this would have minimal economic impact on permittees and the local economy. Allowing continuous grazing and fewer restrictions on structural range improvements would limit operational costs for permittees. The potential for prescriptive grazing is not likely to result in substantial economic effects on permittees due to the sporadic timing and limited basis of use. The potential use of vacant allotments as forage banks could decrease costs to permittees in emergency situations compared to Alternative A.

Effects under Alternative C

Alternative C would include an approximate 73 percent decrease in permitted AUMs (40,700) compared to Alternative A and would reduce the acres available grazing to 2,101,300 acres. Additional restrictions on grazing management, including temporary closure of allotments in emergency situations, restrictions on year-round grazing, and discontinuation of grazing in allotments with a decrease in ecological function, may increase operational costs or further reduce AUMs. Reducing levels of permitted grazing would affect individual ranchers, the local economy, and the social values of the local area. Costs to ranchers to provide forage for cattle would increase. This could lower ranchers' incomes because they would have to find other sources of forage, such as purchasing additional hay or grazing land to equal the AUMs required for the livestock currently using public lands. Ranching incomes would be reduced and consequently the purchase of local services and supplies would be reduced.

Although ranchers must hold private grazing lands in order to obtain grazing permits on BLM lands, the loss of federal grazing permits could still affect their incomes and viability, depending on ranch size and the role that ranching plays as a source of income for the individual rancher. Although the reliance of ranchers on forage from federal land grazing can be relatively small when calculated on an acreage or AUM basis, grazing on federal lands can be an important source of forage, based on seasonal needs. Seasonal forage availability

affects the optimal use of other forages and resources when federal AUMs are not available.

Potential reductions in income and net ranch returns can be greater than the direct economic loss from reductions in federal grazing. Reducing public grazing may also increase the rate of agricultural land conversion. As discussed under *Nature and Type of Effects*, a reduction in the level of ranching could affect the social value attached to this way of life. Ranch lands provide a traditional source of income, habitat for wildlife, and open spaces that are valued for wildlife watching and the preservation of naturalness. These characteristics are particularly important when population and development pressures convert agricultural land and reduce open space.

Effects under Alternative D

Alternative D would keep approximately 4,792,600 acres available to livestock grazing (less than 1 percent change from Alternative A) and 150,800 permitted AUMS (less than 1 percent change from Alternative A), with minimal direct impact on the local economy. As discussed under Alternative C, temporary closure of allotments in emergency situations, restrictions on year-round grazing, and discontinuation of grazing in allotments with decreased ecological function could increase operational costs or further reduce AUMs, with some reduction in local tax revenues and expenditures. Under Alternative D, the BLM would not make grazing available in urban areas that are not compatible with grazing; this action could result in disproportionate economic impacts on grazing operations in the urban corridor.

Effects under Alternative E

Impacts under Alternative E would be similar to those discussed under Alternative B, except that periodic review and adjustment would be as described under Alternative D and temporary closure may occur, with impacts as described under Alternatives C and D.

Social and Economic Conditions: Effects from Geology and Mineral Management

Effects Common to All Alternatives

There are no effects common to all alternatives.

Fluid Minerals

According to the Mineral Potential Assessment Report for the CCD, there is low or no potential for commercial development of oil shale, coal, and oil and gas (BLM 2013f). These have not been significant economic drivers in the past and are anticipated to have an insignificant economic impact on the planning area in the future. Geothermal resources, however, are extremely active in the area, creating a booming marking in the planning area. Since this is the major driver in regional and local economies, only impacts from geothermal energy management are discussed in this analysis.

Locatable Minerals

Historically, Nevada has been a major producer of gold and silver and still maintains a high potential for development for both minerals. Although gold and silver mining in the planning area has declined despite a rapid rise in commodity prices in recent years, it is likely that additional deposits will be discovered, especially in areas that are difficult to assess because they are buried under basin fill deposits. Furthermore, gold and silver can be important secondary minerals in some areas, contributing significantly to the economic viability of mining, even if they are not the primary target. There is also high potential for copper, iron, lead/zinc, tungsten, gemstones, magnesium compounds, barite, fluorspar, gypsum/anhydrite, carbonate, and diatomite in the planning area (BLM 2013f).

If new mining operations are created, there would be increased economic development on the regional and local levels, including increased direct and indirect employment; increased expenditures at local businesses for materials, services, food, and fuel; increased demand for local services; and an increase in tax revenues to all levels of government.

Mineral Materials (Salable)

Crushed aggregate, sand, and gravel operations are expected to continue to be developed across the planning area. These minerals tend to have a low unit value, limiting their impact on the regional economy. However, permits for these types of resources can be obtained through free use permits (mostly for county or state use) or through purchasing a lease for commercial uses for a nominal fee. Affordable access to mineral materials could contribute to keeping costs down for local and state transportation projects and private commercial projects, indirectly contributing to the availability of jobs, expenditures in local communities, and tax revenues.

Nonenergy Leasable Minerals

According to the mineral potential assessment report for the CCD, there is low or no potential for commercial development of phosphate, natural asphalt, or sulfur. Potash and sodium have a high potential in the planning area, but there are no current mining operations for potash. Twelve areas are developing sodium resources, but sodium is considered a small component of leasable resources (BLM 2013f). Nonenergy leasable minerals have not been significant economic drivers in the past and are anticipated to have an insignificant economic impact on the planning area in the future. As such, they will not be discussed in the analysis below.

Effects under Alternative A

Fluid Minerals

Alternative A would close 839,100 acres to geothermal leasing. Most of the viable geothermal resources have been developed already, leaving only a few left

that are economically viable. These closures would not affect the remaining viable areas.

Locatable Minerals

Alternative A would maintain the withdrawal of 194,900 acres of federal mineral estate from locatable mineral entry. Alternative A would also replace pre-FLPMA Classification and Multiple Use Act segregations with FLPMA withdrawals which would result in withdrawing 3,700 acres of currently segregated lands from locatable mineral entry. If viable deposits were found under these lands, these restrictions could limit economic development on the regional and local levels.

Mineral Materials (Salable)

Alternative A would close 564,200 acres to mineral material disposal. This could limit the potential for economic benefit and development based on mineral materials, as well as the availability to governmental and commercial projects.

Effects under Alternative B

Fluid Minerals

Alternative B would close 768,500 acres (approximately 8 percent less than Alternative A) to geothermal leasing and apply NSO stipulations to 404,600 acres. As discussed under Alternative A, most of the viable geothermal resources have been developed already, leaving only a few left economically viable resources. These closures would not affect the remaining viable areas. If NSO stipulations applied under Alternative B prohibitively increase costs of development, economic contributions to the local economy from development of geothermal resources, such as employment opportunities, increased expenditures, and revenues from taxes and federal mineral royalties could decrease.

Locatable Minerals

Alternative B would close 187,100 acres to mineral entry and pursue withdrawal of locatable minerals from 439,600 acres. Effects would be similar in nature to those identified under Alternative A. However, since more acres would be pursued for withdrawal, the effects would be greater.

Mineral Materials (Salable)

Alternative B would close 807,200 acres to mineral material disposal. The effects would be the same as those identified under Alternative A.

Effects under Alternative C

Fluid Minerals

Alternative C would close 2,081,700 acres to geothermal leasing and would apply NSO stipulations to 1,039,200 acres. If the additional areas closed were within the remaining viable geothermal energy areas, then it could limit or

prevent the development of a project. This would prevent important economic contributions to local economies, including employment opportunities, increased expenditures in local communities, and increased tax and federal mineral royalties revenues.

Locatable Minerals

Alternative C would propose for the withdrawal of 117,500 acres from locatable mineral entry, which is more than Alternative A.

Mineral Materials (Salable)

Alternative C would close 3,004,800 acres to mineral material disposal (81 percent more acres closed than under Alternative A). This could severely limit the potential for economic development based on mineral materials, as well as their availability to governmental and commercial projects. If nearby sources of mineral material are not available, the cost of some transportation projects may increase, increasing the amount of economic contribution from the local communities. If costs become too prohibitive, projects could be abandoned and all potential economic gains lost.

Effects under Alternative D

Fluid Minerals

Alternative D would close 737,000 acres to geothermal leasing (approximately 12 percent less than Alternative A) and would apply NSO stipulations to 864,800 acres. The effects would be the same as those identified under Alternative B, but potential for impacts would be increased due to increased acres with NSO stipulations applied.

Locatable Minerals

Alternative D would close 187,100 acres to mineral entry and pursue withdrawal of locatable minerals from 440,800 acres. These effects would be similar to Alternative B.

Mineral Materials (Salable)

Alternative D would close 807,700 acres to mineral material disposal. Effects on local construction and transportation projects would be similar to those identified under Alternative C but at decreased magnitude.

Effects under Alternative E

Fluid Minerals

Alternative E would close 1,007,200 acres to geothermal leasing (an approximate 20 percent increase over Alternative A) and would apply NSO stipulations to 1,151,600. The effects would be similar in nature to those identified under Alternative B but potential for impacts would be increased due to increased acres closed and acres with NSO stipulations applied.

Locatable Minerals

Alternative E would close 187,100 acres to mineral entry and would pursue withdrawal of locatable minerals from 470,600 acres. The effects would be the same as those identified under Alternative C but greater due to the increased acreage withdrawn.

Mineral Materials (Salable)

Alternative E would close 1,778,700 acres to mineral material disposal. Effects would be similar to those identified under Alternative A but to a greater degree.

Social and Economic Conditions: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Under all of the alternatives, recreation visits and permitted activities are expected to increase as local population increases. Employment and income related to recreation, much of which depends on access to BLM-administered lands, would, at a minimum, continue to support communities' quality of life. Changes in recreation levels and activity types could occur as a result of planning actions; however, the role of recreation management and the associated direct and indirect impacts would continue to sustain opportunities important to the area economy and wellbeing under all of the alternatives. All alternatives would provide education and public outreach, which could reinforce social values by improving visitors' connection with CCD lands.

In addition, all alternatives provide for multiple types of dispersed recreation, which would allow for continued inflow of recreation- and tourism-based revenues in the local economy. Such revenues would be derived from expenditures on lodging, dining, recreation equipment, equipment repairs, fuel, and supplies. Differences among alternatives would result primarily from changes in the mix of uses and the acreage available for these uses. For example, restrictions on motorized or mechanized use could reduce expenditures in the local economies by these user groups in the short term; however, expenditures by other user groups could increase as a result.

Effects under Alternative A

Alternative A manages two SRMAs targeting day use and overnight camping containing 67,700 acres and no ERMAs. This would appeal to the portion of visitors who value a more developed recreation experience, but it would offer limited spaces for those kinds of experiences. A diminished visitor experience may prevent repeat visitors and could have a reduced economic impact on local communities and businesses. The lack of ERMAs could also provide a diminished recreation experience and impact nonmarket values of recreation. While backcountry recreationists may visit areas that are outside of RMAs, the experiences could be lacking due to resource conflicts in these areas, potentially

reducing repeat visitors, decreasing the social value of the experience, and preventing visitor spending in local communities.

Under Alternative A, the continued development of motocross tracks and facilities in Lemmon Valley would allow for continued visitation by motorized recreationists. This area is used for motocross recreation and formal races, which are important recreational and social values of the local OHV community, and also provides increased economic activity from the purchase of SRPs or race-day entry fees, fuel, and related equipment.

Effects under Alternative B

Alternative B would have six SRMAs, with two focusing on camping and nonmotorized use and four focusing on OHV and camping use containing 76,100 acres. This would appeal to visitors to CCD lands who are part of the targeted market for each SRMA. Alternative B would enhance recreation in the planning area by providing experience-based opportunities in SRMAs, increasing the number of visitors to the CCD, which would increase expenditures in the local economy. Under Alternative B, the fees collected at the Sand Mountain SRMA would be eliminated, which totaled about $153,000 in 2013 (**Table 3-29**). This reduced funding could have a significant adverse impact on the management, maintenance, solid waste collections, sewage disposal from vault toilets, and enforcement of the SRMA regulations and supplemental rules.

Alternative B would also have eight ERMAs focusing on a mix of backcountry, dispersed, motorized, and nonmotorized uses containing 1,678,300 acres. This would appeal to those who appreciate lower levels of management in their recreation decisions. While the ERMAs would have less of an economic impact than the SRMAs, they would still contribute to the local economy and fulfill the social values of backcountry recreationists, increasing nonmarket values of recreation for those seeking primitive/backcountry experiences.

Under Alternative B, the tracks and facilities at the Lemmon Valley Motocross Area would continue to be operated by the BLM, while the BLM seeks a lessee to operate and maintain the area. While under the management of the BLM, the area would be used for general, commercial, and competitive motorized sports. This would provide increased economic activity from the purchase of SRPs or race-day entry fees, fuel, and related equipment in the local economy. Depending on the management direction of the new lease, visitor experience could be improved or diminished, causing visitor spending in the area to increase or decrease.

Effects under Alternative C

Under Alternative C, there would be three SRMAs, two focusing on camping and nonmotorized use and one focusing on OHV use containing 74,700 acres and 15 ERMAs focusing on a mix of backcountry, dispersed, motorized, and nonmotorized uses, containing 1.52 million acres.

This alternative would have a lot of land devoted to ERMAs, which would appeal to visitors to CCD lands who appreciate lower levels of management in their recreation decisions and would increase nonmarket recreation values for those visitors. However, the moderate amount of SRMAs would make Alternative C less likely to generate economic growth from recreation enhancement, as described under Alternative B. In addition, under Alternative C, management actions for Walker Lake SRMA and all individual ERMAs other than Dry Valley and Pah Rah would prohibit SRPs for competitive events, not allow SRPs for motorized activities, or entirely prohibit SRPs. This may reduce the economic impact from those activities in the local communities.

Under Alternative C, the motocross tracks at Lemmon Valley Motocross Area would be removed and rehabilitated. The closure of this facility would allow for greater rehabilitation of and access to open spaces, but it would decrease the economic benefit from the purchase of SRPs or race-day entry frees, fuel, and related equipment. The loss of the motocross area could also impact the recreational and social values of the local OHV community.

Effects under Alternative D

Alternative D would have four SRMAs, (totaling 67,100 acres) one of which is focused on camping and nonmotorized use and two that are focused on camping and OHV use. It also would have six ERMAs focusing on a mix of backcountry, dispersed, motorized, and nonmotorized uses on 292,600 acres. The effects would be similar to those identified under Alternative C, with the potential for moderate economic growth, as described under Alternative B.

Under Alternative D for the Lemmon Valley Motocross facility, effects would be similar to those identified under Alternative B, except that the lease would be pursued with a county or city entity. This could allow for greater continuity in the management of the area over the long term and a sustained economic and social contribution.

Effects under Alternative E

Alternative E would have six SRMAs, two focusing on camping and nonmotorized use and four focusing on camping and OHV use, for a total of 106,100 acres. It also calls for 15 ERMAs, focusing on a mix of backcountry, dispersed, motorized, and nonmotorized uses on 2.08 million acres, the greatest acreage devoted to such management. These areas would appeal to a wide array of visitors who recreate on CCD lands, creating significant opportunities to generate economic growth. Enhancing recreation in the planning area by providing experience-based opportunities in SRMAs and ERMAs could increase the number of visitors to the CCD, which would increase expenditures in the local economy, increasing income and encouraging the expansion of local business.

Under Alternative E for the Lemmon Valley Motocross facility, effects would be the same as those identified under Alternative D.

Social and Economic Conditions: Effects from Comprehensive Travel and Transportation Management

Effects Common to All Alternatives

Current planning does not include route designation in areas limited to designated routes, so the exact impacts on motorized and mechanized use levels are difficult to predict and are discussed at a qualitative level.

BLM-administered lands would be managed to meet the travel and transportation needs of people engaged in administrative, commercial, agricultural, casual, traditional, and recreational programs in the planning area. Future site-specific travel management planning will consider impacts on level of use and quality of life resulting from changes in access.

Effects under Alternative A

Alternative A would have 38,700 acres closed to motorized travel, 3.84 million acres open to cross-country travel, and 924,300 acres limited to existing or designated routes. Most OHV travel is managed as open under Alternative A, which would provide the greatest area of use for OHV enthusiasts. OHV recreation accounted for 34.2 percent of all activities on CCD lands in 2013 (**Table 3-48**), with almost 300,000 visitor days in 2013 (**Table 3-31**). Hunters use OHV travel to access favorite hunting areas and game, accounting for 8.1 percent of all activities in the planning area and over 70,000 visitor days in 2013. Having more areas open to motorized vehicles would promote OHV use and encourage expenditures by this recreation group and by hunters. These expenditures generate direct and indirect income to local proprietors and residents.

However, the level of open OHV recreation could be limiting the amount of more primitive nonmotorized recreation in the planning area. This group (including such uses as backpacking, camping, picnicking, fishing, environmental education, bicycling, hiking, and winter activities) contributed 54.6 percent of expenditures to the local economy (**Table 3-48**).

Effects under Alternative B

Alternative B would have 34,700 acres closed to motorized travel (six percent reduction from Alternative A), 95,300 acres open to unrestricted travel (97.5 percent reduction from Alternative A), mainly in RMAs or playas, and 4.68 million acres limited to existing or designated routes (400 percent increase over Alterative A). The effects of increasing limits on travel would be similar to that described under Alternative A, but it would be magnified in intensity due to the increase in restrictions.

Effects under Alternative C

Alternative C would have 1.79 million acres closed to motorized travel (over 470 percent increase from Alternative A), 1,300 acres open to unrestricted travel (99.9 percent reduction from Alternative A), and 3.01 million acres

limited to existing or designated routes (225 percent increase from Alternative A). This alternative would provide for the greatest reduction in open designation of all the alternatives. Restrictions on motorized travel could have a significant effect on motorized vehicle use in the planning area, limiting the areas where users can recreate and discourage expenditures in surrounding areas. However, nonmotorized recreationists may increase their use of these lands and their expenditures in local communities. It may also increase nonmarket values, such as solitude, quiet recreation, and improved air quality.

