long term it is likely that there would be a general shift in acreage from a higher FRCC to a lower one. It is also assumed that the risks of a catastrophic wildfire would decrease as resource conditions improve within the CESA due to fire management and other treatments under Alternative A.

Under Alternative B, the BLM would be limited to the use of manual, mechanical, and biological control methods and would treat about half as many acres (about 7,800 acres annually) within the CESA compared to Alternative A. Under this alternative, the potential for loss of life or property from wildland fire on the 3 Bars Project area would probably remain little changed from current conditions. The BLM would not be able to use prescribed fire and fire for resource benefits or herbicides to reduce hazardous fuels, but would be able to compartmentalize and slow the spread of wildland fire using manual and mechanical treatments to create fire and fuel breaks. Because fire would not be available to the BLM to help to restore nature fire cycles on the 3 Bars ecosystem, the ability of the BLM to improve ecosystem health and resiliency and reduce hazardous fuels would be limited.

Under Alternative C, the BLM would be limited to use of manual and classical biological control methods and would treat only one-fourth the acreage treated under Alternative A. Treatments would primarily focus on riparian and aspen restoration, removal of pinyon-juniper in Phase I and II woodlands, and sagebrush habitat manipulation. Little hazardous fuels reduction or noxious weed and other invasive non-native vegetation control would occur, and fire and fuel break treatments would be limited to areas adjacent to roads and streams. The BLM would have limited ability to reduce the risk of a catastrophic fire and to control its spread, and risks of loss of life or property from wildfire within the CESA would likely increase long term. Prescribed fire and fire for resource benefits would not be available to the BLM to help to restore nature fire cycles over portions of the 3 Bars ecosystem, and mechanical treatments would not be available for use to control or eliminate noxious weeds and other invasive non-native vegetation, create fire and fuel breaks, thin and remove pinyon-juniper that is encroaching into sagebrush habitat or is unhealthy, and to reseed disturbed areas. Thus, the ability of the BLM to improve ecosystem health and resiliency and reduce hazardous fuels would be more limited under Alternative C than the other action alternatives.

3.13.4 Mitigation

No mitigation measures are proposed for wildland fire risk.

3.14 Fish and Other Aquatic Resources

3.14.1 Regulatory Framework

Several laws protect fish and other aquatic resources and their habitats. The Sikes Act of 1974 authorizes the USDOI to plan, develop, maintain, and coordinate programs with state agencies for the conservation and rehabilitation of wildlife, fish, and game on public lands. The Fish and Wildlife Conservation Act of 1980 encourages federal agencies to conserve and promote the conservation of non-game fish and wildlife species and their habitats.

3.14.1.1 Endangered Species Act

In accordance with Section 7 of the Endangered Species Act, federal agencies must “insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species.” The purpose of the Act is to provide a means for conserving the ecosystems upon which threatened and endangered species depend, and to provide a program for protecting these species. The Act defines an endangered species as a species that is in danger of

extinction throughout all or a major portion of its range. A threatened species is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a major portion of its range. This Act also addresses species that have been proposed for listing as either threatened or endangered, but for which a final determination has not been made. Critical habitat is a specific area or type of area that is considered to be essential for the survival of a species, as designated by the USFWS under the Endangered Species Act. The Lahontan cutthroat trout is the only federally listed (threatened) species that occurs in the 3 Bars Project area.

3.14.1.2 Special Status Species

BLM Sensitive Species are defined as those plant and animal species for which population viability is a concern, as evidenced by: 1) significant current or predicted downward trend in population numbers or density, or 2) a significant current or predicted downward trend in habitat capability that would reduce the species' existing distribution. These species are protected under provisions of the Endangered Species Act or under the Nevada BLM sensitive status (BLM Manual 6840, *Special Status Species Management*; USDOI BLM 2008h). In addition, there is a Nevada State Protected Animal List (Nevada Administrative Code 501.100 - 503.104) that the BLM has incorporated, in part, into the sensitive species list. No BLM sensitive aquatic species are known to occur within the project area.

3.14.1.3 BLM and Nevada Department of Wildlife Memorandum of Understanding

Wildlife and fish resources and their habitat on public lands are managed cooperatively by the BLM and NDOW under a Memorandum of Understanding as established in 1971. The Memorandum of Understanding describes the BLM's commitment to manage wildlife and fisheries resource habitat, and the NDOW's role in managing populations. The ecological definition of a population is a group of organisms of one species that interbreed and live in the same place at the same time. The BLM meets its obligations by managing public lands to protect and enhance food, shelter, and breeding areas for wild animals. The NDOW assures healthy wildlife numbers through a variety of management tools including wildlife and fisheries stocking programs, hunting and fishing regulations, land purchases for fish and wildlife management, cooperative enhancement projects, and other activities.