Effects under Alternative D

Alternative D would have 32,200 acres closed to motorized travel (14 percent reduction from Alternative A), 22,700 acres open to unrestricted travel (99 percent reduction from Alternative A), mainly in RMAs or playas, and 4.75 million acres limited to existing or designated routes. This alternative would provide for the highest amount of motorized travel limited to designated or existing routes. While motorized use would be permitted, restrictions on routes would reduce the expenditures for those interested in open area riding.

Effects under Alternative E

Alternative E would have 30,300 acres closed to motorized travel (18 percent reduction from Alternative A), 55,700 acres open to unrestricted travel (99 percent reduction from Alterative A), mainly in RMAs or playas, and 4.72 million acres limited to existing or designated routes. Effects would be similar to those identified under Alternative D.

Social and Economic Conditions: Effects from Lands and Realty

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Alternative A identifies 179,700 acres as suitable for disposal. Development of this land would increase its assessed value, could generate economic growth, and could increase tax revenues to the county. However, a decrease in the amount of public lands could reduce areas available for recreation, and as open space, impacting both market and nonmarket-related benefits of public land use. Under Alternative A, 564,100 acres would be managed as ROW exclusion areas, potentially limiting minerals and energy development in these areas and any associated economic growth.

Effects under Alternative B

Alternative B identifies 273,500 acres as suitable for disposal, 580,000 acres for ROW exclusion, and 1,195,800 acres for ROW avoidance. Effects would be similar to those identified in Alternative A. There is greater potential for increased economic benefit for local communities, as more lands suitable for development could be sold, developed, and taxed. There is also greater potential that projects would need to be moved, limited, or abandoned due to

the increased acres of ROW stipulations, reducing economic inputs to local communities and the regional economy.

Effects under Alternative C

Alternative C identifies no acres suitable for disposal, 2,675,800 acres as ROW exclusion areas, and 369,300 acres as ROW avoidance areas. There would be almost no potential for economic benefit to local communities, as no acres are identified as suitable for disposal. Therefore, no land can be developed, and there would be no associated contribution to the local communities. There is also a greater potential that projects would need to be moved, limited, or abandoned due to the increased acres of ROW stipulations, further reducing economic input to local communities and the regional economy. However, these limitations on development could increase ecosystem function, such as migration corridors for wildlife, increasing the contribution of nonmarket values to the area.

Effects under Alternative D

Alternative D identifies 332,500 acres suitable for disposal, 564,100 acres as ROW exclusion areas, and 1,226,100 acres as ROW avoidance areas. Effects would be similar to those identified under Alternative B.

Effects under Alternative E

Management actions under Alternative E identify 267,200 acres suitable for disposal, 605,900 acres as ROW exclusion areas, and 1,448,200 acres as ROW avoidance areas. Effects would be similar to those identified under Alternative B.

Social and Economic Conditions: Effects from Renewable Energy

Effects Common to All Alternatives

Under all alternatives, economic impacts from solar, wind, and biomass renewable energy sources would continue to be a small part of the regional economy. Since 2003, there have been very few applications for renewable energy projects that completed the exploration and planning phases and went on to be constructed (or are slated for construction). If a utility-scale renewable energy project were to be developed in the planning area, it would bring in temporary construction jobs, permanent operations jobs, expenditures to local business, and increased tax revenues. These types of projects would have a stronger impact on smaller communities in more remote areas, where full-time work opportunities and outside income sources may be difficult to find, than on more developed areas, where job opportunities and economic resources are available from a variety of industries.

According to the reasonably foreseeable development scenario for solar, wind and biomass, it is foreseeable that two utility-scale photo-voltaic solar power plants and two utility-scale wind development projects could be permitted within the next 20 years within the planning area (BLM 2013e). While the solar variance acreage varies between the alternatives, the variances are not expected

to prevent the construction of a solar energy project; instead, they would only impact the location of development.

While ROW exclusion areas included in Alternatives B through E could require more mitigation measures to be put in place than compared to Alternative A, more strict environmental requirements, such as funding and sensitive species habitat, would remain the largest determining factor for the development of wind projects. These requirements would need to be met under all alternatives. It is also foreseeable that two small mobile biomass utilization devices could be developed in the planning area. These would be mobile operations and would most likely tie directly into the grid at fuels treatment sites to offset transportation costs for those projects, which would likely have little impact on regional and local economies.

For effects from geothermal energy development, see *Effects from Geology and Mineral Management*.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Social and Economic Conditions: Effects from Areas of Critical Environmental Concern

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage 21,800 acres as ACECs. This would have a minimal impact on the minerals and energy development in the area, and it is likely there would be minimal socioeconomic impacts.

Effects under Alternative B
Alternative B would manage 371,170 acres as ACECs. This could have a much greater impact on the minerals and energy development in the area than Alternative A, as development may be limited in these areas. Level of impacts

would vary by ACEC, depending on whether any of the desired resources are located in these ACECs and the stipulations associated with the individual ACECs and the site-specific stipulations associated with each ACEC. Local economies could be affected due to reduced expenditures and employment, which could be offset by the protection of the sensitive resources and their associated value to society that are associated with these ACECs.

Effects under Alternative C

Alternative C would manage 786,270 acres as ACECs. This would have a much greater impact on the minerals and energy development in the area than Alternative A, with an increased likelihood that desired mineral resources are contained within or under these ACECs.

Increased operational costs could occur to mineral and energy development to develop mitigation measures. Fluid, salable, and solid mineral and energy development would be precluded because ACECs also are defined as exclusion areas. Increased operational costs could occur to mineral and energy development to develop mitigation measures where some development was permitted. Minimal economic contributions from mineral and energy development would be realized within ACECs under Alternative C. Local economies could be affected due to reduced expenditures and employment, which could be offset by the protection of the sensitive resources and their associated value to society that are associated with these ACECs.

Effects under Alternative D

Alternative D would manage 180,000 acres as ACECs. Effects would be similar to those identified under Alternative B.

Effects under Alternative E

Alternative E would manage 82,770 acres as ACECs. Effects would be similar to those identified under Alternative B.

Social and Economic Conditions: Effects from Back Country Byways

Effects Common to All Alternatives

Back Country Byways would stimulate vehicle travel and backcountry tourism, which would promote the purchase of goods and services by these travelers, benefiting local economies. These effects would increase over time as more retirees visit areas via vehicles.

Effects under Alternative A

Alternative A would result in no unique impacts.

Effects under Alternative B

Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Social and Economic Conditions: Effects from National Trails

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would provide for multiple uses for most areas surrounding national trails and would have a minimal economic effect.

Effects under Alternative B
Management actions for Alternative B would open national trail corridors to mineral material sales and disposals, allowing for continued economic contribution from this industry to the local economy.

Effects under Alternative C
Management actions for Alternative C would close national trail corridors to fluid and nonenergy leasing and mineral material disposals, increasing costs, decreasing earnings for individual mineral and energy development operations, and reducing local expenditures and employment.

Effects under Alternative D
Effects under Alternative D would be the same as those identified under Alternative B.

Effects under Alternative E
Alternative E would close only certain sites and segments of national trails to fluid and nonenergy leasing and mineral material disposals, leaving areas open for continued mineral and energy development. Effects would be similar to Alternative B.

Social and Economic Conditions: Effects from Wild and Scenic Rivers

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
Alternative A would manage three NWSRS-eligible segments according to interim protective measures. This would prohibit development and such uses as

mineral and energy development and ROWs along these segments to protect Outstandingly Remarkable Values, as outlined in Section 1 (b) of the Wild and Scenic Rivers Act.

Implementation of mitigation measures could increase operational expenses, which could reduce local expenditures and other economic benefits; however, protecting these segments of the East Fork of the Carson River would preserve fish habitat, which could benefit fisheries in and downstream of the protected area and scenic recreation values. Improved fisheries could bring in greater fishing visitation, and improved scenic values would benefit and potentially increase use by visitors who enjoy nature-related tourism.

Effects under Alternative B
Alternative B would release three NWSRS-eligible segments from interim protective measures. This would open up these areas to economic development but would fail to protect the nonmarket values described in Alternative A.

Effects under Alternatives C, D, and E
Effects under Alternatives C through E would be the same as those identified under Alternative A.

Social and Economic Conditions: Effects from Wilderness Study Areas

Effects Common to All Alternatives
Based on BLM Manual #6330 Management of Wilderness Study Areas (BLM 2012e) and 3802 regulations, mining operations would incur increased expenses for permits to operate within WSAs to meet the minimal impact criteria. Mining would be limited to claims and leases subject to valid existing rights or grandfathered uses and no new mining or claims would be authorized. Other uses such as energy development could be precluded from development within WSAs. Restrictions also could apply to commercial recreation use since minimum tool restrictions would apply. These impacts would vary based on the nature and scope of required restrictions and mitigation measures. Local economies could be affected due to reduced expenditures and employment.

Effects under Alternative A
Alternative A would result in no unique impacts.

Effects under Alternative B
Alternative B would result in no unique impacts.

Effects under Alternative C
Alternative C would result in no unique impacts.

Effects under Alternative D
Alternative D would result in no unique impacts.

Effects under Alternative E
Alternative E would result in no unique impacts.

Social and Economic Conditions: Effects from Tribal Interests

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There are very few management actions under Alternative A, potentially leaving sensitive religious and cultural tribal properties, places, and objects vulnerable to damage or destruction from recreation or energy and minerals development.

Effects under Alternatives B, C, D, and E
Management actions under Alternatives B through E would provide greater protections than under Alternative A. These include closing areas in the vicinity of known human burial sites to mineral material disposal, fluid mineral leasing, and nonenergy solid mineral leasing. While this could prevent some mineral development in these areas, the impact on the economy would be minimal. The added protections these alternatives provide would greatly enhance the nonmarket values of the local tribes, including the protection of sensitive religious and cultural tribal properties, places, and objects.

Social and Economic Conditions: Effects from Public Health and Safety

Effects Common to All Alternatives
Under all alternatives, management actions would result in the following:

- Minimize potential hazards to public health and safety from hazardous materials, solid waste sites, and illegal dump sites, resulting from visitor use or authorized activities
- Remove or addresses physical hazards that may cause death or major injury
- Provide public information on hazards in the areas, such as scalding hot pools or abandoned mine shafts

Emphasis on public safety would reduce visitor accidents and contribute to visitors continuing to use public lands to recreate and contributing money to the local economy. Requirements for fencing, signing, and other actions to protect public safety could increase the costs of minerals operations and renewable energy development. These effects on local economies from public health and safety management would be minimal.

Effects under Alternative A
The effects under Alternative A would be similar to those identified in *Effects Common to All Alternatives*.

Effects under Alternatives B, C, D, and E
The effects under Alternatives B through E would be similar to those identified in *Effects Common to All Alternatives*, with the addition of protecting the public from unexploded ordnance, but would be greater in magnitude.

Social and Economic Conditions: Effects from Interpretation and Environmental Education

Effects Common to All Alternatives
There are no effects common to all alternatives.

Effects under Alternative A
There are no management actions under Alternative A for interpretation and environmental education. Continuing the current programs in place would increase public awareness of the environment and opportunities available on BLM-administered lands. This could attract more tourists to the area and increase spending in local communities. Environmental awareness and conservation techniques taught as part of the outreach programs would help preserve the environment in the planning area, enhancing and protecting nonmarket values such as open space and ecosystem services.

Effects under Alternatives B, C, D, and E
Alternatives B through E would continue current outreach programs and provide additional interpretive and educational programs on BLM-administered lands, potentially attracting more tourism and increasing the preservation of the environment. Effects would be similar to those identified under Alternative A, but greater in magnitude.

4.6.5 Environmental Justice

This section discusses impacts on environmental justice from proposed management actions of other resources and resource uses. Existing conditions are described in **Section 3.4.4**, Environmental Justice.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that federal agencies identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Guidance for evaluating environmental justice issues in land use planning is included in BLM Handbook 1601-1, Land Use Planning, Appendix D (BLM 2005a).

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. It focuses on environmental hazards and human health to avoid disproportionately high and adverse human health or environmental effects on minority and low-income populations. Low-income populations are defined as

persons living below the poverty level based on total income of $11,136 for an individual and $22,314 for a family household of four for 2010, based on preliminary census data (US Census Bureau 2010a). Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-White persons are defined as minority populations.

Summary

Counties within the planning area were examined for minority or low-income populations based on CEQ guidelines (20 percentage points higher than the state average, or more or 50 percent of the total population). Based on the levels defined above, and the data provided in Chapter 3, no counties within the planning area meet the definition of environmental justice populations. Individual populations may contain low-income or minority populations, including the six Native American reservations within the planning area.

Public involvement activities have included outreach in various formats (including local media, internet, and newsletters). Public meetings have been held through the planning area, including in locations accessible by public transportation to facilitate participation for all socioeconomic groups. The BLM would continue to consider environmental justice impacts for all site-specific actions.

As a result, there would be no impacts on environmental justice populations by actions in the RMP under any of the alternatives.

4.6.6 Facilities and Transportation Maintenance

As stated in **Section 3.5.6**, the BLM's transportation system and facilities are critical to its management of public lands. The maintained roads provide access that supports uses ranging from recreation to commercial activity, while facilities provide the infrastructure that supports these activities. There are no specific goals, objectives, or actions outlined for Facilities and Transportation Maintenance in Chapter 2. These activities are specified within the planning area Transportation Plan, which is updated quarterly, and conducted in accordance with BLM 9100 Series Manuals.

Impacts on facilities and transportation management are largely a result of the desired management of other uses and resource programs. These effects are analyzed in the appropriate resource section (e.g., recreation, CTTM). In addition, **Section 4.4.5**, Comprehensive Travel and Transportation Management, includes an assessment of management actions that would limit the BLM's ability to maintain or enhance the travel network as a whole. Therefore, only those impacts resulting from actions that affect facilities development and maintenance or that limit the BLM's ability to maintain existing roads within the planning area are discussed in this section.

Summary

Impacts on facilities and transportation maintenance are the result of changes to the amount of new facility development or construction and the ability to maintain existing facilities and roads. Management that calls for additional facilities would have an impact as well as management that restricts travel or other types of disturbance. In general, management under Alternatives A, B, D, and E includes fewer closures for motorized travel and fewer restrictions on facilities development.

Alternative C would affect facilities and transportation maintenance the least in terms of the amount of maintenance. This is because the largest portion of the planning area would be closed to motorized travel, and there would be restrictions on road and facility development; however, Alternative C would also result in the most restrictions on road and facility development and could have impacts on the ability to conduct maintenance. Alternative B would result in the most impacts on facilities and transportation maintenance in terms of the amount of facilities developed and the level of maintenance that would be required.

Methods of Analysis

Methods and Assumptions

The following methods and assumptions were used to assess the impacts on facilities and transportation maintenance:

- The nature and types of potential impacts on facilities and transportation maintenance from proposed actions under each alternative are based on
  - numerical data gathered during the planning process
  - BLM interdisciplinary team knowledge of the resource
  - input provided during the public scoping process
- Where possible, this analysis uses quantitative data to describe impacts on facilities and transportation maintenance from other resources and resource use programs. Qualitative information is also used to support quantitatively based analysis or where numerical data does not exist. In all cases, best professional judgment is used in evaluating effects on the facilities and transportation maintenance program.
- A travel management plan, which would include specific route designations, will be developed as part of a subsequent implementation-level planning process and is not included as part of this RMP/EIS.
- Implementation of a travel management plan would include increased maintenance and signing.

- This RMP/EIS identifies allocations for open, closed, and limited areas for travel management, within the Comprehensive Travel and Transportation Management section.

Indicators

The following indicators were used to assess impacts on facilities and transportation maintenance:

- Management activities or closures that would restrict facilities development or maintenance
- Management actions that would limit the BLM's ability to maintain or enhance the travel network

Nature and Type of Effects

Impacts on facilities and transportation maintenance are those that restrict or increase facilities development or maintenance. For example, where roads are closed and access is limited, this would restrict the ease of access for maintenance as well. At the same time, however, road closures would result in fewer miles of BLM roads to be maintained.

Implementing management for most of the resources and resource uses would have negligible or no influence on facilities and transportation maintenance actions and are therefore not discussed in detail. The resource uses that would have impacts on facilities and transportation maintenance include CTTM and recreation, lands and realty, and Back Country Byways. Impacts on facilities and transportation maintenance from CTTM are addressed in the CTTM, **Section 4.4.5**.

Facilities and Transportation Maintenance: Effects from Recreation and Visitor Services

Effects Common to All Alternatives

Under all alternatives, the BLM would seek to acquire easements to provide access to BLM-administered lands to meet recreation objectives. These easements would expand and improve the travel network, while reducing barriers to access.

Effects under Alternative A

Alternative A specifies the construction and maintenance of several access roads and the development of a motocross area. One recreational facility and parking area would also be constructed. Expansion of the trail network as discussed (**Section 3.3.5**, Comprehensive Travel and Transportation Management, and **Section 3.3.4**, Recreation and Visitor Services) would increase the road maintenance requirements, while maintaining the road network and access in those areas.

Effects under Alternative B

Under Alternative B, staging areas, parking areas, and primitive camping areas would be designated or constructed, and river access roads would be constructed. This would have greater impacts on facilities and transportation maintenance than under Alternative A.

Effects under Alternative C

Under Alternative C, one recreational camping and parking area would be constructed, and one mile of access road would be maintained; therefore, there would be fewer impacts on facilities and transportation maintenance than all of the alternatives.

Effects under Alternatives D and E

Under Alternatives D and E, the highest number of access roads into recreation areas would be maintained, and camping, parking, and staging areas would be developed, within the Hungry Valley SRMA. This would have the greatest impacts on facilities and transportation maintenance of all the alternatives.

Facilities and Transportation Maintenance: Effects from Lands and Realty

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Management under Alternative A that prioritizes access to the Pah Rah Range, Petersen Mountains, and the Jumbo area, while maintaining or increasing access to other BLM-administered lands, would impact facilities and transportation maintenance by improving overall access. However, it would also result in additional maintenance.

Effects under Alternative B

Alternative B would identify 84,500 additional acres for disposal than Alternative A; 580,000 acres would be managed as ROW exclusion areas; and 1,195,800 acres would be managed as ROW avoidance areas. Impacts associated with reductions in access and road miles to be maintained from land disposal and ROW restrictions would be consistent with the description under *Nature and Types of Effects*.

Effects under Alternative C

Alternative C would have the least potential for impacts from land tenure actions because there would not be any areas identified for disposal. However, restrictions on future ROW development would be greatest under Alternative C, which would manage 2,675,800 acres as ROW exclusion areas and 369,300 acres as ROW avoidance areas. Impacts associated with reductions in access and miles of roads to be maintained from ROW restrictions would be consistent with those described under *Nature and Types of Effects*.

Effects under Alternative D

Land tenure actions under Alternative D would have the greatest potential for reducing access to and across BLM-administered lands by identifying the most area for disposal of any alternative (332,500 acres) and making eligible for transfer to the BIA an additional 31,900 acres.

Because the same number of acres would be managed as ROW exclusion, effects on facilities and transportation maintenance from ROW exclusions would be the same as Alternative A. Management of 1,226,100 acres as ROW avoidance would have similar effects as Alternative B on facilities and transportation maintenance.

Effects under Alternative E

Effects on facilities and transportation maintenance from land tenure actions under Alternative E would be similar to Alternative D but would include 20 percent less area identified for disposal (65,300 acres).

Future expansion of the travel network would be restricted in 605,900 acres of ROW exclusion areas and 1,448,200 acres of ROW avoidance areas, which together account for 42 percent of BLM-administered land in the planning area.

Facilities and Transportation Maintenance: Effects from Back Country Byways

Effects Common to All Alternatives

There are no effects common to all alternatives.

Effects under Alternative A

Under Alternative A, impact of the existing Fort Churchill Back Country Byway would be as described under nature and type of effects.

Effects under Alternative B

Under Alternative B, maintenance and expansion of Fort Churchill Back Country Byway and development of the Marietta and New Pass Hawthorne Back Country Byways would result in increased maintenance needs.

Effects under Alternative C

Impacts from the development of Marietta and New Pass Hawthorne Back Country Byways would be as described under nature and type of effects. Declassification of the Fort-Churchill Byway would decrease maintenance in that area.

Effects under Alternative D

The BLM would manage no Back Country Byways in the planning area under Alternative D, reducing the impacts on facilities maintenance compared to Alternative A.

Effects under Alternative E
Impacts would be as described under Alternative B.

Facilities and Transportation Maintenance: Cumulative Effects
Past, present, and reasonably foreseeable future actions and conditions within the cumulative impact analysis area that have affected and will likely continue to affect facilities and transportation maintenance are those that increase the demands for facilities construction and maintenance, increase road maintenance requirements, or that restrict access for maintenance. Impacts on facilities and transportation maintenance from all alternatives would be similar, with variations on the level of access and the required facility maintenance; therefore, the cumulative impacts from all alternatives would also be similar and consistent the nature and type of effects as described previously.

4.7 UNAVOIDABLE ADVERSE IMPACTS

The NEPA, Section 102(c)(i), requires agencies of the federal government to identify and analyze any unavoidable adverse environmental effects as a result of implementing the proposed action. Unavoidable adverse impacts vary between the proposed RMP alternatives and take into consideration protection of resources, while allowing for differing intensities of multiple uses.

Implementation of all proposed alternatives would generate varying levels of surface disturbance open to multiple uses that would create unavoidable impacts. These impacts include surface disturbance that removes and alters vegetation communities, surface disturbance that contributes to fugitive dust emissions, soil loss from wind and water erosion, soil compaction, and surface disturbance that removes, alters, or fragments wildlife habitat. Surface-disturbing activities could affect water resources by reducing water quantity or quality. Restoration would help reduce the degree and intensity of impacts.

Energy and mineral resource extraction would include unavoidable impacts that remove vegetation, leading to changes in vegetation composition and would make areas vulnerable to establishment and spread of invasive plants. Surface disturbance to soils would alter soil horizons and increase compaction. Construction of such facilities as pits, dumps, power lines, and roads, would create visual intrusions to landscape settings changing visual landscapes. Water quantity and quality may be affected from mineral and energy development as a result of drilling or operations.

Livestock and wild horse and burro grazing would include changes in vegetation composition. The health of riparian areas has been affected by livestock trampling stream banks and spring areas as a result of concentrated grazing. Grazing also increases competition for habitat with wildlife.

Recreation use has resulted in loss of vegetation and increased soil erosion, especially in areas of intense recreation use and increased visitation. OHVs have removed vegetation, resulting in increased soil erosion and compaction.

Wildland fire has burned vegetation, impacted soil productivity, and changed species composition of vegetation. Many areas burned have become dominated by invasive annual plants. Fire frequency has increased in these areas. Wildland fire also has and will contribute large quantities of greenhouse gas and particulate emissions.

Continued drought conditions have changed species composition of vegetation, increased the potential for invasive plants to establish and spread, and have weakened trees making them vulnerable to insect infestation and disease. Reduced availability of water within habitat areas have affected plant composition and have altered wildlife habitat use areas.

Irreversible and Irretrievable Commitment of Resources

Section 102 (c)(v) of the NEPA requires a discussion of irreversible or irretrievable commitments of resources. Impacts causing irreversible or irretrievable impacts vary by alternative and generally are the result of uses of the public lands, climate change, and fire.

Irreversible commitments of resources refer to the loss of resources that cannot be regained. Examples are extinction of a species, mined out mineral commodities, and loss of protected cultural resources.

Irretrievable commitments are those that involve the short-term loss of production, harvest, or use of natural resources but can be regained or retrieved over time. Examples include temporary loss of wildlife habitat from removal of vegetation by multiples uses. Use restrictions, mitigation measures, and permit stipulations and adaptive management strategies to address climate change could reduce the degree or intensity of irretrievable commitment of resources.

Minerals and energy development would cause an irretrievable loss of vegetation during operations; however, reclamation of areas would restore vegetation. Minerals and energy development would remove habitat, reducing food and cover for wildlife. Development of facilities, power lines, and roads would also fragment wildlife habitat, change wildlife migration patterns, and displace wildlife in the short term.

Following active operations, wildlife habitat would eventually be restored over time. Irreversible impacts from mineral and energy development are the permanent loss of vegetation and wildlife habitat from the development of mine pits. Loss of unknown cultural resources would also be an irreversible commitment impact due to surface-disturbing activities necessary for development. The loss of historic visual landscape settings would result from mineral and energy developments from placement of permanent features on the landscape, such as waste dumps or pits. The removal of mineral commodities is an irreversible impact as commodities would not available for future uses or to future generations.

Livestock and wild horse and burro grazing could result in an irretrievable loss of vegetation in areas where concentrated grazing occurs. Improving grazing management would help to restore rangeland.

Irreversible commitment impacts from wildfire has burned areas making them vulnerable for establishment and spread of wildfire and have created conditions where ecological thresholds have been exceeded, thereby permanently removing the potential for reestablishment of native vegetation. Climate change has caused irretrievable impact as a result of drought, which has caused changes in plant species composition, allowing more drought-tolerant species to flourish.

Irreversible impact commitments relating to recreation uses would center on OHV travel management. Concentrated use in open use areas may cause permanent loss of vegetation and cause accelerated soils erosion. Areas where non concentrated use occurs would be subject to irretrievable commitments of resources. OHV impacts on vegetation and soils would improve over time in closed or limited travel management areas.

4.8 Relationship of the Short-Term Uses of the Environment to Long-Term Productivity

Section 102 (c)(iv) of the NEPA requires an analysis of the relationship between local short-term uses of the human environment and of long-term productivity of resources. Short-term uses result in impacts that are anticipated to occur while the proposed alternative, use, or activity is being implemented, usually within a five-year period. Long-term impacts relate to effects that are anticipated after the first five years but would not exceed the timeframe for the life of the RMP. This period would generally range from 15 to 20 years.

Impacts from short-term uses to long-term productivity would vary by alternative. More long-term impacts would be anticipated from alternatives that emphasize more uses.

Many uses of public lands, such as livestock grazing, mineral and energy development, ROWs, and recreation, have active operations that exceed five years. Consequently, short-term uses center on site-specific short-term events that require SRPs (e.g., motocross racing) or ROWs (e.g., advertising). Impacts from these events would have minimal long-term impacts on long-term productivity as newly disturbed areas would generally be reclaimed under the requirements of the permit or grant. There would be potential for some loss of long-term productivity of the land should short-term activities recur on a frequent or regular basis.

Short-term mineral and energy exploration development would remove vegetation, disturb soils, and remove and fragment wildlife habitat. Impacts on long-term productivity would vary based on the size of surface disturbance. The potential for loss of long-term productivity of rangelands would be greater in lower elevation areas. These areas are more vulnerable to establishment and

spread of annual invasive plant species following disturbance. These invasive plants often outcompete native plants, reducing food and cover sources for wildlife and changing forage available for grazing. A short-term wildfire would permanently affect the productivity of rangeland through alteration of plant species composition, wildlife habitat, and increased soil erosion. Wildlife habitat and rangeland production may not return to pre-fire conditions in the long term, especially in lower elevation areas. Short-term activities that improve, restore, or reclaim areas through seeding; planting and protecting areas would improve long-term productivity of rangeland.

Chapter 5

Consultation and Coordination

CHAPTER 5
CONSULTATION AND COORDINATION

5.1 PUBLIC COLLABORATION AND OUTREACH

This chapter describes the public outreach and participation opportunities that have occurred throughout the development of this draft RMP/EIS, and the coordination and consultation with tribes, government agencies, and other stakeholders that have transpired to date. It includes a list of preparers of the document and the agencies, organizations, and individuals that have been involved in the development of the RMP/EIS.

5.1.1 Scoping Process

Scoping is the term used in the CEQ) regulations for implementing the NEPA. It is the early and open process for determining the scope or range of issues to be addressed in the planning process (40 CFR, Part 1501 et seq.). The scoping process requires the lead agency to invite the participation of federal, state, and local agencies, affected Native American tribes, and other interested persons or parties to provide input on the proposed action. As the word implies, scoping is to determine the scope of issues for the project.

The scoping process encourages public involvement to identify significant issues of land use management actions. It also identifies issues that are not significant to the project and that can thereby be eliminated from detailed analysis. The lead agency initiates public and agency involvement through mailing lists, project websites, and newsletters. It confirms and augments a list of stakeholders and other interested parties during the scoping process.

Notice of Intent

The scoping process begins by publishing a Notice of Intent. This is the legal document notifying the public of the BLM's intent to initiate a planning process and to prepare an EIS for a major federal action. The Notice of Intent for the RMP/EIS was published in the Federal Register on February 24, 2012. In it, the BLM invited the affected and interested agencies, organizations, and members of

the general public to participate in the planning process. The goal is to develop the scope and significant issues to be addressed in the planning alternatives and analyzed in the EIS. The scoping period for the receipt of public comments ended on April 29, 2012.

Press Releases

The BLM used local and regional newspapers throughout the planning area to disseminate information on the RMP scoping and planning process. A press release was posted on the project website (see below) on February 24, 2012, announcing the Notice of Intent for the CCD RMP/EIS process. It also provided information on the six scoping open houses and described the various methods for submitting comments. The press release was sent electronically to over 130 different media outlets. Additionally, the public was notified via Facebook and Twitter on February 24 and March 27 and 29, 2012. In March 2012, the BLM published a notice in seven local newspapers, advertising the scoping meetings. **Table 5-1**, Newspaper Advertisement Publication Dates, displays the date each newspaper published the advertisement announcing the original six scoping open houses.

Table 5-1
Newspaper Advertisement Publication Dates

Nevada Appeal	February 29, 2012
Mason Valley News	March 2, 2012
Reno Gazette	March 2, 2012
Dayton Courier	March 3, 2012
Nevada Appeal	March 5, 2012
Mineral County Independent	March 7, 2012
Nevada Appeal	March 25, 2012
Reno Gazette	March 25, 2012

Postcards

The BLM mailed a postcard in February 2012 to over 630 agency officials, organizations, and members of the public. It included such information as open house locations and times; it also requested public comments and provided contact information.

The BLM gathered additional contact information during the scoping period, which enabled it to complete a mass mailing list. A project update posted to the RMP website was mailed in postcard format to the project mailing list in July 2013.

Website

The BLM continuously updates the project website with information, documents, and announcements about the planning process as well as various documents. The website can be accessed at http://www.blm.gov/nv/st/en/fo/carson_city_field.html.

Additional Public Outreach

In addition to public scoping conducted for the RMP, the BLM held travel management workshops on as follows:

- October 10, 2012, in Reno, Nevada, at John Ascuaga's Nugget Poolside Terrace Room
- October 16, 2012, in Fallon, Nevada, at the Fallon Convention Center
- October 18, 2012, in Minden, Nevada, at the Carson Valley Inn

The BLM staff was in attendance to answer questions. Comment forms were provided to collect public input, which was used to help the BLM create a comprehensive route inventory. This will form the basis for a system of designated routes to guide all modes of travel in the CCD.

As of December 2013, BLM staff from the CCD had conducted more than 90 public information meetings or presentations at public, local, and state governments and tribal groups. **Table 1-5** outlines the presentations and dates they were conducted.

5.2 CONSULTATION AND COORDINATION

The CCD RMP will provide guidance for a vast area of BLM-administered land in Nevada. It necessarily requires the coordination of a variety of organizations with interests in the area. Among those are governmental bodies that create, administer, and monitor policy for these and adjacent lands. The BLM developed the RMP by seeking the active participation of these parties.

The following sections document the BLM's consultation and coordination during the RMP/EIS preparation. Consultation is ongoing throughout the entire RMP process.

5.2.1 Cooperating Agencies

The BLM identified a list of potential federal, state, and local government as well as tribal representatives for potential cooperating agency participation. Between February 2012 and July 2013, the BLM sent formal invitations to 50 representatives. Table 1-4 lists the agencies invited and identifies those 25 that have agreed to participate in the RMP process as of July 3013.

These entities continue to work with the BLM by sharing special expertise, resources, and providing comment and review of various preliminary draft documents to help forge the development of the Draft RMP. Throughout the planning process, the BLM has met and coordinated with the cooperating agencies. In addition, combined meetings were held with all of the cooperators on November 8, 2012, and June 13, 2013. The BLM held a conference call on November 19, 2013, with the agencies to review Chapter 2. The cooperating

agencies were provided with the opportunity to review and comment on the Administrative Draft RMP/EIS in April 2014.

5.2.2 Native American Consultation

Federally recognized Native American tribes have a unique legal and political relationship with the government of the United States. EO 13175 requires federal agencies to coordinate and consult on a government-to-government basis with Sovereign Native American tribal governments whose interests may be directly and substantially affected by activities on government-administered lands. Other laws, regulations, guidance, and EOs require government agencies to consult with Native American people. The purpose is to identify cultural values, religious beliefs, traditional practices, and legal rights that could be affected by BLM actions on federal lands. These legal instruments include the NHPA of 1966 (as amended); the American Indian Religious Freedom Act of 1978; the Native American Graves Protection and Repatriation Act; the DOI Secretarial Order No. 3215 (USDI 2000), 512 Department Manual Chapter 2 (USDI 1995), and BLM Manual H-8160-1 (USDI 1994); and EO 13007, Indian Sacred Sites.

The BLM consulted with 10 tribes identified as having an interest or traditional cultural properties in the planning area. BLM staff provided a summary presentation of the RMP process to each of the identified tribes. **Table 1-4** identifies the potentially interested tribes and which tribes have agreed to participate. Consultation is required by and will be consistent with the NHPA and the American Indian Religious Freedom Act.

In addition to the government-to-government consultation, the BLM, with the assistance of a contractor, conducted a confidential ethnographic assessment of the CCD planning area. The primary objectives of this study were as follows:

- Conduct a thorough archival and literature review to identify and document Native American traditional occupancy and use of lands and resources; the review included previously recorded Native American places of cultural and religious importance within the study area
- Elicit contemporary concerns and recommendations for managing traditional resources and cultural and religious values from tribal leaders, elders, or representatives
- Document the BLM's Native American consultations
- Elicit tribal recommendations for managing the BLM-administered lands

Table 5-2, Concerns Identified through Government-to-Government Consultation and Ethnographic Study, displays issues that were raised during government-to-government consultation and the ethnographic study.

Table 5-2
Concerns Identified through Government-to-Government Consultation and Ethnographic Study

Concern	RMP Decision	Implementation Decision	Location of Text Addressing Concern in the RMP
Involvement in project planning		X	Table 2-2 Rows 234, 239, 654-655
Co-managing resources		X	Table 2-2 Rows 242, 655
Concern over the confidentiality of information		X	Table 2-2 Rows 657-658
Access through private land to culturally important places			This is outside the scope of an RMP. The BLM can work to seek assistance in gaining access when public lands are involved.
Commercial pine nut collecting	X		Table 2-2 Row 295
Invasive species affects pinyon trees	X		Table 2-2 Rows 60-61
Wildland fire	X		Table 2-2 Rows 234, 223-226
Illegal firewood cutting	X		Table 2-2 Row 294
Acquisition of public land	X		Table 2-2 Rows 488-489 and 499
Privatization of lands	X		Table 2-2 Rows 495-496
Unauthorized OHV routes		X	Unauthorized OHV routes are addressed during travel management planning.
Illegal dumping	X		Table 2-2 Rows 356 and 662; addressed as public health and safety issue
Mapping and managing medicinal plant habitat		X	This is outside the scope of an RMP. This can be addressed through a Memorandum of Agreement and site-specific mitigation measures.
Establishment of ACECs	X		Table 2-2 Rows 242, 243
Establishing a "no collection" policy and returning previously collected artifacts to original locations			This is outside the scope of an RMP. BLM Nevada has updated its policy for cultural resource fieldwork. A special permit is required for the collection of cultural materials. Tribal governments are notified 30-days prior to the issuance of the permit. BLM Nevada is in on-going discussions with tribes regarding the returning of cultural material to the original locations.
Training and employment of Native American archaeological monitors		X	This is outside the scope of an RMP. This can be addressed through a Memorandum of Agreement and site-specific mitigation measures.