3.14.1.4 Nevada Department of Wildlife Programs

The NDOW is the state agency responsible for the restoration and management of fish and wildlife resources within the state. The NDOW administers state fish and wildlife management and protection programs as set forth in Nevada Revised Statute Chapter 501, Wildlife Administration and Enforcement, and Nevada Administrative Code § 503, Hunting, Fishing and Trapping; Miscellaneous Protective Measures. Nevada Revised Statute § 501.110 defines the various categories of fish and wildlife in Nevada, including protected categories. Nevada Administrative Code §§ 503.010-503.080, 503.110, and 503.140 list the fish and wildlife species currently placed in the state's various legal categories, including protected species, game species, and pest species.

3.14.2 Affected Environment

3.14.2.1 Study Methods and Study Area

Aquatic biological resources within the project area include fish and aquatic invertebrates and their habitat. Descriptions of fish and other aquatic resources were based on published and unpublished information regarding the types of aquatic habitat and their associated species or groups found in the 3 Bars Project area. Data sources used to identify habitat and aquatic species occurrences include the Mount Hope Project EIS and references cited therein

(USDOI BLM 2012c), NDOW reports on fish populations and Lahontan cutthroat trout, the species management plan for the Lahontan cutthroat trout (Elliot 2004), and published reports of snails (SRK 2010). In addition, BLM and NDOW staff were contacted for information on fish and other aquatic resources on the 3 Bars Project area.

The study area for direct and indirect effects to aquatic biological resources includes streams, springs, and wetlands within the project area. The CESA for cumulative impacts to aquatic biological resources includes the Hydrologic Unit Code 10 watersheds wholly, or partially within, the project area, as shown in **Figure 3-1**.

3.14.2.2 Aquatic Habitat

The types of aquatic habitat that occur with the analysis area include perennial, intermittent, and ephemeral streams, springs, and wetlands. Perennial waterbodies contain water continuously during an average water year. Intermittent waterbodies contain water or flow on a sporadic or periodic basis, while ephemeral waterbodies contain water on a short-term basis after precipitation events. The majority of the streams within the project area are intermittent/ephemeral.[2] In terms of stream lengths, the Pine Valley Basin contains the greatest number of miles of streams with perennial reaches. These streams include Birch, Denay, Henderson, Kelley, North Fork Pete Hansen, Pete Hansen, Vinini, and Willow Creeks (**Figure 3-23**). Of these streams, Henderson and Vinini Creeks contain the most perennial lengths, with 18.3 and 9.5 miles, respectively. Roberts Creek, with 8.4 miles, is the only stream in the Kobeh Valley Basin that contains perennial reaches. McClusky Creek (7.1 miles of perennial stream length) is the only perennial stream in the Grass Valley Basin that is within the 3 Bars Project area. Springs and wet areas are scattered throughout the project area. The majority of springs are found at higher elevations in the Simpson Park Range, on Roberts Mountains, and in the Sulphur Spring Range.

Aquatic habitat surveys were conducted in Birch and Pete Hanson Creeks as part of fish surveys in July 2009, and in 2011 in Willow Creek. These streams were selected for study due to the presence of Lahontan cutthroat trout, a federally listed threatened species under the Endangered Species Act. Based on the Habitat Condition Index, NDOW rated the stream reaches from poor to good in Birch and Pete Hanson Creeks, and fair to excellent in Willow Creek (NDOW 2009a, 2011). The overall Habitat Condition Index rating was good in Birch and Willow Creeks and fair in Pete Hansen Creek. The Habitat Condition Index rating involved evaluating six parameters in the field, including pool abundance, pool structure, substrate stability, bank cover, soil stability, and bank vegetation stability. Downcutting of the stream channel exists in portions of Willow Creek (NDOW 2011), but the downcut sections were not part of the Willow Creek habitat survey sites. Habitat information for these streams is provided in **Table 3-43.**

Stream assessments were conducted in Birch and Pete Hanson Creeks in 2001 for the purpose of evaluating the stream's ability to dissipate energy, protect banks, and minimize erosion (USDOI BLM 2012c). The streams' functioning condition was rated in qualitative terms using information about channel morphology, hydrology, soil, and vegetative parameters. Of the 5.4 miles of Birch Creek that were surveyed, conditions were rated as Proper Functioning Condition for 0.7 miles and Functional-at-risk Downward Trend for 0.4 miles. The remaining 4.3 miles were classified as an intermittent stream. Assessment results for 9.5 miles of Pete Hanson Creek were Functional-at-risk with the Trend Not Apparent (5.3 miles), Functional-at-risk Upward (1.6 miles) Functional-at-risk Trend Not

[2] The USGS does not distinguish between intermittent and ephemeral streams. The majority of streams classified as intermittent on the 3 Bars Project area do not have seasonal water, but only have water occasionally and would be classified as ephemeral.

Apparent (1.3 miles) and Intermittent (1.3 miles). Assessment results for 5.8 miles of Willow Creek were Proper Functioning Condition (1.4 miles), Functional-at-risk Upward (1.6 miles), Functional-at-risk Trend Not Apparent (0.8 miles), and Non-functional (2.0 miles). Stream evaluations also were completed for other streams within the 3 Bars Project area. Several stream reaches did not meet the Proper Functioning Condition or Functional-at-risk Upward Trend including perennial streams such as Henderson, Vinini, Roberts, and McClusky Creeks.