5.2.3 Cultural Resources Consultation

The BLM has specific responsibilities and authorities to consider, plan for, protect, and enhance historic properties and other cultural properties that may be affected by its actions or actions it permits. The principal federal law addressing cultural resources is the NHPA (16 USC, Section 470), and its implementing regulations (36 CFR, Part 800). These regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties, for assessing the effects of federal actions on

historic properties, and for guiding project proponents consulting with appropriate agencies to avoid, reduce, or minimize adverse effects.

The BLM in Nevada meets its responsibilities under Section 106 and other provisions of the NHPA through a state protocol agreement with the Nevada SHPO. Using authorities developed under a nationwide BLM programmatic agreement, the BLM follows an alternate procedure to the 36 CFR, Part 800, regulations to meet historic preservation responsibilities. Cultural resource consultation with the SHPO, Native American tribes, and interested parties is required under the NHPA and a variety of laws, regulations, guidance, departmental orders, and EOs.

The state protocol agreement requires that the BLM invite the SHPO to participate early in preparing or amending land use plans. This is to identify cultural resource issues that should be addressed. The SHPO was invited but declined to be a cooperating agency for the RMP/EIS. The SHPO has also received copies of consultation correspondence with the Native American tribes.

The BLM will invite the SHPO to comment on the draft and final land use plans and on any proposed cultural resource use allocations developed as a result of the RMP/EIS process. Additional consultations with the SHPO and Indian tribes also may be required during implementation of individual projects. Consultations with the SHPO are ongoing and will be completed before the Record of Decision is signed.

5.2.4 Endangered Species Act Consultation

The ESA, as amended, directs every federal agency to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the existence of any listed species or destroy or adversely modify critical habitat. The ESA authorizes federal agencies to enter into early consultation with the USFWS to make those determinations. The BLM requested a species list from the USFWS of any federally listed, federally proposed, or federal candidate species that may be in the RMP planning area. The BLM will initiate formal consultation with the USFWS under Section 7 of the ESA to review the proposed alternative.

5.2.5 Resource Advisory Council

A RAC is a committee established but the Secretary of Interior to provide advice or recommendations to the BLM management. The BLM notified the Sierra Front-Northwestern Great Basin RAC of the RMP revision project on March 5, 2012. The RAC is composed of 15 members representing a range of interests. The RAC provides input on public land management issues: land use planning, recreation fees, public land classification, management, and tenure within the Carson City and Winnemucca BLM District Offices.

The RAC is facilitated by the BLM public affairs officer. The first meeting with the new RAC was held on June 14, 2012, at the CCD. After a presentation of

the RMP process highlighting the components and issues of the planning area, preliminary planning criteria, and project status.

BLM will continue collaborating with cooperating agencies, the RAC group, and tribal governments.

5.3 LIST OF PREPARERS

An interdisciplinary team (IDT) of resource specialists from the BLM CCD prepared this RMP/EIS.

Table 5-3
List of Preparers – BLM

Name	Years of Experience	Role/Responsibility	Education
Bryant Smith	28	Associate District Manager Leadership and Oversight of RMP Revision	BA, Social Sciences and Outdoor Recreation Management, Bethel College, Minnesota; University of Wisconsin, River Falls; University of Montana, Missoula
Terri Knutson	27	Field Manager Stillwater Field Office ID Team Support	
Leon Thomas	11	Field Manager Sierra Front Field Office ID Team Support	MS, Public Administration, Kentucky State University BS, Criminal Justice/Biology, Northern Arizona University
Shane McDonald	24	Fire Management Officer ID Team Support	BS, Environmental and Resource Science, University of Nevada-Reno
Lisa Ross	15	Public Affairs Officer ID Team Support and assist with Public Scoping	BA, Public Relations, Utah State University
Colleen Sievers	20	Project Manager NEPA Oversight; Social and Economic Conditions	MA, Anthropology, University of Idaho BA, Anthropology, University of Nevada, Reno
Brian Buttazoni	7	Sierra Front Field Office Planning and Environmental Coordinator NEPA Oversight	BA, Biological Sciences, Stanislaus State University
Angelica Rose	13	Stillwater Field Office Planning and Environmental Coordinator NEPA Oversight	BS, Environmental Studies, Southern Oregon University AS, Great Basin College
John Neill	22	Assistant Field Manager Stillwater Field Office	
Paul Fuselier	16	Assistant Field Manager Sierra Front Field Office	BA, Geography, California State University-Chico

Table 5-3
List of Preparers – BLM

Name	Years of Experience	Role/Responsibility	Education
Jim Schroeder		Assistant Field Manager Sierra Front Field Office	
Katrina Leavitt	15	Livestock Grazing; ESR; Vegetation; Weed Management	MS, Natural Resource Management, University of Nevada, Reno
Ryan Leary	6	Livestock Grazing	MS, Range Management, Oregon State University
Chelsy Simerson	7	Livestock Grazing	BS, Rangeland Resources, Oregon State University
Perry Wickham	7	Lands and Realty; Renewable Energy (Wind and Solar)	
Dean Tonenna	14	Weeds	BS, Natural Resources
Chris Kula	4	Fish and Wildlife; Special Status Animal and Plant Species	MS, Natural Resources, Utah State University BS, Wildlife Science
John Wilson	6	Fish and Wildlife; Special Status Animal and Plant Species	MS, Fish and Wildlife Biology, Colorado State University BS, Fish and Wildlife Biology, Colorado State University
Pilar Ziegler	9	Fish and Wildlife	MS, Wildlife Biology, University of Montana
John Axtell	26	Wild Horse and Burros	MS, Wildlife Science, New Mexico State University BS, Wildlife Management, Humboldt State University
Dan Erbes	29	Geology and Minerals (excluding Geothermal and Oil and Gas); Public Safety; Fluid Minerals (Geothermal and Oil and Gas)	MS, Geology
Ken Depaoli	6	Geology and Minerals (excluding Geothermal and Oil and Gas)	BS, Geology, University of Nevada, Reno
Carla James	24	Geology and Minerals (excluding Geothermal and Oil and Gas); Public Safety; Fluid Minerals (Geothermal and Oil and Gas)	BS, Geology, University of Nevada-Reno
Joel Hartmann	5	Geology and Minerals (excluding Geothermal and Oil & Gas)	BS, Environmental Science Geology, University of Montana Western
Deb Snyder	25	Environmental Education and Interpretation	BS, Journalism, West Virginia University
Cheryl Davis	7	GIS Support	
Devin Welty	6	GIS Support	AAS, Geographical Information Systems, Western Nevada College

Table 5-3
List of Preparers – BLM

Name	Years of Experience	Role/Responsibility	Education
Michael Grimes	7	IT Support	BS, Information System Security, ITT Technical Institute
Niki Cutler	3	Air; Climate Change; Soil; Water	MS, Hydrology, University of Nevada-Reno
Keith Barker	12	Wildland Fire Ecology and Management	BS, Parks, Tourism and Recreation Management, Clemson University
Ryan Elliot	7	Wildland Fire Ecology and Management	BS, Forestry, Iowa State University
Tim Roide		Wildland Fire Ecology and Management	
Coreen Francis	21	Forestry and Woodland Products	MS, Forestry, Oregon State University
Jason Wright	13	Cultural Resources; National Historic Trails; Paleontological Resources; Tribal Interests; Native American Consultation	MA, Anthropology, University of Idaho BS, Anthropology BS, History
Kristin Bowen	10	Cultural Resources; Paleontological Resources	BA and MA, Anthropology, University of Montana
Matt Simons	6	Lands and Realty; Renewable Energy (Wind & Solar)	BS, Business Science, California State University-Chico
Dan Westermeyer	25	Visual Resources; Wilderness Characteristics; Cave and Karst Resources; Recreation and Visitor Services; Comprehensive Trails and Travel Management; Special Designations	BS, Natural Resource Management, Humboldt State University
Arthur Callan	18	Visual Resources; Wilderness Characteristics; Cave and Karst Resources; Recreation and Visitor Services; Comprehensive Trails and Travel Management; Special Designations	BS, Natural Resource Management, Oklahoma State University
Mike Davis	16	Cadastral; Transportation Facilities	BS, Bio-mechanical Engineering, University of Nevada-Reno
Scott Fischer	15	Public Safety	BS, Geology, University of Colorado Boulder AS, Park Management, West Valley College

The following individuals provided input on the Draft RMP/EIS but are no longer with the Carson City District:

Steve Kramer	Planning and Environmental Coordinator
Ed Klimasauskas	Fluid Minerals (Geothermal and Oil and Gas)
Steep Weiss	Forestry
Jim Carter	Cultural Resources; National Historic Trails; Paleontological Resources; Tribal Interests; Native American Consultation
Susan McCabe	Cultural Resources; National Historic Trails; Paleontological Resources; Tribal Interests; Native American Consultation
Joanne Hufnagle	Lands and Realty; Renewable Energy (Wind and Solar)
Chuck Valentine	Lands and Realty; Renewable Energy (Wind and Solar)
Chris McAlear	Leadership and Oversight of RMP Revision
Bernadette Lovato	Leadership and Oversight of RMP Revision
Erik Pignata	Lands and Realty; Renewable Energy (Wind & Solar)
Kathryn Dyer	Livestock Grazing; ESR; Vegetation; Weed Management
Jim Schroeder	Leadership and Oversight of RMP Revision

EMPSi assisted the BLM in preparing these documents and in the planning process.

Table 5-4
List of Preparers – EMPSi

Name	Years of Experience	Role/Responsibility	Education
David Batts	21	Principal; Alternative Development; QA\QC	MS, Natural Resource Management
Jennifer Thies	16	Project Manager	MS, Natural Resources Management BS, Conservation and Resource Studies
David Parker	38	Assistant Project Manager	MS, Environmental Management BS, Geology BA, Anthropology
Carol-Anne Garrison	14	Physical Resources Lead	MA, Anthropology

Table 5-4
List of Preparers – EMPSi

Name	Years of Experience	Role/Responsibility	Education
Holly Prohaska	14	Resource Uses Lead; Wild Horse and Burros Lead	MS, Environmental Management
Meredith Zaccherio	8	Biological Resources Lead	MA, Biology
Andrew Gentile	12	Public Collaboration	MS, Environmental Management BS, Biochemistry
Marcia Rickey	14	GIS/eGIS Lead Analyst	MS, Conservation Biology
Liza Wozniak	8	Vegetation, Weeds, and Threatened, Endangered, or Sensitive Plant and Animal Species	MS, Ecology
Zoe Ghali	8	Livestock Grazing and Social and Economic Lead	MS, Environmental Physiology
Jordan Adams	3	Minerals and Geology; Paleontology; Cultural Resources; National Trails	BS, Environmental Science, Minor in Geology
Derek Holmgren	15	Water Resources; Soils	MS, Environmental Science MPA, Environmental Policy and Natural Resource Management BS, Environmental Studies BA, International Studies
Amy Cordle	20	Air Resources; Climate Change	BS, Civil Engineering
Jeff Johnson	23	Wildland Fire Management	BS, Conservation and Resource Studies
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Drew Vankat	11	Recreation; Travel management	MS, Environmental Policy and Planning
Sean Cottle	1	Water Resources; Special Designations	BS, Ecohydrology
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Lauren Zielinski	3	Social and Economic Values; Environmental Justice	BS, Earth and Environmental Engineering
Laura Long	6	Technical Editing	MA, Communications BA, English Literature
Randolph Varney	22	Technical Editing	MFA, Writing BA, Technical and Professional Writing

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Chapter 6

References

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Chapter 7

Glossary

CHAPTER 7
GLOSSARY

Acquired lands. Lands in federal ownership that are not public domain and that have been obtained by the government by purchase, condemnation, gift, or by exchange. Acquired lands are normally dedicated to a specific use or uses.

Acquisition. The process by which the BLM obtains land or interest in land into the public lands system.

Active nest site. A raptor nest site that is currently occupied by a pair of breeding raptors.

Activity plan. A type of implementation plan (see *Implementation plan*); an activity plan usually describes multiple projects and applies best management practices to meet land use plan objectives. Examples of activity plans include interdisciplinary management plans, habitat management plans, recreation area management plans, and grazing plans.

Actual use. The amount of animal unit months (AUMs) consumed by livestock based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

Adaptive management. A type of natural resource management in which decisions are made as part of an ongoing science-based process. Adaptive management involves testing, monitoring, and evaluating applied strategies, and incorporating new knowledge into management approaches that are based on scientific findings and the needs of society. Results are used to modify management policy, strategies, and practices.

Administrative access. Administrative access pertains to travel on routes that are limited to authorized users (typically motorized access). These are existing routes that lead to developments that have an administrative purpose, where the BLM or a permitted user must have access for regular maintenance or operation.

Air basin. A land area with generally similar meteorological and geographic conditions throughout. To the extent possible, air basin boundaries are defined along political boundary lines and include both the source and receptor areas.

Air pollution. Degradation of air quality resulting from unwanted chemicals or other materials occurring in the air.

Air quality classes. Classifications established under the Prevention of Significant Deterioration portion of the Clean Air Act, which limits the amount of air pollution considered significant within an area. Class I applies to areas where almost any change in air quality would be significant; Class II applies to areas where the deterioration normally accompanying moderate, well-controlled growth would be insignificant; and Class III applies to areas where industrial deterioration would generally be insignificant.

Airshed. A subset of air basin, the term denotes a geographical area that shares the same air because of topography, meteorology and climate.

Allotment. An area of land in which one or more livestock operators graze their livestock. Allotments generally consist of BLM-administered lands but may include other federally managed, state-owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allotment management plan (AMP). A concisely written program of livestock grazing management, including supportive measures if required, designed to attain specific, multiple-use management goals in a grazing allotment. An AMP is prepared in consultation with the permittee(s), lessee(s), and other affected interests. Livestock grazing is considered in relation to other uses of the range and to renewable resources, such as watershed, vegetation, and wildlife. An AMP establishes seasons of use, the number of livestock to be permitted, the range improvements needed, and the grazing system.

All-terrain vehicle. A motorized vehicle that is less than 50 inches in width and is capable of operating on roads, trails, or designated areas that are not maintained. A wheeled vehicle, other than a snowmobile, that has a wheelbase and chassis of 50 inches in width or less, generally has a dry weight of 800 to 1,200 pounds or less, and travels on 3 or more low-pressure tires.

Alluvial soil. A soil developing from recently deposited alluvium and exhibiting essentially no horizon development or modification of the recently deposited materials.

Alluvium. Clay, silt, sand, gravel, or other rock materials transported by moving water. Deposited in comparatively recent geologic time as sorted or semi-sorted sediment in rivers, floodplains, lakes, and shores, and in fans at the base of mountain slopes.

Alternate nest (inactive nest) site. A raptor nest site that has been used in the past by and within the territory of a breeding pair of raptors. The nest site still maintains the characteristics of a nest structure and habitat features of a nest site but is not currently in use.

Alternative state. A difference in the operation of one or more primary ecological processes including the water cycle, nutrient cycle, and the process of energy capture and transformation (energy flow).

Ambient air quality. The state of the atmosphere at ground level as defined by the range of measured and predicted ambient concentrations of all significant pollutants for all averaging periods of interest.

Analysis of the Management Situation (AMS). Assessment of the current management direction. It includes a consolidation of existing data needed to analyze and resolve identified issues, a description of current BLM management guidance, and a discussion of existing problems and opportunities for solving them.

Animal Unit Month (AUM). The amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month.

Aquatic. Living or growing in or on the water.

Area of Critical Environmental Concern (ACEC). Special Area designation established through the BLM's land use planning process (43 CFR 1610.7-2) where special management attention is required (when such areas are developed or used or where no development 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. The level of allowable use within an ACEC is established through the collaborative planning process. Designation of an ACEC allows for resource use limitations in order to protect identified resources or values.

Assessment, Inventory, and Monitoring Strategy (**AIMS).** Initiated by the BLM, in part, to evaluate current monitoring activities and recommend procedures to improve the efficiency and effectiveness of these activities. To this end, the AIMS supports an integrated approach to document the distribution and abundance of natural resources on public lands; facilitate the description of resource conditions; and identify natural resource trends or changes. (From 'BLM Core Terrestrial Indicators and Methods, Technical Note 440, August 2011).

Atmospheric deposition. Air pollution produced when acid chemicals are incorporated into rain, snow, fog, or mist and fall to the earth, sometimes referred to as acid rain. Comes from sulfur oxides and nitrogen oxides, products of burning coal and other fuels and from certain industrial processes. If the acid chemicals in the air are blown into the area where the weather is wet, the acids can fall to earth in the rain, snow, fog, or mist. In areas where the weather is dry, the acid chemicals may become incorporated into dust or smoke.

At Risk. In the context of state and transition, a community in a certain state is at risk if it is nearing the threshold of transitioning to a less desirable state, but has not yet undergone that transition.

Attainment area. A geographic area in which levels of a criteria air pollutant meet the health-based National Ambient Air Quality Standard for that specific pollutant.

Avoidance area. See "Right-of-way avoidance area" definition.

Backcountry. Lands remote from development and typically difficult to access.

Backcountry byway. Vehicle routes that traverse scenic corridors using secondary or backcountry road systems. Backcountry byways fall into one of four categories from Type I, paved all weather roads, to Type 4, single track trails suitable only for dirt bikes and mountain bikes.

Backcountry Byway Program. The BLM's program for designation of scenic roads on public lands. Operates as a subcategory of the National Scenic Byways Program.

Best Management Practice (BMP). A method, process, or activity, or usually a combination of these, determined by a state or a designated planning agency to be the most effective and practicable means (including technological, economic, and institutional considerations) of managing or controlling particular conditions or circumstances. BMPs are a suite of voluntary, accepted measures that may or may not be applied to or enforced for any given project.

Big game. Indigenous, ungulate (hoofed) wildlife species that are hunted, such as elk, deer, bison, bighorn sheep, and pronghorn antelope.