TABLE 3-43

Habitat Characteristics of Birch, Pete Hanson, and Willow Creeks

Stream	Discharge (cfs)[2]	Average Depth (feet)	Average Width (feet)	Substrate (%)		Bank Vegetative Cover (%)		
				Gravel	Rubble	Trees	Shrubs	Grasses/Forbs
Birch Creek	1.0-4.3	0.4	4.4	18	38	47	31	22
Pete Hanson Creek	1.0-4.3	0.4	4.4	44	28	19	36	45
Willow Creek	0.1-1.3	0.2	2.5	53	28	6	31	61

Cfs = cubic feet per second.
Source: NDOW (2009a), *as cited in* BLM (2012c), NDOW 2011.

The NDOW conducted aquatic habitat surveys of Birch Creek and Pete Hanson Creek in 2009, and Willow Creek in 2011. Streambank stability, bank alteration, and erosion evaluations were completed for these streams in July 2010. The survey indicated that 73 percent of surveyed reaches had stable streambanks while 16 percent had active bank erosion, in Birch Creek. Similar results were observed in Pete Hanson Creek, where 74 percent of reaches surveyed had stable banks, while active bank erosion was observed on 15 percent of reaches. Bank alteration from livestock was estimated at 3 percent of the surveyed reach in Birch Creek and 4 percent of the surveyed reach in Pete Hanson Creek. Stable streambanks were found along 78 percent of surveyed reaches for Willow Creek (USDOI BLM 2013a).

Based on public scoping comments, habitat conditions could be improved in project study area perennial streams that contain fish. The public recommended removal of fish barriers consisting of culvert and a large headcut on lower Roberts Creek, and habitat improvements on Birch, Pete Hanson, Vinini, Henderson, Roberts, and McClusky Creeks.

3.14.2.3 Aquatic Species

3.14.2.3.1 Invertebrates

Permanent and temporary waterbodies provide habitat for aquatic invertebrates. These aquatic organisms are indicators of water quality conditions and they serve important roles in the dynamics of the aquatic food web. Based on surveys in Birch Creek, the most abundant invertebrate groups included mayflies (Ephemeroptera), caddiflies (Trichoptera), stoneflies (Plecoptera), flies (Diptera), beetles (Coleoptera), and leeches (Hirudinea; USDOI BLM 2012c). These same groups, as well as snails (Gastropoda) and true bugs (Hemiptera), were common in Pete Hanson Creek. Invertebrate groups collected in Willow Creek included mayflies, stoneflies, and beetles (NDOW 2011). Invertebrates were considered to be abundant at all sites sampled in Willow Creek.

Five major invertebrate groups typically are present in all types of springs including nematodes, aquatic worms (Oligochaeta), water mites (Acari), caddisflies, and chironomid midges. Several groups such as flatworms and stoneflies are present only in springs with permanent water sources.

A regional springsnail survey was conducted in selected springs within Antelope, Diamond, Huntington, Kobeh, Little Smokey, and Pine Valleys in 2007 by SRK (2010). Approximately 40 of the surveyed springs are within the 3 Bars Project area. Six of these springs contained snails, although species were not identified (**Figure 3-38**). Snails also were observed at two sites within unnamed streams in Pine Valley. Some of these snails could be springsnails. This group of mollusks is considered important because of their restricted distribution and native origin. The BLM considers springsnails to be a sensitive group and manages public lands to protect these species and their habitats.