Biodiversity (biological diversity). The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

Biological Opinion. A document prepared by US Fish and Wildlife Service stating their opinion as to whether or not a federal action will likely jeopardize the continued existence or adversely modify the habitat of a listed threatened or endangered species.

Biological soil crust. A complex association between soil particles and cyanobacteria, algae, microfungi, lichens, and bryophytes that live within or atop the uppermost millimeters of soil.

Birds of Conservation Concern. Bird species considered for inclusion include nongame birds, game birds without hunting seasons, subsistence-hunted nongame birds in Alaska; and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species.

BLM Sensitive Species. Those species that are not federally listed as endangered, threatened, or proposed under the Endangered Species Act, but are designated by the BLM State Director under 16 USC 1536(a)(2) for special management consideration. By national policy, federally listed candidate species are automatically included as sensitive species. Sensitive species are managed so they will not need to be listed as proposed, threatened, or endangered under the Endangered Species Act.

Boundary (Lands with Wilderness Characteristics). The boundary of wilderness characteristics inventory units established using the presence of wilderness inventory roads, property lines, developed rights-of-way, and other substantially noticeable imprints of human activity.

Broadcast burning. Intentional burning in which fire is intended to spread over all of a specific area within well-defined boundaries.

Candidate species. Taxa for which the US Fish and Wildlife Service has sufficient information on their status and threats to propose the species for listing as endangered or threatened under the Endangered Species Act, but for which issuance of a proposed rule is currently precluded by higher priority listing actions. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the Federal Register (BLM Manual 6840, Special Status Species Manual).

Categorical Exclusion (CE). A category of actions (identified in agency guidance) that do not individually or cumulatively have a significant effect on the human environment, and for which neither an environmental assessment nor an environmental impact statement is required (40 CFR 1508.4), but a limited form of NEPA analysis is performed.

Causal Factor. A factor in the failure to achieve the standards for rangeland health and conform to the guidelines. A causal factor, if modified would enable an area to achieve or make significant progress toward achieving the standards for rangeland health.

Casual use. Activities ordinarily resulting in no or negligible disturbance of the public lands or resources. Actions determined to fall under "casual use" do not require any sort of authorization.

Cave. Any naturally occurring void, cavity, recess, or system of interconnected passages beneath the surface of the earth or within a cliff or ledge, including any cave resource therein, and which is large enough to permit a person to enter, whether the entrance is excavated or naturally formed. Such term shall include any natural pit, sinkhole, or other feature that is an extension of a cave entrance or which is an integral part of the cave.

Cave Resource. Any material or substance occurring in caves on federal lands, including, but not limited to, biotic, mineralogic, paleontological, geologic, hydrologic, or cultural resources.

Certified weed-free seed. Certification provides assurance that the field was inspected based upon a reasonable and prudent visual inspection by a certified inspector, and no noxious weeds were detected.

Chemical vegetation treatment. Application of herbicides to control invasive species, noxious weeds, and unwanted vegetation.

Citizen Wilderness Proposal. Areas that have been inventoried and proposed for Wilderness designation by citizens.

Clean Air Act (CAA) of 1963 and amendments. Federal legislation governing air pollution control.

Climate change. Any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun; natural processes within the climate system (e.g., changes in ocean circulation); and human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, or desertification).

Closed area. An area where one or more uses are prohibited either temporarily or over the long term. Areas may be closed to uses such as, but not limited to, off-road vehicles, mineral leasing, and mineral or vegetative material collection. In off-road vehicle use closed areas, motorized and mechanized off-road vehicle use is prohibited. Use of motorized and mechanized off-road vehicles in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer (43 CFR 8340.0-5).

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 take place with any interested parties, whether or not they are a cooperating agency.

Collaborative partnerships. Refers to people working together, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks.

Commercial use. The collection of vegetative products for the purpose of resale.

Community phase. In the context of state and transition modeling, one of multiple phases within a state that describes the dynamic vegetative property transitions within the state.

Condition class (fire regimes). Fire regime condition classes are a measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components, such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or disease, or other management activities.

Condition of approval (COA). Condition or provision (requirement) under which an application for a permit to drill or sundry notice is approved.

Conformance. A proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

Control Method. Weed control methods, which include mechanical (digging or mowing), biological (livestock grazing, bio-pathogens or predator species), and chemical (BLM-approved herbicides and additives) treatments that may be used alone or in combination.

Controlled Surface Use (CSU). A category of moderate constraint stipulations that allows some use and occupancy of public land while protecting identified resources or values and is applicable to fluid mineral leasing and all activities associated with fluid mineral leasing (e.g., truck-mounted drilling and geophysical exploration equipment off designated routes, construction of wells or pads). Areas managed with CSUs are open to fluid mineral leasing but the stipulation allows the BLM to require special operational constraints, or the activity can be shifted more than 200 meters (656 feet) to protect the specified resource or value.

Construction. The phase of an authorization in which facilities are built on public land such as roads, pipelines, and transmission lines.

Cooperating Agency. Assists the lead federal agency in developing an environmental assessment or environmental impact statement. These can be any agency with jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any tribe or federal, state, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency.

Corridor. A strip of land that aids in the movement of species between disconnected core areas of their natural habitat.

Council on Environmental Quality (CEQ). An advisory council to the President of the US established by the National Environmental Policy Act of 1969. It reviews federal programs to analyze and interpret environmental trends and information.

Criteria pollutant. Indicators of air quality established by the Environmental Protection Agency (EPA). The EPA has established a maximum concentration for each of the six pollutants, above which adverse effects on human health may occur. These threshold concentrations are called National Ambient Air Quality Standards. The criteria pollutants are ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead.

Critical habitat. (1) The specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and 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 US Fish and Wildlife Service and/or National Marine Fisheries Service that such areas are essential for the conservation of the species. Critical habitats are designated in 50 CFR Parts 17 and 226. The constituent elements of critical habitat are those physical and biological features of designated or proposed critical habitat essential to the conservation of the species, including, but not limited to: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) habitats

that are protected from disturbance or are representative of the historical geographic and ecological distributions of a species (BLM Manual 6840).

Critical natural and cultural resources. Plant, wildlife, and cultural resources at risk of irreparable harm as a result of wildfire. Critical natural and cultural resources include but are not limited to sites eligible for inclusion in the National Register of Historic Places and wildlife priority habitats.

Crucial habitat. Habitat that is vital to the continued existence of a population.

Cultural resource high priority sites. Those historic properties identified as being in some danger of modification (e.g., vandalism, erosion, or heavy visitation) that would alter the site's integrity and eligibility or potential eligibility for listing on the National Register of Historic Places.

Cultural resources. Locations of human activity, occupation, or use. Cultural resources include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and locations of traditional cultural or religious importance to social and/or cultural groups.

Cultural resources inventory. An inventory to assess the presence of historic properties.

Cumulative effects. The direct and indirect effects of a proposed project alternative's incremental impacts when they are added to other past, present, and reasonably foreseeable actions, regardless of who carries out the action.

Decision area. Lands and federal mineral estate within the planning area that are administered by the BLM.

Deferred rotation. Rotation grazing with regard to deferring pastures beyond the growing season, if they were used early the prior year, or that have been identified as needing deferment for resource reasons.

Desired Future Condition (DFC). For rangeland vegetation, the condition of rangeland resources on a landscape scale that meet management objectives. It is based on ecological, social, and economic considerations during the land planning process, and is usually expressed as ecological status or management status of vegetation (species composition, habitat diversity, and age and size class of species) and desired soil qualities (soil cover, erosion, and compaction). In a general context, desired future condition is a portrayal of the land or resource conditions that are expected to result if goals and objectives are fully achieved.

Desired plant community (DPC). One of several plant community types that may occupy an ecological site, the one that meets at least the minimum quality criteria for the soil, water, air, plant, and animal resources, and meets the planned objectives for the use.

Desired outcomes. A type of land use plan decision expressed as a goal or objective.

Direct effect. Those effects caused by the action and occur at the same time and place.

Directional drilling. A drilling technique whereby a well is deliberately deviated from the vertical in order to reach a particular part of the oil- or gas-bearing reservoir. Directional drilling technology enables the driller to steer the drill stem and bit to a desired bottom hole location. Directional wells initially are drilled straight down to a predetermined depth and then gradually curved at one or more different points to penetrate one or more given target reservoirs. This specialized drilling usually is accomplished with the use of a fluid-driven downhole motor, which turns the drill bit. Directional drilling also allows multiple production and injection wells to be drilled from a single surface location such as a gravel pad, thus minimizing cost and the surface impact of oil and gas drilling, production, and transportation facilities. It can be used to reach a target located beneath an environmentally sensitive area (Alaska Department of Natural Resources, Division of Oil and Gas 2009).

Discretionary Action. A non-mandatory course of action using elements of judgment and choice by an authorized individual that is not spelled out in advance by federal statute, regulation, or policy.

Dispersed Recreation. Any recreational activity that takes place in areas with minimal or no facilities or services.

Disposal. The act of conveying federal interest in public land to a non-federal party through sale, exchange, the Recreation and Public Purposes Act, Desert Land Entry, or other land law statute.

Disposal lands. Those public lands that are identified in a Land Use Plan for the possibility of transfer out of federal ownership.

Disturbance activities. Any actions that could result in the displacement or disturbance of wildlife (e.g. vehicle travel, removal of vegetation, noise, and development).

Diverse stabilizing species. Obligate and facultative species that can improve riparian/stream health and the sustainability of values (such as fish and wildlife habitat, livestock forage and aesthetics) and provide: rooting strength to prevent bank erosion that can fill gravel beds with fine sediment; roughness for dissipating energies of water; filtering of runoff from adjacent lands of eroded sediment, nutrients and bacteria; water storage and aquifer recharge; shading necessary to retard heating and help maintain cooler water temperatures; and the source of large woody debris in higher gradient reaches that dissipates energy and helps retain spawning gravels, contributes to pool formation, provides critical in-stream structure and helps moderate summer water temperature.

Domestic well. A well serving up to 3 single-family dwellings, irrigating 1 acre or less of lawn and garden, and providing water for the individual's domestic animals and livestock.

Easement. An easement is a right to use someone else's land for a specific purpose.

Ecological threshold. Thresholds are points in space and time at which one or more of the primary ecological processes responsible for maintaining the sustained equilibrium of the state degrades beyond the point of self-repair.

Education. A learning process that increases people's knowledge and awareness about environmental and heritage resources and their associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action.

Eligible river. A river that qualifies for inclusion into the National Wild and Scenic River System through professional judgment that it is free flowing and, with its adjacent land area, possesses at least one river-related value considered to be outstandingly remarkable (M-8351, BLM Wild and Scenic River Policy and Program).

Emergency Stabilization (ES). Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Emergency stabilization actions must be taken within one year following containment of a wildfire.

Emergency Stabilization Plan. A site-specific document that specifies treatments required to implement post-fire emergency stabilization policies.

Endangered species. Any species that is in danger of extinction throughout all or a significant portion of its range (BLM Manual 6840, Special Status Species Manual). Under the Endangered Species Act in the US, "endangered" is the more-protected of the two categories. Designation as endangered (or threatened) is determined by US Fish and Wildlife Service as directed by the Endangered Species Act.

Endangered Species Act of 1973 (ESA). Designed to protect and recover imperiled species and the ecosystems upon which they depend (16 USC 1531-1544). The ESA is administered by two federal agencies, US Fish and Wildlife Service and the National Marine Fisheries Service.

Environmental assessment (EA). A concise public document prepared to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact. It includes a brief discussion of the need for the proposal, alternatives considered, environmental impact of the proposed action and alternatives, and a list of agencies and individuals consulted.

Environmental impact statement (EIS). A detailed statement prepared by the responsible official in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed.

Exception. An exception exempts the holder of the land use authorization document from the stipulation on a one-time basis for a particular site within the leasehold or project area. The standard exception applies to all No Surface Occupancy, Controlled Surface Use, and Timing Limitation stipulations. Exceptions are determined on a case-by-case basis and may be granted by the Authorized Officer if it can be demonstrated that the surface-disturbing activity would not cause adverse impacts; have no measurable impacts; or not interfere with fire suppression or health and safety objectives. In situations where an activity is excepted from a lease

stipulation, the activity could be subject to additional conditions of approval, reclamation measures, or best management practices. Measures required would be based on the nature and extent of resource values potentially affected by the surface-disturbing activity. Excepted lease stipulations are granted on a one-time case-by-case basis and will not necessarily constitute subsequent approvals.

Exchange. A transaction whereby the federal government receives land or interests in land in exchange for other land or interests in land.

Exclusion area. See "Right-of-way exclusion area" definition.

Existing routes. The roads, trails, or ways that are used by motorized vehicles (e.g., jeeps, all-terrain vehicles, and motorized dirt bikes), mechanized uses (e.g., mountain bikes, wheelbarrows, and game carts), pedestrians (e.g., hikers), and/or equestrians and are, to the best of the BLM's knowledge, in existence at the time of RMP/EIS publication.

Extensive Recreation Management Area (ERMA). Administrative units that require specific management consideration in order to address recreation use, demand, or Recreation and Visitor Services program investments. ERMAs are managed to support and sustain the principal recreation activities and the associated qualities and conditions of the ERMA. ERMA management is commensurate and considered in context with the management of other resources and resource uses.

Federal Land Policy and Management Act of 1976 (FLPMA). Public Law 94-579, October 21, 1976, often referred to as the BLM's "Organic Act," which provides most of the BLM's legislated authority, direction policy, and basic management guidance (BLM National Management Strategy for OHV Use on Public Lands).

Federal mineral estate. Subsurface mineral estate owned by the US and administered by the BLM.

Fire frequency. A general term referring to the recurrence of fire in a given area over time.

Fire Management Category A. Those areas where wildfires are not wanted. These areas include threatened and endangered species habitat and the urban/wildland interface.

Fire Management Category B. Those areas where wildfires are not wanted, but if fires occur and escape initial attack, management options, on how to suppress the fire is available.

Fire Management Category C. Those areas where fire has a significant role in the environment, and wildfires should be used to accomplish resource management goals.

Fire Management Category D. Those areas where wildfires should be allowed to burn in a mostly unrestricted fashion to achieve resource objectives.

Fire Management Plan (FMP). A plan that identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and wildland fire

use). The plan is supplemented by operational plans including, but not limited to, preparedness plans, preplanned dispatch plans, and prevention plans. FMPs assure that wildland fire management goals and components are coordinated.

Fire retardant. A substance other than water that reduces flammability of fuels or delays their combustion. Fire retardants applied to wildfires are usually a mixture of water and chemicals designed to wet the area as well as chemically retard a fires progression through vegetation. Typically it is colored so that the application area can be seen from the air.

Fire suppression. All work and activities connected with control and fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

Fish and wildlife priority habitat. Habitat critical to the life processes/stages of terrestrial, aquatic, and semi-aquatic species (e.g. Important Bird Areas (IBAs); key breeding, nesting, spawning, birthing, and young/brood-rearing areas; crucial summer and winter habitat; critical habitat; and important migration corridors).

Floodplain. Topographically, flat land adjacent to a stream; geomorphically, landforms composed primarily of unconsolidated depositional material (sediments) derived from the stream; hydrologically, landforms subject to periodic flooding by the stream.

Fluid minerals. Oil, gas, coal bed natural gas, and geothermal resources.

Fluvial. Of or pertaining to rivers or produced by the action of rivers or streams.

Forage. All browse and herbaceous foods that are available to grazing animals.

Four-wheel drive vehicle. A passenger vehicle or truck having power available to all wheels. Any motorized vehicle that has generally higher clearance than a passenger car and has traction on all four wheels.

Fragile soils. Soils having a shallow depth to bedrock, minimal surface layer of organic material, textures that are more easily detached and eroded, or are on slopes over 35 percent.

Free use permits. Governmental units (federal, state, and local), nonprofit organizations, and certain mining claimants which do not qualify for free use permits under the provisions of 43 CFR 5511.1 may qualify under 43 CFR 5511.3 for a special permit to remove vegetative products free of charge if it is used for public interest.

Front Country. Outdoor areas that are easily accessible by vehicle and mostly visited by day users.

Geographic Information System (GIS). A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and display a potentially wide array of geospatial information.

Geophysical exploration. Efforts to locate deposits of oil and gas resources and to better define the subsurface.

Geothermal energy. Natural heat from within the Earth captured for production of electric power, space heating, or industrial steam.

Goal. A broad statement of a desired outcome; usually not quantifiable and may not have established timeframes for achievement.

Government to Government Consultation. Communication between the tribal council, or council member designated to represent the council, and an appointed line officer of the BLM who is knowledgeable about the project and who is authorized to speak for the federal government.

Grandfathered right. The right to use in a non-conforming manner due to existence prior to the establishment of conforming terms and conditions.

Grass bank/Reserve Allotment. A parcel of land for which a term livestock grazing permit has not been issued but is available for livestock grazing authorization under special circumstances. Those circumstances may include but are not limited to instances where livestock grazing on permitted allotments is not available in a given year due to drought conditions or post fire rehabilitation and/or vegetation treatment grazing deferrals.

Grazing preference. Grazing preference or preference means a superior or priority position compared to others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by a permittee or lessee (43 CFR 4100.0-5).

Groundwater. Water held underground in soil or permeable rock, often feeding springs and wells.

Growth medium characterization. An evaluation of soils consisting of obtaining representative soil samples from the reclamation area to assess the surface and subsurface conditions of the soils. Soil conditions are evaluated by completing laboratory tests to determine the physical and chemical characteristics of the soils and evaluate suitability for growth medium and determine if there is any need for soil amendments to improve the success of reclamation.

Guidelines. Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2.

Guidelines for Rangeland Health. A grazing practice, method or technique determined by the authorized officer to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard.

Guzzler. General term covering guzzler, wildlife drinker, or tenaja. A natural or artificially constructed structure or device to capture and hold rain water, and make it accessible to small and/or large animals. Most guzzlers involve above- or below-ground piping, storage tanks, and

valves. Tenajas are natural depressions in rock, which trap and hold water. To some guzzlers, steps or ladders are sometimes added to improve access and reduce mortality from drowning.

Habitat. An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle.