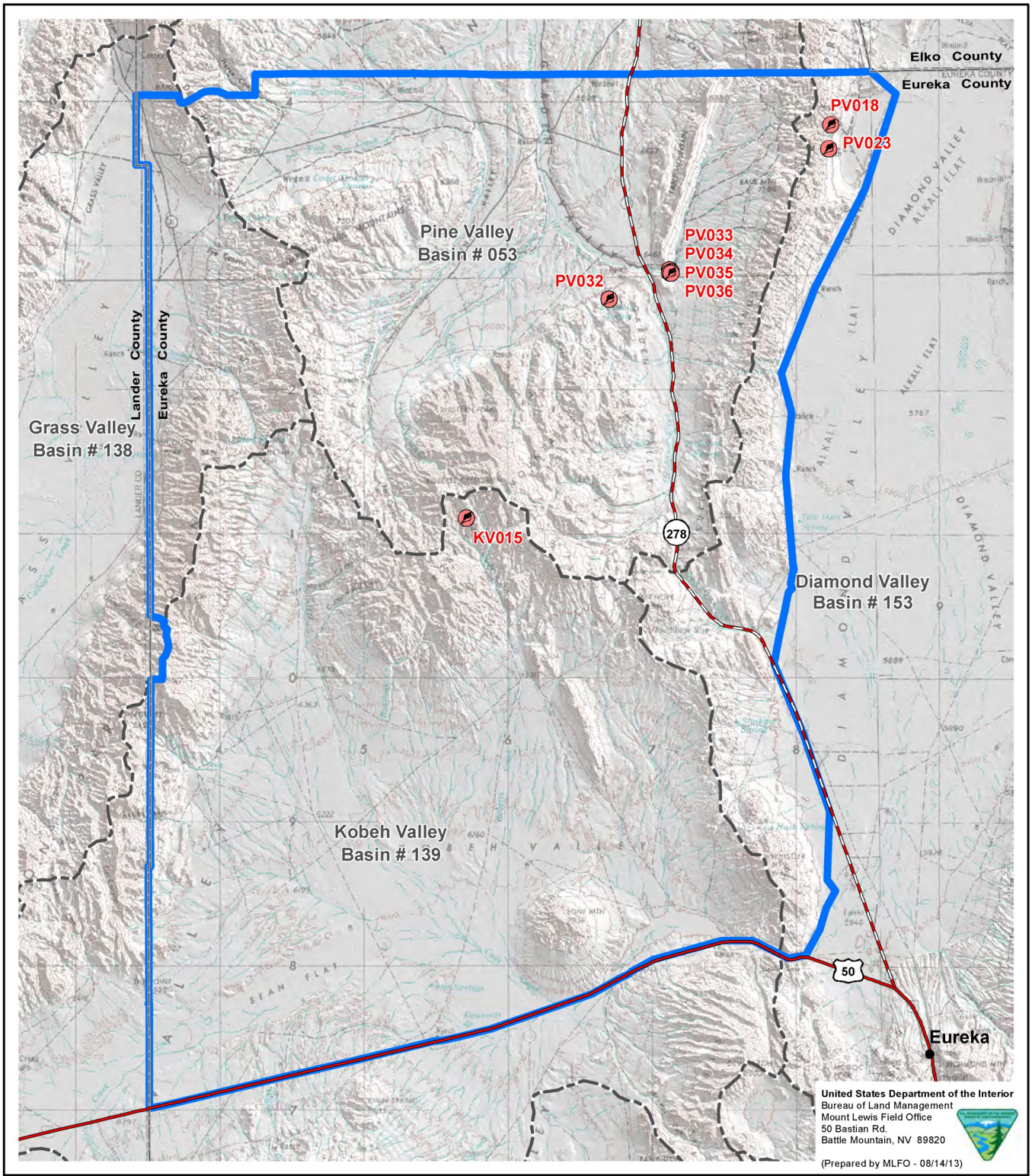
3.14.2.3.2 Lahontan Cutthroat Trout

Fish surveys in the project study area have focused on the occurrence of Lahontan cutthroat trout. The Lahontan cutthroat trout is an inland subspecies of cutthroat trout (family Salmonidae). The species may be either riverine or lacustrine and is endemic to the Lahontan Basin of northeast California, southeast Oregon, and northern Nevada.

The range for Lahontan cutthroat trout in Nevada includes the Truckee, Carson, Walker, Quinn, and Humboldt River Basins, the Honey and Coyote Lake Basins, and Black Rock Desert Basin. Riverine, or stream-dwelling, Lahontan cutthroat trout usually live less than 5 years and may reach 10 to 15 inches in length. Females mature at 3 to 4 years of age and males at 2 to 3 years of age (Coffin and Cowan 1995). As with all cutthroat trout, the Lahontan cutthroat trout is an obligate riverine spawner. Spawning occurs from April to July, depending on stream discharge, elevation, and water temperature. Most remaining populations of Lahontan cutthroat trout in Nevada occupy higher elevation, low-order streams (Dunham et al. 1999). Spawning and nursery habitat is characterized by cool-water pools in close proximity to instream cover, velocity breaks, well-vegetated and stable streambanks, and relatively silt-free rocky substrate in riffle-run areas (Coffin and Cowan 1995). This species spawns in riffles over gravel substrate when water temperatures are between 41 to 60 ˚F. Intermittent tributaries are sometimes used as spawning sites during high-water years. Fry may develop in the tributary stream until flushed into the mainstream during high runoff (Coffin 1981, Trotter 1987).

General characteristics of riverine cutthroat trout habitat include a relatively stable flow regime, a 1:1 pool to riffle ratio, well-vegetated stable streambanks, instream cover exceeding 25 percent, and relatively silt-free riffle-run areas. Cutthroat trout waters generally have a stable summer temperature regime with less than 39 ˚F fluctuation in water temperature and maximum water temperatures less than 72 ˚F (Hickman and Raleigh 1982). Lahontan cutthroat trout may have a higher thermal tolerance than other cutthroat trout and can tolerate temperatures exceeding 80 ˚F for short periods of time and 57 to 63 ˚F fluctuations of temperature (Coffin 1983, Dickerson and Vinyard 1999). Beaver ponds may provide thermal refuge for trout in the summer and winter. Habitat requirements may vary somewhat with life stage and season (Coffin and Cowan 1995). Lahontan cutthroat trout primarily feed on terrestrial and aquatic invertebrates, although larger fish may be fish-eating.

The decline of the Lahontan cutthroat trout has been primarily attributed to the loss and degradation of habitat. Agricultural and municipal uses of water from streams or lakes have reduced or altered the stream discharge in this species' range. Livestock and wild horse grazing have altered the physical characteristics of stream channels and increased the sediment loads in many Lahontan cutthroat trout streams. Mining, urban development, logging, road construction, and dam building have also been associated with changes in stream channel morphology and water quality (Coffin and Cowan 1995, NDOW 2004).



Legend

- Snail Observation
- Hydrographic Basin
- 3 Bars Project Area

Source: SRK 2010.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-38

Snail Observations

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data.
Original data were compiled from various sources. This information may not meet National Map Accuracy Standards.
This product was developed through digital means and may be updated without notice.

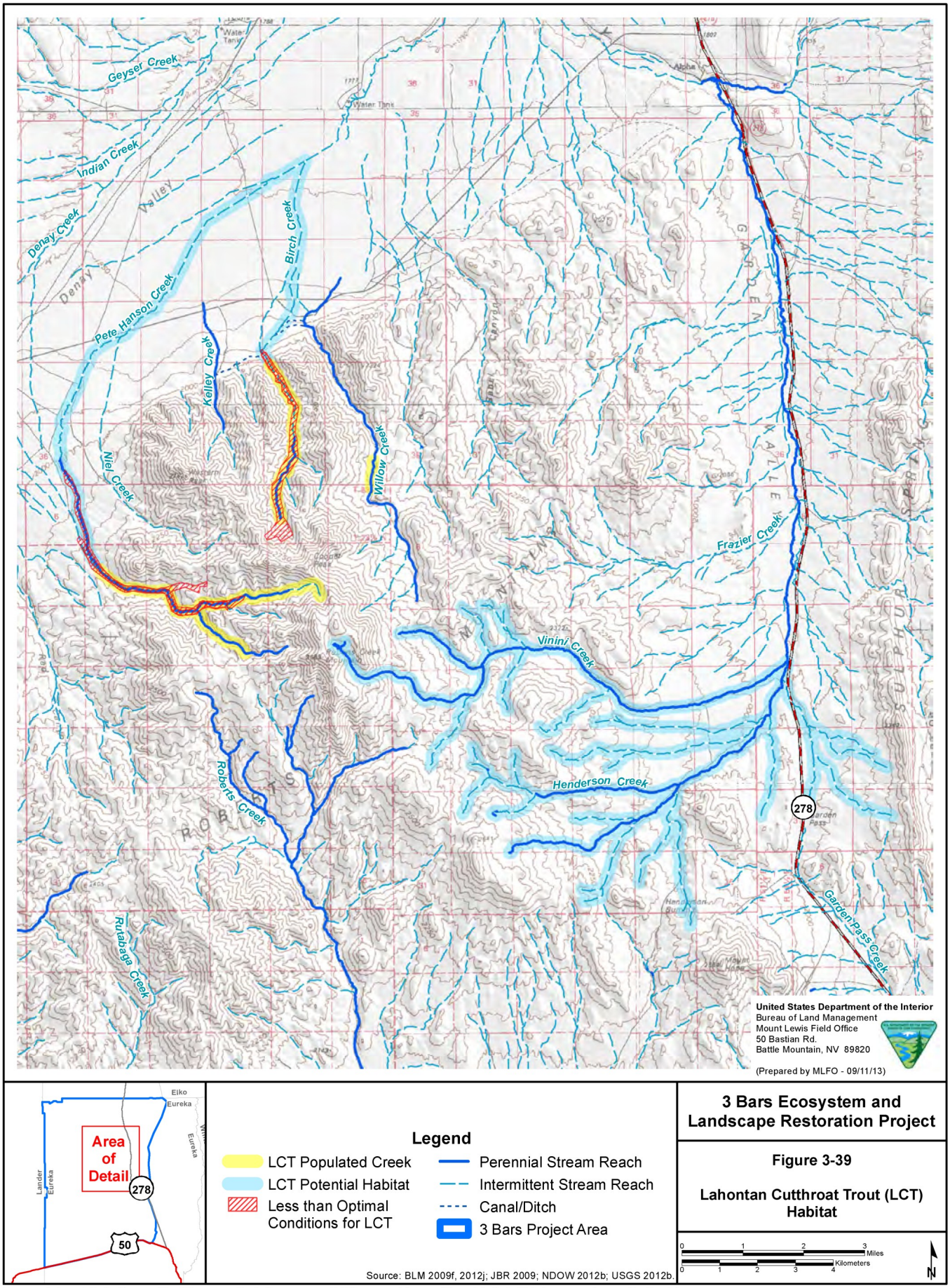
The Lahontan cutthroat trout competes with non-native trout species that were historically stocked for recreational fishing opportunities. Dunham and Vinyard (1996) found that the distribution of Lahontan cutthroat trout can be truncated when brook trout are present, although they noted that the results were variable. Furthermore, Lahontan cutthroat trout have hybridized with non-native rainbow trout in many areas (Coffin and Cowan 1995, NDOW 2004).