Habitat Management Plan (HMP). A written and approved activity plan for a geographical area which identifies habitat management activities to be implemented in achieving specific objectives of planning decisions.

Hazardous material. A substance, pollutant, or contaminant that, due to its quantity, concentration, or physical or chemical characteristics, poses a potential hazard to human health and safety or to the environment if released into the workplace or the environment.

Herd area (HA). An area that contained wild horses or burros that were inventoried and mapped based on the requirements set forth with passage of the Wild Free-Roaming Horses and Burros Act of 1971.

Herd management area (HMA). Public land under the jurisdiction of the BLM that has been designated for special management emphasizing the maintenance of an established wild horse or burro herd.

Historic properties. All prehistoric, historic and ethnographic sites, buildings, structures, or objects that are eligible for inclusion on the National Register of Historic Places or that are unevaluated.

Horizontal drilling. A more-specialized type of directional drilling that allows a single well bore at the surface to penetrate oil- or gas-bearing reservoir strata at angles that parallel or nearly parallel the dip of the strata. The well bore is then open and in communication with the reservoir over much longer distances. In development wells, this can greatly increase production rates of oil and gas or volumes of injected fluids. Horizontal drilling may involve underbalanced drilling, coiled tubing, bit steering, continuous logging, multilateral horizontals, and horizontal completions. Lateral step-outs are directional wells that branch off a main borehole to access more of the subsurface. Conditions for successful horizontal wells include adequate pre-spud planning, reservoir descriptions, drillable strata that will not collapse, and careful cost control (Alaska Department of Natural Resources, Division of Oil and Gas 2009).

Impact. The effect, influence, alteration, or imprint caused by an action. Can be used synonymously with "effect."

Impairment. The degree to which a distance of clear visibility is degraded by human-made pollutants.

Implementation decisions. Decisions that take action to implement land use planning; generally appealable to Interior Board of Land Appeals under 43 CFR 4.410.

Implementation plan. An area or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans.

Indian Trust Assets. Lands, natural resources, money, or other assets held by the federal government in trust or that are restricted against alienation for tribes and individual Native Americans.

Indirect effects. Those effects caused by the action that are later in time or farther in distance, but are still reasonably foreseeable.

Intermittent stream. An intermittent stream is a stream that flows only at certain times of the year when it receives water from springs or from some surface sources such as melting snow in mountainous areas. During the dry season and throughout minor drought periods, these streams will not exhibit flow. Geomorphological characteristics are not well defined and are often inconspicuous. In the absence of external limiting factors, such as pollution and thermal modifications, species are scarce and adapted to the wet and dry conditions of the fluctuating water level.

Interpretation. A mission based communication process that forges emotional and intellectual connections between the interests of the audience and meanings inherent in the resource.

Invasive species. A species that is not native to the region or area and who's introduction does or is likely to cause economic or environmental harm or harm to human health.

Invertebrate. An animal lacking a backbone or spinal column, such as insects, snails, and worms. The group includes 97 percent of all animal species.

Issues of Tribal Concern (Tribal concerns). Sacred sites, areas of religious and traditional importance, hunting grounds, medicinal and other plant gathering areas, cultural resource locations and sites that have any historical and cultural significance.

K factor. A soil erodibility factor used in the universal soil loss equation that is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff. Estimation of the factor takes several soil parameters into account, including soil texture, percent of sand greater than 0.10 millimeter, soil organic matter content, soil structure, soil permeability, clay mineralogy, and coarse fragments. K factor values range from 0.02 to 0.64, the greater values indicating the highest susceptibilities to erosion.

Key Species. A single plant species (or in some situations two or three similar species) chosen to serve as a guide to the grazing use of the entire plant community. If the key species on the key grazing area is properly grazed, the entire plant community will not be excessively grazed.

Lacustrine. Pertaining to, produced by, or inhabiting a lake environment.

Land classification. The process of determining a specific use for certain public lands. Classification actions may include segregation from other uses, such as mineral entry.

Land health condition. A classification for land health which includes these categories: Meeting Land Health Standard(s) and Not Meeting Land Health Standard(s).

- Meeting Land Health Standard(s): Lands for which health indicators are currently in acceptable condition such that basic levels of ecological processes and functions are in place. This rating includes the following subcategories:
  - Fully Meeting Standard(s): Lands for which there are no substantive concerns with health indicators
  - Exceeding Standard(s): Lands for which health indicators are in substantially better conditions than acceptable levels.
  - Meeting Standard(s) with Problems: Lands which have one or more concerns with health indicators to the degree that they are categorized as meeting the Land Health Standards, but have some issues which make them at risk of becoming "not meeting."
- Not Meeting Land Health Standard(s): Lands for which one or more health indicators are in unacceptable conditions such that basic levels of ecological processes and functions are no longer in place.

Land health trend is used to describe these classes further. It includes these categories: upward, static, and downward.

- Upward Trend: lands which have shown improving indicator conditions over time.
- Static Trend: lands which have shown no clear improvement or decline in indicator conditions over time.
- Downward Trend: lands which have shown declining indicator conditions over time.

Land tenure adjustments. Jurisdictional or ownership changes in public land. Tenure is derived from the Latin word tenet meaning "to hold," so land tenure describes the way in which land is held. These adjustments are accomplished through such actions as disposals, acquisitions, or withdrawals.

Land treatment. All methods of artificial range improvement arid soil stabilization such as reseeding, brush control (chemical and mechanical), pitting, furrowing, and water spreading.

Land use allocation. 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 (H-1601-1, BLM Land Use Planning Handbook).

Land use plan. A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land use plan level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes both RMPs and management framework plans (from H-1601-1, BLM Land Use Planning Handbook).

Land use plan decision. Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to Interior Board of Land Appeals.

Late season. Late summer or fall grazing.

Leasable minerals. Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. These include energy-related mineral resources such as oil, natural gas, coal, and geothermal, and some non-energy minerals, such as phosphate, sodium, potassium, and sulfur. Geothermal resources are also leasable under the Geothermal Steam Act of 1970.

Lease. A contract granting possession or control of real property for a determined period. The BLM employs numerous types of leases under different laws and statues including but not limited to communication use leases, mineral leases, and grazing leases.

Lease notice. Provides more-detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. A lease notice also addresses special items that lessees should consider when planning operations but does not impose additional restrictions. Lease notices are not an RMP-level decision, and new lease notices may be added to fluid mineral leases at the time of sale. Lease notices apply only to leasable minerals (e.g., oil, gas, geothermal) and not to other types of leases, such as livestock grazing.

Lease stipulation. A modification of the terms and conditions on a standard lease form at the time of the lease sale.

Lek. An assembly area where birds, especially sage-grouse, carry on display and courtship behavior.

Lentic. Pertaining to standing water such as lakes and ponds.

Lithic site. An archaeological site containing debris left from the manufacture, use, or maintenance of stone tools and/or including ground stone implements.

Livestock carrying capacity. The maximum stocking rate possible without inducing damage to vegetation or related resources. It may vary from year to year on the same area due to fluctuating forage production.

Livestock kind. Species of domestic livestock such as cattle, sheep, horses, or goats.

Locatable minerals. Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Long-term effect. The effect could occur for an extended period after implementation of the alternative. The effect could last several years or more.

Low-power communication site. Sites that include non-broadcast uses (e.g., commercial or private mobile radio service, cellular telephone, microwave, local exchange network, passive reflector).

Maintenance. The phase of an authorization in which facilities have been built on public land and are being utilized and upkept.

Management decision. A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

Master development plan. Information common to multiple planned wells, including drilling plans, Surface Use Plans of Operations, and plans for future production.

Mechanical transport. Any vehicle, device, or contrivance for moving people or material in or over land, water, snow, or air that has moving parts.

Mechanical vegetation treatment. Includes mowing, chaining, chopping, drill seeding, and cutting vegetation to meet resource objective. Mechanical treatments generally occur in areas where fuel loads or invasive species need to be reduced prior to prescribed fire application; when fire risk to resources is too great to use naturally started wildland fires or prescribed fires; or where opportunities exist for biomass utilization or timber harvest. Mechanical treatments may also be utilized to improve wildlife habitat conditions.

Mechanized uses. Equipment that is mechanized, including but not limited to mountain bikes, wheelbarrows, and game carts.

Megaannum (Ma). A unit of time equal to one million years.

Mineral. Any naturally formed inorganic material, solid or fluid inorganic substance that can be extracted from the earth, any of various naturally occurring homogeneous substances (as stone, coal, salt, sulfur, sand, petroleum, water, or natural gas) obtained usually from the ground. Under federal laws, considered as locatable (subject to the general mining laws), leasable (subject to the Mineral Leasing Act of 1920), and salable (subject to the Materials Act of 1947).

Mineral entry. The filing of a claim on public land to obtain the right to any locatable minerals it may contain.

Mineral estate. The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

Mineralize. The process where a substance is converted from an organic substance to an inorganic substance.

Mineral materials (salable minerals, salable mineral materials). Common varieties of mineral materials such as soil, sand and gravel, stone, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Materials Act of 1947, as amended.

Mineral patent. A claim on which title has passed from the federal government to the mining claimant under the Mining Law of 1872.

Minimum Impact Suppression Tactics (MIST). The use of fire management tactics commensurate with the fire's potential or existing behavior while producing the least impact on the resource being protected.

Mining claim. A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

Mining Law of 1872. Provides for claiming and gaining title to locatable minerals on public lands. Also referred to as the General Mining Laws or Mining Laws.

Mitigation. Alleviation or lessening of possible adverse effects on a resource by applying appropriate protective measures or adequate scientific study. Mitigation may be achieved by avoidance, minimization, rectification, reduction, and compensation.

Modification. A modification changes the language or provisions of a surface stipulation, either temporarily or for the term of the lease or project. A 30-day public notice and comment period is required before modification of a stipulation.

Monitoring (plan monitoring). The process of tracking the implementation of land use plan decisions and collecting and assessing data necessary to evaluate the effectiveness of land use planning decisions.

Motocross facility. Venue that facilitates competitive motocross racing and spectating in a controlled setting. Venue layout provides for public health and safety and track design(s) conform to uniform or industry standards. Routine maintenance is provided for the venue.

Motocross track. High speed motorcycle course characterized by winding paths augmented with super elevated sharp turns and jumps where natural elevated features exist. Tracks are randomly established through repetitive, intense motorcycle use over relatively short periods of time. Tracks generally do not conform to any uniform or industry standards and are constantly changing over time.

Motorcycle. A motorized vehicle with two tires and with a seat designed to be straddled by the operator.

Motorized vehicles or uses. Vehicles that are motorized, including but not limited to jeeps, off-highway vehicles (all-terrain vehicles, such as four-wheelers and three-wheelers), trail motorcycles or dirt bikes, and aircrafts.

Multiple-use. The management of the public lands and their various resource values 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 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 nonrenewable resources, including recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the 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 (Federal Land Policy and Management Act; BLM Manual 6840, Special Status Species Manual).

Municipal watershed. A watershed area that provides water for use by a municipality as defined by the community and accepted by the state.

National Environmental Policy Act of 1969 (NEPA). Public Law 91-190. Establishes environmental policy for the nation. Among other items, NEPA requires federal agencies to consider environmental values in decision-making processes.

National Historic Trail (NHT) corridor. Allocation established through the land use planning process, pursuant to Section 202 of Federal Land Policy and Management Act and Section 7(a)(2) of the National Trails System Act for a public land area of sufficient width within which to encompass National Trail resources, qualities, values, and associated settings and the primary use or uses that are present or to be restored.

National Register of Historic Places. A listing of architectural, historical, archaeological, and cultural sites of local, state, or national significance established by the National Historic Preservation Act of, 1966 and maintained by the National Park Service.

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, historic, 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 or vegetation. A species found in a given region or ecosystem that is the result of natural processes, with no human intervention.

Naturalness (ecological). Consistent with what would occur without human intervention. For vegetation structure, naturalness implies a pattern similar to what fire and climate would produce across the landscape.

Naturalness (wilderness). The degree to which an area generally appears to have been affected primarily by the forces of nature with the imprint of people's work substantially unnoticeable.

Natural processes. Fire, drought, insect and disease outbreaks, flooding, and other events which existed prior to European settlement, and shaped vegetation composition and structure.

No Ground Disturbance (NGD). Areas restricted by NGD are closed to all surface-disturbing activities. Activities that are not considered surface disturbing include, but are not limited to, livestock grazing, cross-country hiking or equestrian use, installing signs, minimum impact filming, vehicular travel on designated routes, and use of the land by wildlife. An NGD stipulation cannot be applied to operations conducted under the 1872 Mining Law without a withdrawal. A withdrawal is not considered a land use planning decision because it must be approved by the Secretary of Interior. Therefore, unless withdrawn, areas identified as NGD are open to operations conducted under the mining laws subject only to timing limitation and controlled surface use stipulations that are consistent with the rights granted under the mining laws. In addition, the following actions or activities are not subject to the NGD stipulation because specific laws and program terminology constrain them. However, these actions or activities may be subject stipulations: right-of-way location; coal leasing; non-energy solid mineral leasing; and mineral material disposal.

No net unmitigated loss. Objective to maintain the current quantity and quality of all fish and wildlife habitat on BLM-administered lands, including Greater Sage-Grouse habitat within PPMA and PGMA, by protecting existing habitat or by mitigating for loss due to anthropogenic disturbances.

Non-Attainment of PFC. For lentic systems, riparian areas are functioning properly when adequate vegetation, landform, or debris is present to dissipate energies associated with wind action, wave actions, and overland flow from adjacent sites, thereby reducing erosion and improving water quality; filter sediment and aid floodplain development; improve flood-water retention and groundwater recharge; develop root masses that stabilize islands and shoreline features against cutting action; restrict water percolation; develop diverse ponding characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, water bird breeding, and other uses; and support greater biodiversity.

For lotic systems, riparian areas are functioning properly when adequate vegetation, landform, or large woody material is present to dissipate stream energy associated with high waterflow, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and groundwater recharge; develop root masses that stabilize stream banks against erosion; and maintain channel characteristics.

Non-discretionary action. A mandatory course of action by an authorized individual that is required by federal statute, regulation, or policy.

Non-energy leasable minerals. Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920. Non-energy minerals include resources such as phosphate, sodium, potassium, and sulfur.

Non-native species or vegetation. A species that is not native to an area or ecosystem that was introduced to the area.

Nonfunctional condition. Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or woody debris to dissipate energies associated with flow events, and thus are not reducing erosion or improving water quality.

Non-Selective Removal. A wild horse or burro gather operation in which the number of animals gathered equals the number of excess animals that need to be removed in order to achieve the post gather target or AML. Additional animals beyond the needed removal numbers are not gathered. The operation would typically be conducted in emergency situations to remove animals in distress, to animals located outside HMA boundaries, or to remove animals that are not designated for management in an HMA (remove wild horses from a burro HMA). Burro gathers are typically non-selective gathers. Population control or selection based on age or sex is not feasible during Gate Cut or Non-Selective gather operations.

Non-target vegetation. Vegetation that is considered to be desirable and part of the potential natural vegetation or desired plant community.

No Surface Occupancy (NSO). A major constraint where use or occupancy of the land surface for fluid mineral exploration or development and all activities associated with fluid mineral leasing (e.g., truck-mounted drilling and geophysical exploration equipment off designated routes, construction of wells and/or pads) are prohibited to protect identified resource values. Areas identified as NSO are open to fluid mineral leasing, but surface occupancy or surface-disturbing activities associated with fluid mineral leasing cannot be conducted on the surface of the land. Access to fluid mineral deposits would require horizontal drilling from outside the boundaries of the NSO area.

Noxious weeds. A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the US.

Objective. A description of a desired outcome for a resource. Objectives can be quantified and measured and, where possible, have established timeframes for achievement.

Off-highway vehicle (OHV). Any motorized vehicle capable of, or designated for travel on or immediately over land, water or other natural terrain, excluding: any non-amphibious registered motorboat; any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; vehicles in official use; and any combat or combat support vehicle when used for national defense emergencies (43 CFR 8340.0-5).

Off-highway vehicle area designations. BLM-administered lands in the CCD are designated as Open, Limited, or Closed for OHV use.

- **Open.** An area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set forth in 43 CFR subparts 8341 and 8342 (43 CFR 8340.0-5).
- **Limited.** An area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following type of categories: Numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions (43 CFR 8340.0-5).
- **Closed.** An area where off-road vehicle use is prohibited. Use of off-road vehicles in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer (43 CFR 8340.0-5).

Open. Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 defines the specific meaning of "open" as it relates to OHV use.

Open area. See "Off-highway vehicle area designations – Open" definition.

Outstandingly Remarkable Value (ORV). Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values..." Other similar values that may be considered include ecological, biological, or botanical.

Ozone. A faint blue gas produced in the atmosphere from chemical reactions of burning coal, gasoline, and other fuels and chemicals found in products such as solvents, paints, and hairsprays.

Paleontological resources. The physical remains or other physical evidence of plants and animals preserved in soils and sedimentary rock formations.

Passive Recreation. Refers to non-consumptive uses such as wildlife observation, hiking, cross-country skiing, running, and horseback riding. Passive recreational activities place minimal stress on a site's resources and as a result, they can provide ecosystem benefits and are highly compatible with natural resource protection.

Particulate matter (PM). One of the six criteria pollutants for which the EPA established National Ambient Air Quality Standards. Particulate matter is defined as two categories, fine particulates, with an aerodynamic diameter of 10 micrometers (PM_{10}) or less, and fine particulates with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$).

Passenger vehicle. Two-wheel-drive, low-clearance vehicles.

Patent. The instrument by which the federal government grants public land to an individual or entity. Patents may include reservations, such as the sub-surface mineral estate or easements for ditches and canals, to the United States.

Perennial stream. A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Permitted access. See "Administrative access" definition.

Permitted use. The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and expressed in animal unit months (43 CFR 4100.0-5; from H-4180-1, BLM Rangeland Health Standards Manual).

Permitted Event. An event, activity, or use that is authorized under the Special Recreation Permit program

Permittee. A person or company permitted to graze livestock on public land.