Lahontan cutthroat trout conservation efforts are ongoing and involve fish transplants, population and habitat surveys, genetic evaluations, habitat improvement projects, new grazing practices, use of riparian fencing, and the creation of fishery management plans for several basins. The objective of these management efforts is the protection or restoration of habitats that sustain viable self-sustaining populations of this species. A self-sustaining population is defined as having been established 5 or more years and having three or more age classes (Coffin and Cowan 1995).

Lahontan cutthroat trout populations occur in three streams within the project study area—Birch, Pete Hanson, and Willow Creeks. The headwater areas of Birch and Pete Hanson Creeks originate at elevations of approximately 8,200 and 7,200 feet amsl, respectively. Genetic analyses have determined that pure strains (i.e., fish with unmixed lineage over many generations) exist in Pete Hanson Creek. Recent genetic analysis on the Birch Creek Lahontan cutthroat trout has shown a small degree of hybridization with rainbow trout. Of the 30 fish sampled, 8 had rainbow trout alleles at one locus that was the result of an historic hybridization event. Results for the genetic analysis on the Willow Creek population are pending. Pete Hanson Creek was stocked with Lahontan cutthroat trout from Shoshone and Santa Fe Creeks (Elliott 2013a).

Surveys in 2009 indicated that Lahontan cutthroat trout occupy approximately 1.9 miles in Birch Creek and 3.5 miles in Pete Hanson Creek (**Figure 3-39**). Population estimates during the 2009 surveys were 116 fish/mile in Birch Creek and 445 fish/mile in Pete Hanson Creek (NDOW 2009a). Comparison of 2009 Lahontan cutthroat trout densities with previous survey results indicated that population levels in Birch Creek are stable, while the Pete Hanson population estimates are more variable (**Table 3-44**). Lahontan cutthroat trout were surveyed in Willow Creek in September 2011 (NDOW 2011). The estimated density for this species was 106 fish/mile in the lower portion of the creek. The fish collected in Willow Creek were considered healthy and representative of at least three different Lahontan cutthroat trout age classes. Lahontan cutthroat trout occupies approximately 0.5 mile in the middle portion of Willow Creek. In addition to occupied habitat in these perennial and intermittent streams, potential habitat has been identified by the NDOW surveys (**Figure 3-39**). Potential recovery streams for Lahontan cutthroat trout within the project area include Henderson and Vinini Creeks (Coffin and Cowan 1995); these streams have 15.6 miles of potential habitat (7 and 8.6 miles respectively).

Management direction for Lahontan cutthroat trout is provided in the *Lahontan Cutthroat Trout Species Management Plan for the Upper Humboldt River Drainage Basin* (Elliott 2004) and the *Lahontan Cutthroat Trout Recovery Plan* (Coffin and Cowan 1995). A portion of the project area falls within the Humboldt River basin, which supports the greatest number of riverine populations. Management objectives for this species focus on the protection and restoration of habitats that sustain viable self-sustaining populations. Threats to Lahontan cutthroat trout include habitat fragmentation due to physical and biological conditions, alteration of stream discharge, water quality degradation, and introduction of non-native fish species (Coffin and Cowan 2005, USDOI USFWS 2010a).



3 Bars Ecosystem and Landscape Restoration Project

Figure 3-39

Lahontan Cutthroat Trout (LCT) Habitat

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TABLE 3-44

Summary of Lahontan Cutthroat Trout Surveys in Birch, Pete Hanson, and Willow Creeks

Stream	Survey Years			
	1998	2003	2009	2011
Birch Creek				
Miles Occupied	1.5	1.5	1.9	NS
LCT/Stream Mile	153	198	116	NS
Pete Hanson Creek				
Miles Occupied	3.5	3.5	3.5	NS
LCT/Stream Mile	382	823	445	NS
Willow Creek				
Miles Occupied	NS	NS	NS	0.5
LCT/Stream Mile	NS	NS	NS	106

NS = Not surveyed.
LCT = Lahontan cutthroat trout.
Source: NDOW (2009a) *as cited in* USDOI BLM (2012c), NDOW (2011).

3.14.2.3.3 Other Fish

Other native fish species are also likely to occur in study area streams, based on historic occurrences. Speckled dace, redside shiner, Tahoe sucker, mountain sucker, and Lahontan tui chub have been reported in the Pine Creek Drainage (Elliott 2013b). Speckled dace also are known to occur in Coils Creek. Two additional streams, Roberts and McClusky Creeks, contain sport fish species including brook, brown, and rainbow trout (Petersen 2012). McClusky Creek has been stocked with brook trout, and Roberts Creek with rainbow trout, in the past (Elliott 2013b).

3.14.3 Environmental Consequences

3.14.3.1 Key Issues of Concern Considered during Evaluation of the Environmental Consequences

Based on the AECC and public scoping comments, the following issues were identified for aquatic biological resources:

- Habitat conditions for Lahontan cutthroat trout are less than optimal.
- Limiting factors for Lahontan cutthroat trout include insufficient residual pool depth and cemented substrate.
- There has been a decline in fisheries habitat complexity.
- Address the need for habitat improvements in occupied Lahontan cutthroat trout streams (Birch, Pete Hanson, and Willow Creeks), Lahontan cutthroat trout recovery streams (Vinini and Henderson Creeks), and sport fish streams (Roberts and McClusky).
- Increase public awareness of Lahontan cutthroat trout in Willow Creek.
- Consider historical and current population trends for Lahontan cutthroat trout in the 3 Bars Project area to determine recovery status.

- Identify known and potential conflicts with Lahontan cutthroat trout and livestock and wild horses and mitigation measures that could be implemented to minimize effects from these conflicts.
- Concern regarding historical trout numbers in some drainages within the 3 Bars project study area.
- Concern regarding fish barriers consisting of culverts and a headcut on Lower Roberts Creek.
- Evaluate and consider the effect of wildland fire on special status species.

3.14.3.2 Significance Criteria

Impacts to aquatic biological resources would be considered significant if the BLM actions resulted in the following:

- Action results in long-term (greater than 3 year in duration) alteration or loss of habitat in streams or springs containing Lahontan cutthroat trout (current populations or recovery sites), or other aquatic species.
- Action causes long-term (greater than 3 year in duration) loss of riparian vegetation from prescribed fire treatment or surface disturbance activities in streams or springs containing Lahontan cutthroat trout (current populations or recovery sites), or other aquatic species.
- Action results in water quality effects and potential toxicity conditions involving spills or chemical use that last more than 1 month in streams or springs containing Lahontan cutthroat trout (current populations or recovery sites), or other aquatic species.
- Action causes a flow reduction lasting more than 1 month in streams containing Lahontan cutthroat trout (current populations or recovery sites), or other aquatic species.
- Action causes permanent barriers to fish movement in streams containing Lahontan cutthroat trout (current populations or recovery sites), or other aquatic species.

The following assumptions were used in the impact analysis for aquatic biological resources:

- Surface disturbance activities within approximately 0.25 mile and upgradient of perennial streams could result in sediment or contaminant input to the streams.
- Flow reductions of greater than 5 percent of baseline conditions on a continual basis could result in an adverse effect on aquatic habitat for Lahontan cutthroat or other trout, or native fish species.

3.14.3.3 Direct and Indirect Effects

3.14.3.3.1 Direct and Indirect Effects Common to All Action Alternatives

Habitat Alteration

Proposed treatments would disturb aquatic habitat if equipment or vehicles enter streams or other waterbodies. The magnitude of the effect would vary depending on the area of disturbance and the duration of the activity. Instream disturbance would alter bottom substrates and possibly change the types of fish cover such as cobble, vegetation, or woody debris in the affected area, and the substrate alteration could adversely affect fish spawning habitat. Habitat alteration could affect Lahontan cutthroat trout, since restoration treatments are proposed for streams occupied by this species including Birch, Pete Hanson, and Willow Creeks. Final aspects of restoration treatment in Lahontan cutthroat

trout occupied streams would be determined through BLM consultation with the USFWS and input from NDOW. These treatments would be designed in a manner that would minimize direct effects to Lahontan cutthroat trout. The USFWS, and to some extent NDOW, would determine what level of impact would be acceptable.

The outcome of the restoration would ultimately benefit Lahontan cutthroat trout populations by expanding suitable habitat as a result of increased stream connectivity. Stream enhancements could involve the creation or expansion of pool habitat, improvements in the riffle to pool ratio, and the addition of instream cover for fish. Stream enhancements would also benefit other fish and macroinvertebrate species that inhabit the treated streams.

Fencing and revegetation treatments would result in benefits to aquatic species. Protective fencing would restrict access to treated areas by domestic livestock, wild horses, and wild ungulates. This action would prevent livestock, wild horses, and wild ungulates from riparian treatment areas, resulting in reduced bank erosion and improved riparian vegetation cover. After treatment activities are completed, treated sites would be replanted. The addition of vegetation and riparian cover would be beneficial to water quality by reducing erosion in the drainage. In addition, the BLM would place logs and other woody debris from felled pinyon-juniper into streams to slow water flow and create fish habitat.

Vegetation Modification

Treatment activities would affect riparian vegetation through disturbance by vehicles or equipment. Removal of noxious weeds and invasive non-native plant species would cause a short-term loss of riparian vegetation, which could adversely affect aquatic habitat and ecological requirements for aquatic species, and cause a temporary increase in bank erosion.

Proposed treatments would have beneficial effects on riparian vegetation depending on the activity. Riparian vegetation is an important habitat component for aquatic species, as plants provide overhanging cover, temperature control via shading, bank stability, a food source from insects on the vegetation, and nutrient input to the stream from loss of leaves and branches. Beneficial effects would result from riparian restoration actions that would improve riparian community health and resiliency. These include stream channel restoration and removal of pinyon-juniper from the riparian zone. Replacing invasive plant species with native vegetation can improve food availability to insectivorous fish species, as native plants typically support a more diverse native insect community. The removal of noxious weeds and invasive non-native vegetation and restoration of the streamside vegetation to include native plant species would be beneficial to the stream morphology and the ecological requirements for aquatic species long term (USDOI BLM 2007b:4-76).