Personal use. The collection of vegetative products for individual use in which no resale of the material is allowed.

Petroglyph. A form of rock art created by incising, scratching or pecking designs into rock surfaces.

Physiography. The study and classification of the surface features of the earth.

Planning area. The geographical area for which resource management plans are developed and maintained. The Carson City planning area boundary defines the area assessed in this RMP. The planning area encompasses nine million acres in 11 counties in Nevada and California. The BLM administers about 4.8 million acres within the planning area.

Planning criteria. The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamlines and simplifies the resource management planning actions.

Planning issues. Concerns, conflicts, and problems with the existing management of public lands. Frequently, issues are based on how land uses affect resources. Some issues are concerned with how land uses can affect other land uses, or how the protection of resources affects land uses.

Post Treatment Monitoring. Evaluation of the number of acres treated to determine effectiveness.

Potential Natural Community. The biotic community that would become established on an ecological site if all successional sequences were completed without interferences by humans under the present environmental conditions. Natural disturbances are inherent in its development. The potential natural community may include acclimatized or naturalized nonnative species.

Potential Fossil Yield Classification (PFYC) System. A system used by the BLM to classify geologic units 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.

Potential vegetation group. Potential vegetation types grouped on the basis of a similar general moisture or temperature environment.

Prehistoric resources. Any material remains, structures, and items used or modified by people before Euro-Americans established a presence in the region.

Preliminary Priority Sage-grouse Habitat (PPH). Areas that have been identified as having the highest conservation value to maintaining sustainable sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. These areas have been identified by state fish and wildlife agencies in coordination with respective BLM offices.

Prescribed fire. A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire.

Prescribed grazing. Prescribed grazing is the application of a specific kind of livestock at a determined season, duration and intensity to accomplish a clearly defined vegetation or landscape goal.

Prevention of significant deterioration (PSD). An air pollution permitting program intended to ensure that air quality does not diminish in attainment areas.

Primitive and unconfined recreation. Non-motorized, non-mechanized (except as provided by law), and undeveloped types of recreational activities.

Primitive road. A linear transportation route managed for use by four-wheel drive or high-clearance vehicles. Primitive roads do not normally meet any BLM road design standards.

Priority Fish and Wildlife Species. Species occurring on BLM-administered land that require special management due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority fish and wildlife species include, but are not limited to: Special Status Species and Game Species that are Endangered, Threatened, Sensitive, or Candidate species. Priority fish and wildlife species and their habitat may change with dynamic resource conditions on the ground, designation modifications, and as new science dictates.

Priority Watersheds. Watersheds that are delineated at the HUC 12 level (USGS Hydrologic Unit Code) that contain habitat for threatened and endangered species habitat, or well head protection zones, or watersheds that serve as important source areas for municipal and agricultural water supplies.

Proper functioning condition (PFC). A term describing stream health that is based on the presence of adequate vegetation, landform and debris to dissipate energy, reduce erosion and improve water quality.

Proper Functioning Condition for lentic systems. Riparian areas are functioning properly when adequate vegetation, landform, or debris is present to dissipate energies associated with wind action, wave actions, and overland flow from adjacent sites, thereby reducing erosion and improving water quality; filter sediment and aid floodplain development; improve flood-water retention and groundwater recharge; develop root masses that stabilize islands and shoreline features against cutting action; restrict water percolation; develop diverse ponding characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, water bird breeding, and other uses; and support greater biodiversity.

Proper Functioning Condition for lotic systems. Riparian areas are functioning properly when adequate vegetation, landform, or large woody material is present to dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality; filter sediment, capture bed load, and aid floodplain development; improve flood-water retention and groundwater recharge; develop root masses that stabilize stream banks against erosion; and maintain channel characteristics.

Proposed critical habitat. Those areas officially proposed for designations as critical habitat by the Secretary of Interior or Commerce.

Proposed species. A species for which a proposed rule to add the species to the federal list of threatened and endangered species has been published in the Federal Register.

Public land. Land or interest in land owned by the US and administered by the Secretary of the Interior through the BLM without regard to how the US acquired ownership, except lands located on the Outer Continental Shelf and land held for the benefit of Indians, Aleuts, and Eskimos (H-1601-1, BLM Land Use Planning Handbook).

Public water supply. A system, regardless of ownership, that provides the public with water for human consumption through pipes or other constructed conveyances, if the system has 15 or more service connections, as defined in Nevada Revised Statutes 445A.843, or regularly serves 25 or more persons.

Range improvement project. An authorized physical modification or treatment which is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; restore, protect and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. This definition includes, but is not limited to: structures, treatment projects and use of mechanical devices, or modifications achieved through mechanical means.

Rangeland health. The degree to which the integrity of the soil and ecological processes of rangeland ecosystems are sustained. Rangeland health exists when ecological processes are functioning properly to maintain the vegetative and soil structure, organization and activity of the system over time.

Rapid Ecological Assessments (REAs). REAs examine ecological values, conditions, and trends within ecoregions, which are large, connected areas that have similar environmental characteristics. Examples of ecoregions include the Sonoran Desert and the Colorado

Plateau. Ecoregions span administrative boundaries and typically encompass areas much larger than those managed by individual BLM field offices. The ecoregions under assessment range in size from 11 million to 91 million acres. Assessments of these larger areas provide land managers additional information and tools to use in subsequent resource planning and decision-making. REAs are called "rapid" assessments because they synthesize existing information, rather than conduct research or collect new data, and are generally completed within 18 months. This time frame is relatively "rapid" in comparison to assessments that conduct research or collect new data, or in comparison to the preparation of a BLM land-use plan, which typically takes from 36 to 48 months to complete.

Rapid response. Sometimes considered the "second line of defense" after prevention, early detection and rapid response (EDRR) is a critical component of any effective invasive species management program. When new invasive species infestations are detected, a prompt and coordinated containment and eradication response can reduce environmental and economic impacts. This action results in lower cost and less resource damage than implementing a long-term control program after the species is established. Early detection of new infestations requires vigilance and regular monitoring of the managed area and surrounding ecosystem. Reference website: http://www.fs.fed.us/invasivespecies/documents/FICMNEW_EDRR.pdf.

Raptor. Bird of prey with sharp talons and strongly curved beaks, such as hawks, owls, falcons, and eagles.

Reasonably foreseeable action. Those actions for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends.

Reasonable foreseeable development scenario. The prediction of the type and amount of oil and gas activity that would occur in a given area. The prediction is based on geologic factors, past history of drilling, projected demand for oil and gas, and industry interest.

Recharge areas. Headwaters of perennial streams, contributing watersheds to springs and/or seeps, floodplains, all stream channels, municipal watersheds, and source water protection areas.

Reclamation. Returning disturbed lands to a form and productivity that will be ecologically balanced and in conformity with a predetermined land management plan.

Recovery Plan. A plan to promote the conservation of endangered or threatened species to the point at which listing is no longer appropriate under the ESA.

Recreation Management Area (RMA). Land units where Recreation and Visitor Services objectives are recognized as a primary resource management consideration and specific management is required to protect the recreation opportunities. RMAs can be classified as either Special Recreation Management Areas (SRMA) or Extensive Recreation Management Areas (ERMA).

Recreational mining. Engaging in mining activities for hobby, sport, or recreation. Recreational activities undertaken using different types of mining equipment. Also referred to as

"casual mining," "recreational panning," "recreational gold panning," and "recreational mineral prospecting."

Recreational shooting. The use of a firearm, bow and arrow, paintball gun, air-guns, airsoft guns or similar equipment for target shooting or plinking. The definition also applies to paintball and airsoft gun activities involving human targets.

Recreation and Public Purposes Act of 1926. Provides for the lease and sale of public lands determined valuable for public purposes. The objective of the R&PP Act is to meet the needs of state and local government agencies and nonprofit organizations by leasing or conveying public land required for recreation and public purpose uses. Examples of uses made of R&PP lands are parks and greenbelts, sanitary landfills, schools, religious facilities, and camps for youth groups. The act provides substantial cost-benefits for land acquisition and provides for recreation facilities or historical monuments at no cost.

Recreation experiences. Psychological outcomes realized either by recreation-tourism participants as a direct result of their on-site leisure engagements and recreation-tourism activity participation or by nonparticipating community residents as a result of their interaction with visitors and guests within their community or interaction with the BLM and other public and private recreation-tourism providers and their actions.

Recreation Management Zones (RMZ). Subunits within a SRMA managed for distinctly different recreation products. Recreation products are composed of recreation opportunities, the natural resource and community settings within which they occur, and the administrative and service environment created by all affecting recreation-tourism providers, within which recreation participation occurs.

Recreation niche. The place or position within the strategically targeted recreation-tourism market for each SRMA that is most suitable (i.e., capable of producing certain specific kinds of recreation opportunities) and appropriate (i.e., most responsive to identified visitor or resident customers), given available supply and current demand, for the production of specific recreation opportunities and the sustainable maintenance of accompanying natural resource or community setting character.

Recreation opportunities. Favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and attain more lasting, value-added beneficial outcomes.

Recreation Opportunity Spectrum (ROS). One of the existing tools for classifying recreation environments (existing and desired) along a continuum, ranging from primitive, low-use, and inconspicuous administration to urban, high-use, and a highly visible administrative presence. This continuum recognizes variation among various components of any landscape's physical, social, and administrative attributes. Resulting descriptions of existing conditions and prescriptions of desired future conditions define recreation setting character.

Recreation Setting Characteristics (RSC). The distinguishing recreational qualities of any landscape, objectively defined along a continuum, ranging from primitive to urban landscapes,

expressed in terms of the nature of the component parts of its physical, social, and administrative attributes. These recreational qualities can be both classified and mapped. This classification and mapping process should be based on variation that either exists (for example, setting descriptions) or is desired (for example, setting prescriptions) among component parts of the various physical, social, and administrative attributes of any landscape. The recreation opportunity spectrum is one of the tools for doing this.

Recreation settings. The collective distinguishing attributes of landscapes that influence and sometimes actually determine what kinds of recreation opportunities are produced.

Recreation Use Permits (RUP). Authorizations for use of developed facilities that meet the fee criteria established by the Land and Water Conservation Fund Act of 1964, as amended or subsequent authority (such as the pilot fee demonstration program). Recreation Use Permits are issued to ensure that US residents receive a fair and equitable return for the use of those facilities to help recover the cost of construction, operation, maintenance, and management of the permits.

Reference State. A set of plant communities where ecological processes relating to soil and site stability, hydrologic function and biotic integrity are performing at an optimum level under a natural disturbance regime. This state includes the potential natural plant community.

Rehabilitate. Returning disturbed lands as near to its pre-disturbed condition as is reasonably practical or as specified in approved permits.

Renewable Energy. Energy resources that constantly renew themselves or that are regarded as practically inexhaustible. These include solar, wind, geothermal, hydro, and biomass. Although particular geothermal formations can be depleted, the natural heat in the Earth is a virtually inexhaustible reserve of potential energy.

Required design features. Means, measures, or practices intended to reduce or avoid adverse environmental impacts. A suite of features that would establish the minimum specifications for certain activities (i.e., water developments, mineral development, and fire and fuels management) and mitigate adverse impacts. These design features would be required to provide a greater level of regulatory certainty than through implementation of Best Management Practices. In general, the design features are accepted practices that are known to be effective when implemented properly at the project level. However, their applicability and overall effectiveness cannot be fully assessed except at the project-specific level when the project location and design are known. Because of site-specific circumstances, some features may not apply to some projects (e.g., a resource is not present on a given site) and/or may require slight variations from what is described in the EIS/RMP amendment (e.g., a larger or smaller protective area). All variations in design features would require appropriate analysis and disclosure as part of future project authorizations. Additional mitigation measures may be identified and required during individual project development and environmental review.

Research Natural Area (RNA). A land management status which reserves the area for uses compatible with the resource of interest and research for which the area was designated.

Reserve Allotment/Grass Bank. A repository of available pasture/rangeland to be accessible for emergency use in case of a disaster precluding use of the normal permitted allotment. Any qualified applicant has the ability to graze, and grazing must follow an approved plan.

Resilience. Resilience focuses on how far a system can be displaced from equilibrium before return to equilibrium is precluded. The emphasis is placed on the persistence of relationships as they affect the system's ability to adapt to change, therefore resilience relates to the functioning of the system's ecological processes.

Resistance. Resistance indicates the ability of a system to remain at or near its equilibrium condition by maintaining control of its ecological processes.

Resource Advisor. A qualified individual who is primarily responsible for identifying and evaluating potential impacts and benefits of fire operations (wildland or prescribed fire) on natural and cultural resources.

Resource Advisory Council (RAC). A council established by the Secretary of the Interior to provide advice or recommendations to BLM management. The Sierra Front-Northwestern Great Basin RAC covers the CCD.

Resource Management Plan (RMP). A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives, and actions to be achieved.

Restore/restoration. The process of returning disturbed areas to a natural array of native plant and animal associations.

Restoration pathway. In the context of state and transition modeling, re-establishment of pre-threshold states following active restoration.

Resilience. Resilience focuses on how far a system can be displaced from equilibrium before return to equilibrium is precluded. The emphasis is placed on the persistence of relationships as they affect the systems' ability to adapt to change, therefore resilience relates to the functioning of the system's ecological processes.

Resistance. Resistance indicates the ability of a system to remain at or near its equilibrium condition by maintaining control of its ecological processes.

Rest rotation. A grazing rotation strategy that normally involves a multi-pasture system, where one pasture is given 12 months of nonuse each year, while the remaining pastures absorb all the grazing use. This grazing strategy can provide periodic rest for all pastures in the rotation system, or for pastures that have been identified as needing rest for resource reasons.

Reuse. Use of an existing authorization for a new purpose. As a land use authorization reaches the end of its useful life, an acceptable reuse proposal by a third party would allow the old grant to terminate without total reclamation of the facilities under the old authorization.

Revegetate/revegetation. The process of putting vegetation back in an area where vegetation previously existed, which may or may not simulate natural conditions.

Revision. The process of completely rewriting the land use plan due to changes in the planning area affecting major portions of the plan or the entire plan.

Right-of-way (ROW). A grant, easement, lease, permit, or license to occupy, develop, use, or traverse public lands. The Secretary of the Interior is authorized to grant, issue, or renew rights-of-way over, upon, under, or through public lands for such purposes including but not limited to reservoirs, canals, ditches, pipelines, roads, trails, highways, transmission lines, communication lines, systems for the transmission and reception of communication signals, railroads, tunnels, airways, tramways, slurry lines and conveyor belts.

Right-of-way avoidance area. An area only available for land use authorizations if there are no other reasonable alternatives for the authorization. If a land use authorization already exists in an avoidance area, a new authorization would be encouraged to collocate within the bounds of the existing right-of-way.

Right-of-way exclusion area. An area that is not available for land use authorizations.

Riparian/aquatic system. Interacting system between aquatic and terrestrial situations. Identified by a stream channel and distinctive vegetation that requires or tolerates free or unbound water.

Riparian area. Areas that provide enough available water to the root zone to establish and maintain riparian-wetland vegetation. Riparian areas are transitional areas regularly influenced by fresh water, normally extending from the edges of water bodies to the edges of upland communities.

Riparian zone. An area one-quarter mile wide encompassing riparian and adjacent vegetation.

Riparian-wetland potential. The highest ecological status a riparian-wetland area can attain given no political, social, or economic constraints.

Road. A linear transportation route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use.

Roadless. The absence of roads that have been constructed and maintained by mechanical means to ensure regular and continuous use.

Rock art. Petroglyphs (carvings) or pictographs (painting) used by native persons to depict their history and culture.

Rotation. Grazing rotation between pastures in the allotment for the permitted time.

Routes. Multiple roads, trails and primitive roads; a group or set of roads, trails, and primitive roads that represents less than 100 percent of the BLM transportation system. Generically, components of the transportation system are described as "routes."

Sale (public land). A method of land disposal pursuant to Section 203 of FLPMA, whereby the US receives a fair-market payment for the transfer of land from federal ownership. Public lands determined suitable for sale are offered on the initiative of the BLM. Lands suitable for sale must be identified in the RMP. Any lands to be disposed of by sale that are not identified in the current RMP, or that meet the disposal criteria identified in the RMP, require a plan amendment before a sale can occur.

Saturated soils. Occur when the infiltration capacity of the soil is exceeded from above due to rainfall or snowmelt runoff. Soils can also become saturated from groundwater inputs.

Scenic byways. Highway routes that have roadsides or corridors of special aesthetic, cultural, or historical value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic features, or other natural elements.

Scenic river. A river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

Scoping process. An early and open public participation process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

Season of use. The time during which livestock grazing is permitted on a given range area, as specified in the grazing permit.

Seeding. Seeding is a vegetation treatment that includes the application of grass, forb, or shrub seed, either aerially or from the ground. In areas of gentle terrain, ground applications of seed are often accomplished with a rangeland drill. Seeding allows the establishment of native species or placeholder species and restoration of disturbed areas to a perennial-dominated cover type, thereby decreasing the risk of subsequent invasion by exotic plant species. Seeding would be used primarily as a follow-up treatment in areas where disturbance or the previously described treatments have removed exotic plant species and their residue.

Selective Removal. A wild horse or burro gather operation in which the number of animals gathered exceeds the number of excess animals that need to be removed in order to achieve the post gather target or AML. The operation typically would involve selection of animals to return to the age based on age, sex, or other characteristics as determined through Herd Management Area Plan or analyzed in a Gather Plan and NEPA document. Selective removal also provides the opportunity for the BLM to implement population controls such as fertility control.

Short-term effect. The effect occurs only during or immediately after implementation of the alternative.

Significant Cave. A cave located on Federal lands that has been evaluated and determined to possess one or more of the following features, characteristics, or values: biota, cultural, geologic/mineralogical/paleontological, hydrologic, recreational, or educational/scientific.

Significant fossils. Any vertebrate fossil remains or site with fossils of exceptional preservation or context.

Significant impacts (in reference to off-site mitigation requirements). Any disturbance activity that results in the reduction in the quantity or quality of wildlife priority habitat.

Sole-source aquifer. Defined by the US EPA as an aquifer supplying at least 50 percent of the drinking water consumed in the area overlying the aquifer, where the surrounding area has no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

Solitude. The state of being alone or remote from habitations; isolation. A lonely or secluded place. Factors contributing to opportunities for solitude may include size, natural screening, topographic relief, vistas, physiographic variety, and the ability of the user to find a secluded spot.

Source water protection area. The area delineated by a state for a public water supply or including numerous suppliers, whether the source is ground water or surface water or both.

Special Recreation Management Area (SRMA). An administrative public lands unit identified in land use plans where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and/or distinctiveness, and recreation is identified as the predominate resource use and recreation opportunities are managed and protected on a long-term basis.

Special Recreation Permit (SRP). Authorization that allows for recreational uses of public lands and related waters issued as a means to manage visitor use, protect recreational and natural resources, and provide for the health and safety of visitors. There are five types of SRPs as defined below:

- Commercial: any recreational use of the public lands and related waters for business or financial gain. Financial gain includes gratuities, donations, gifts, bartering, etc. where a duty of care or expectation of safety is owed participants by service providers as a result of compensation. It may also be characterized by public advertising for participants.
- Competitive: any organized, sanctioned, or structured use, event, or activity on public land in which two or more contestants compete and either participants register, enter, or complete an application or there is a predetermined course or area designated for the event.
- Organized: any group outdoor recreation activity or event that is neither commercial nor competitive. A group is loosely defined as more than one person participating in a recreation activity or event.
- Vending: any temporary, short-term, non-exclusive revocable authorization to sell goods or services on public lands in conjunction with a recreation activity.

- Special Area Use: authorizations for individual (private, noncommercial) recreation use in areas officially designated as Special Areas by statute or Secretarial Order.

Special status species (BLM). BLM special status species are: (1) species which are federally listed, candidate, or proposed for listing under the Endangered Species Act; and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the Endangered Species Act that are designated as BLM sensitive by the BLM State Director(s). All federally listed candidate species, proposed species, and delisted species in the five years following delisting are conserved as BLM sensitive species.

Split estate. A parcel of land in which all or a portion of the mineral estate is owned by someone other than the surface estate owner. For example, the surface is in private ownership while the subsurface mineral resources are publicly held and managed by the federal government.

Stabilize. The process of stopping further damage from occurring.

Stabilizing vegetation (riparian). Riparian vegetation with the extensive root masses capable of withstanding high-flow events. USDA Forest Service (1992) has developed stability ratings for community types and other bank features (barren, rock, etc.).

Standard. A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., land health standards). To be expressed as a desired outcome (goal).

Standard deviation: A statistical measurement of variation from the average (mean). A low standard deviation means that more of the data points are close to the mean; a high standard deviation means that more of the data points are far away or cover a large range of values from the mean. Standard deviation units are expressed in the same units as the original measurement.

Standard lease terms and conditions. Areas may be open to leasing with no specific management decisions defined in a Resource Management Plan; however, these areas are subject to lease terms and conditions as defined on the lease form (Form 3100-11, Offer to Lease and Lease for Oil and Gas; and Form 3200-24, Offer to Lease and Lease for Geothermal Resources).

Standards and Guidelines Assessment (S&G Assessment). Estimating or judging the status of the ecosystem resources, functions, or processes within a geographic area at a specific time. An assessment characterizes the status of the resource conditions so that the status can be evaluated in relation to rangeland health standards.

Standards and Guidelines Evaluation (S&G Evaluation). An S&G Evaluation analyzes and interprets the findings from the S&G Assessment, relative to the standards for rangeland health, to evaluate the degree of achievement of the standards for rangeland health, and based upon review of existing information, the evaluation draws conclusions on the potential causal factors

for not achieving land health standards and what may be required to make significant progress towards achieving those standards.

State. A state is a recognizable, resistant and resilient complex of 2 components, the soil base and the vegetation structure. The vegetation and soil components are necessarily connected through integrated ecological processes that interact to produce a sustained equilibrium that is expressed by a specific suite of vegetative communities.

State implementation plan. A detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act. State implementation plans are collections of the regulations used by a state to reduce air pollution.

Stationary source. Refers to a stationary source of emissions. Prevention of Significant Deterioration permits are required for major new stationary sources of emissions that emit 100 tons or more per year of carbon monoxide, sulphur dioxide, nitrogen dioxide, ozone, or particulate matter.

Stipulation (general). A term or condition in an agreement or contract.

Stipulation (oil and gas). A provision that modifies standard oil and gas lease terms and conditions in order to protect other resource values or land uses and is attached to and made a part of the lease. Typical lease stipulations include No Surface Occupancy (NSO), Timing Limitations (TL), and Controlled Surface Use (CSU). Lease stipulations are developed through the land use planning (RMP) process.

Suitable river. A river segment found, through administrative study by an appropriate agency, to meet the criteria for designation as a component of the National Wild and Scenic Rivers system, specified in Section 4(a) of the Wild and Scenic Rivers Act.

Surface-disturbing activities. Human-caused disturbance resulting in direct and pronounced alteration, damage, removal, displacement, or mortality of vegetation, soil, or substrates; usually entail motorized or mechanized vehicles or tools; typically can also be described as disruptive activities (see following definition). Examples of typical surface disturbing activities include earth-moving and drilling; geophysical exploration; off-route motorized and mechanized travel; vegetation treatments including woodland thinning with chainsaws; pyrotechnics and explosives; and construction of power lines, pipelines, oil and gas wells, recreation sites, livestock improvement facilities, wildlife waters, or new roads. Examples of casual use and other activities that would not normally be considered surface disturbing activities include equestrian use; managed livestock grazing; cross-country hiking; hand-spraying weeds; minimal trimming of vegetation to maintain ROWs; fire management and fire suppression activities; motorized and mechanized travel on designated routes; and maintenance of permitted areas under valid existing rights.

Sustained yield. The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

Target vegetation. Vegetation that is considered to be detrimental to or invasive within a plant community when compared to the objectives for the site.

Targeted grazing/prescribed grazing. The application of a specific kind of livestock at a determined season, duration and intensity to accomplish defined vegetation or landscape goals.

Terrestrial. Living or growing in or on the land.

Threatened species. Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (BLM Manual 6840, Special Status Species Management). Under the Endangered Species Act in the US, "threatened" is the lesser-protected of the two categories. Designation as threatened (or endangered) is determined by US Fish and Wildlife Service as directed by the Endangered Species Act.

Threshold (ecological). Thresholds are points in space and time at which one or more of the primary ecological processes responsible for maintaining the sustained equilibrium of the state degrades beyond the point of self-repair. Thresholds: boundary in space and time between any and all states, or along irreversible transitions, such that one or more of the primary ecological processes has been irreversibly changed and must be actively restored before return to a previous state is possible.

Threshold (recreation). The point at which the "limit of acceptable change and sustainability is reached. Threshold can be measured in terms of quality standards for the physical, psychological and environmental capacity of an area based upon planning, resource concerns, potential user conflicts, and public health and safety.

Timber. Standing trees, downed trees, or logs which are capable of being measured in board feet.

Timing Limitation (TL). The TL stipulation, a moderate constraint, is applicable to fluid mineral leasing, all activities associated with fluid mineral leasing (e.g., truck-mounted drilling and geophysical exploration equipment off designated routes, construction of wells and/or pads), and other surface-disturbing activities (i.e., those not related to fluid mineral leasing). Areas identified for TL are closed to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified time frames. This stipulation does not apply to operation and basic maintenance activities, including associated vehicle travel, unless otherwise specified. Construction, drilling, completions, and other operations considered to be intensive in nature are not allowed. Intensive maintenance, such as workovers on wells, is not permitted. TLs can overlap spatially with NSO, NGD, CSU, SSR, as well as with areas that have no other restrictions. Administrative activities are allowed at the discretion of the Authorized Officer.

Total dissolved solids. Salt, or an aggregate of carbonates, bicarbonates, chlorides, sulfates, phosphates, and nitrates of calcium, magnesium, manganese, sodium, potassium, and other cations that form salts.

Total maximum daily load (TMDL). An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria.

Traditional cultural property (TCP). A property that derives significance from traditional values associated with it by a social or cultural group, such as an Indian tribe or local community. A traditional cultural property may qualify for the National Register of Historic Places if it meets the criteria and criteria exceptions at 36 CFR 60.4 (see National Register Bulletin 38).

Traditional use. 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.

Trail. A linear route managed for human-power (e.g., hiking or bicycling), stock (e.g., equestrian), or off-highway vehicle forms of transportation or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles.

Transition. Transitions are trajectories of change that are precipitated by natural events and/or management actions which degrade the integrity of 1 or more of the state's primary ecological processes. The primary difference between the reversible and irreversible property of a transition is defined by the systems' ability or inability to repair itself.

Transmission. A passage or transfer, as of a disease from one individual to another or of neutral impulses from one neuron to another.

Transportation linear features. "Linear features" represents the broadest category of physical disturbance (planned and unplanned) on BLM land. Transportation related linear features include engineered roads and trails, as well as user-defined, non-engineered roads and trails created as a result of the public use of BLM land. Linear features may include roads and trails identified for closure or removal as well as those that make up the BLM's defined transportation system.

Transportation system. The sum of the BLM's recognized inventory of linear features (roads, primitive roads, and trails) formally recognized, designated, and approved as part of the BLM's transportation system.

Travel Management Areas (TMA). Polygons or delineated areas where a rational approach has been taken to classify areas open, closed or limited, and have identified and/or designated a network of roads, trails, ways, landing strips, and other routes that provide for public access and travel across the planning area. All designated travel routes within travel management areas should have a clearly identified need and purpose as well as clearly defined activity types, modes of travel, and seasons or timeframes for allowable access or other limitations (BLM Handbook H-8342 Travel and Transportation Handbook).

Treatments. Management actions designed to modify, restore or enhance the integrity, functionality, production, composition or diversity of plant communities.

Trespass. The unauthorized use, development, or occupancy of public land.

Tribal interests. Native American or Native Alaskan economic rights such as Indian trust assets, resource uses and access.

Understory. That portion of a plant community growing underneath the taller plants on the site.

Unexploded Ordinance (UXO). Consists of military materials used in tests and on training ranges. UXO may include but is not limited to bombs, mortars, artillery shells, rockets, submunitions and landmines. Given the amount of aircraft used on the various military facilities in the planning area, it is possible that a military aircraft could crash and be a source of UXO.

Unique geologic features. A-typical geologic features found within the district that provide outstanding examples or opportunities for scientific education.

Upland Game Birds. Non-waterfowl game birds usually hunted with pointing breed, flushing spaniels, and retrievers. Upland game birds include grouse, chukar, quail, snipe, doves, pigeons, ptarmigan, and wild turkey.

Upland springs and seeps. Water sources on the landscape that could be stream order 1, 2 or 3 (in Nevada) but do not have enough of an expression to be classified with a beneficial use. (No recreating, fisheries, or irrigation uses). A first order stream is the smallest of the world's streams and consists of small tributaries. These are the streams that flow into and "feed" larger streams but do not normally have any water flowing into them. In addition, first and second order streams generally form on steep slopes and flow quickly until they slow down and meet the next order waterway. First through third order streams are also called headwater streams and constitute any waterways in the upper reaches of the watershed.

Utility corridor. Tract of land varying in width forming passageway through which various commodities such as oil, gas, and electricity are transported.

Utility Terrain Vehicle. A small one- to four-person off-road vehicle also referred to as a side-by-side. The UTV has a steering wheel for steering control and non-straddle seating for the operator and all passengers.

Utilization. The proportion of current year's forage production that is consumed or destroyed by grazing animals (including insects). The term may refer either to a single species, a group of species, or to the vegetation community as a whole. Utilization is synonymous with use. Degree of utilization has been placed in the following categories (*the percent of removal associated with each utilization category may be updated based on current science and further specified according to plant community type*). Utilization categories are classified based on the amount of forage removed by weight on individual key species.

Slight. Removal of 1 to 20% of current year's growth.

Light. Removal of 21 to 40% of currents year's growth.

Moderate. Removal of 41-60% of current year's growth.

Heavy. Removal of 61-80% of current year's growth.

Severe. Removal of 81-100% of current year's growth.

Vacant Allotment. An allotment that is open to grazing, but does not have any grazing permits currently issued.

Valid existing rights. Documented, legal rights or interests in the land that allow a person or entity to use said land for a specific purpose and that are still in effect. Such rights include but are not limited to fee title ownership, mineral rights, rights-of-way, easements, permits, and licenses. Such rights may have been reserved, acquired, leased, granted, permitted, or otherwise authorized over time.

Value at risk. Communities and community infrastructure, other property and improvements, natural and cultural resources.

Vegetation manipulation. Planned alteration of vegetation communities through use of mechanical, chemical, seeding, and/or prescribed fire or managed fire to achieve desired resource objectives.

Vegetative permits. A written permit is required from the owner of the land from which vegetative material is harvested unless the total amount is less than reasonable amounts as established in the Resource Management Plan.

Vegetative products. Includes wood and vegetative material that is removed from public land for subsequent use (e.g. grasses, seeds, cones, roots, bark, berries, mosses, ferns, edible mushrooms, tree seedlings, transplants, poles, and firewood).

Vegetation structure. The stage of plant community development, encompassing age of stand, height of vegetation, and spatial distribution of plants.

Vegetation treatments. Management practices which change the vegetation structure to a different stage of development. Vegetation treatment methods include managed fire, prescribed fire, chemical, mechanical, and seeding.

Vegetation type. A plant community with immediately distinguishable characteristics based upon and named after the apparent dominant plant species.

Vertebrate. An animal having a backbone or spinal column. Includes jawless fishes, bony fishes, sharks and rays, amphibians, reptiles, mammals, and birds.

Viewshed. The panorama from a given viewpoint that encompasses the visual landscape, including everything visible within a 360-degree radius.

Visibility (air quality). A measure of the ability to see and identify objects at different distances.

Visual Resource Management (VRM). The inventory and planning actions taken to identify visual resource values and to establish objectives for managing those values, and the management actions taken to achieve the visual resource management objectives.

Visual Resource Management Classes. Define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. Categories assigned to public lands are based on scenic quality, sensitivity level, and distance zones. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape (from H-1601-1, BLM Land Use Planning Handbook).

The four classes are described below:

- **Class I** provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar areas where landscape modification activities should be restricted.
- **Class II** areas are those areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
- **Class III** includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- **Class IV** applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Visual resources. The visible physical features on a landscape, (topography, water, vegetation, animals, structures, and other features) that comprise die scenery of the area.

Visual sensitivity. Visual sensitivity levels are a measure of public concern for scenic quality and existing or proposed visual change.

Volatile organic compounds. Chemicals that produce vapors readily at room temperature and at normal atmospheric pressure. Volatile organic compounds include gasoline, industrial chemicals such as benzene, solvents such as toluene and xylene, and tetrachloroethylene (perchloroethylene, the principal dry cleaning solvent).

Waiver. A waiver permanently exempts the surface stipulation. No permanent exemptions or waivers are authorized unless the areas mapped as possessing the attributes are field verified by BLM staff to lack those attributes.

Watershed. Topographical region or area delineated by water draining to a particular watercourse or body of water.

Water impoundment structures. Structures such as dams, dikes, and levees used to create or store a body of water within a drainage way (annual, ephemeral or perennial waterway/stream).

Way (wilderness study areas). A linear transportation feature within a WSA created solely by the passage of vehicles that was identified and designated during the BLM's original wilderness inventory process. Ways are now referred to as primitive routes.

Weed-free. Products which are certified by state agencies as being free of noxious weed seed.

Wellhead Protection Area. The surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field.

Wellhead Protection Zone. A protective buffer zone around domestic water wells based on site-specific analysis.

Wild and scenic study river. Rivers identified in Section 5 of the Wild and Scenic Rivers Act of 1968 for study as potential additions to the National Wild and Scenic Rivers System. The rivers will be studied under the provisions of Section 4 of the act (BLM Manual 8351, BLM WSR Policy and Program).

Wilderness. A congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value. The definition contained in Section 2(c) of the Wilderness Act of 1964 (78 Stat. 891) (H-6310-1, Wilderness Inventory and Study Procedures).

Wilderness characteristics. Wilderness characteristics attributes include the area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values. Lands with wilderness characteristics are those lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in section 2(c) of the Wilderness Act.

Wilderness Study Area (WSA). Areas with wilderness characteristics identified and designated through the inventory and study processes authorized by Section 603 of FLPMA, and, prior to 2003, through the planning process authorized by Section 202 of FLPMA.

Wildland fire. Wildland fire is a general term describing any non-structure fire that occurs in the wildland. Wildland fires are categorized into two distinct types: Wildfires: Unplanned ignitions or prescribed fires that are declared wildfires; and Prescribed fires: Planned ignitions.

Wildland-urban interface (WUI). The line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Wildlife escape ramp. Structure that allows birds and small mammals to exit guzzlers, water troughs, or other artificial water structures.

Wildlife Friendly Fencing. Fencing that is designed in a manner that allows animals (wildlife not domestic) to jump over and crawl under easily without injury, is highly visible for both ungulates and birds, and is constructed in a location that does not inhibit wildlife movement across the landscape.

Wild river. Those rivers or sections of rivers free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and unpolluted. These represent vestiges of primitive America.

Wild, Scenic, or Recreational river. The term used for what is traditionally shortened to wild and scenic rivers. Designated river segments are classified as wild, scenic, or recreational but cannot overlap (BLM Manual 8351, BLM WSR Policy and Program).

Withdrawal. An action that restricts the use of public land and segregates the land from the operation of some or all of the public land and mineral laws. Withdrawals are also used to transfer jurisdiction of management of public lands to other federal agencies.

Woodlands. A tree dominated plant community in which either non-merchantable conifers (e.g. pinyon pine) or hardwoods dominate.

Wood product sales/harvest. Any wood-collection activity other than incidental use involving the severance and/or removal of any vegetative material for personal use requiring a permit or commercial use requiring a contract.