Water Quality

Proposed treatments would result in short-term adverse effects on water quality. Surface disturbing activities within or near streams and springs could cause short-term increased sediment input. The extent of the area affected by sediment would depend on soil composition and the characteristics of the receiving stream or standing waterbody (e.g., flow conditions, channel or waterbody morphology, presence of aquatic vegetation, and gradient). Streams with firm substrates consisting of sand, gravel, or cobble would exhibit lower levels of sedimentation compared to soft substrates such as silt. Typically, the extent of downstream movement of sediment is less during low flow conditions and more extensive during high flow conditions. However, the suspended sediment levels would be more diluted under high flow conditions due to the higher water volumes.

Increases in sediment entering a stream could adversely affect fish health and stream quality. Suspended sediment can affect physiological functions such as oxygen uptake for aquatic species. Depending on the sediment level and sensitivity of the species, effects can range from reduced health to mortality (Waters 1995). Increased sediment levels can bury invertebrates and early life stages of fish. Sedimentation can affect fish habitat by covering spawning and rearing areas, thereby reducing the survival of fish embryos and juvenile fish. Excessive sedimentation also can fill in pool habitats. Pool habitats provide important fish cover due to depth and overwintering habitat.

Vehicles and equipment used within or adjacent to streams and waterbodies could also pose a risk to aquatic biota from fuel spills or lubricant leaks. If fuel reached a waterbody, aquatic species could be exposed to toxic conditions. Impacts could include direct mortality or reduced health of aquatic organisms. The magnitude of a potential spill would depend on the flow conditions, channel or waterbody morphology, and gradient, and the response time and effectiveness of containment and cleanup operations. To reduce these risks, refueling activities would not be allowed within 300 feet of a stream.

Long term, treatments that restore channel morphology and stream function, remove noxious weeds and other invasive non-native vegetation, improve the health and resiliency of riparian vegetation, and reduce the risk of catastrophic wildfire would benefit water quality and aquatic organisms.

Water Use

Stream water could be used during restoration projects and for prescribed fire control and could result in temporary reductions in stream flows or water levels in ponds. The BLM occasionally withdraws water from streams or ponds during wildfire events as an emergency measure for fire suppression. The BLM works closely with resource advisors to make sure this option is authorized and does not impact other key resources including aquatic species. Water withdrawal would consider the presence of Lahontan cutthroat trout and game fish species and their habitats when selecting water sources. Flow regime is considered the primary determinant regarding the structure and function of aquatic and riparian ecosystems for streams and rivers (Poff et al. 2010). Based on a literature review by Poff and Zimmerman (2010), fish was the only aquatic biological group to consistently respond negatively to reductions in flow magnitude. Flow or water level reductions could adversely affect fish by decreasing the amount of aquatic habitat and affect critical life events such as spawning, early life development, growth, physiological functions, and competition (Bradford and Heinonen 2008, Poff and Zimmerman 2010).

The response of macroinvertebrate communities to reduced flow has been the subject of recent literature reviews by Dewson et al. (2007) and Poff and Zimmerman (2010). Based on a review of studies involving relatively large flow reductions (approximately 60 to 100 percent compared to base flow conditions), results showed that macroinvertebrate abundance and diversity declined in most cases due to reduced habitat diversity, loss of food sources, and changes in competition and predation. Increased water temperature and sedimentation and altered attached algae assemblages also can contribute to changes in aquatic community composition and taxonomic richness.

3.14.3.3.2 Direct and Indirect Effects under Alternative A (Preferred Alternative)

Riparian Treatments

Riparian area treatments would focus on restoring stream and habitat functionality in areas where both the morphology and structural integrity of the stream channel, and the plant species composition within the riparian zone, have been compromised by past actions. Examples of compromised stream channel integrity include: 1) areas where

the channel is eroded and incised; 2) areas where there is a sharp break in the slope of the channel due to erosion (knickpoint or headcut); and 3) areas where the channel has been diverted from its historic watercourse due to road construction or other factors. For example, in areas where water is collected for use by livestock using culverts, pipes, cisterns, or troughs, livestock have damaged stream channels and adjacent meadows by congregating near these features. Because of loss of structural integrity in compromised channels, stream velocities have increased over historic levels, nutrient-rich sediment is not being delivered to riparian vegetation, and there is less groundwater recharge within the floodplains, to the detriment of fish and other aquatic organisms.

Treatments would primarily occur in upper and lower Henderson Creek (8.9 miles of perennial stream), Roberts Creek (7.6 miles), upper and lower Vinini Creek (5.9 miles), and Willow Creek (4.3 miles). Willow Creek supports Lahontan cutthroat trout along 0.5 mile of occupied perennial stream habitat, while Henderson and Vinini and unnamed creeks have known or potential Lahontan cutthroat trout habitat, including approximately 9.3 miles of potential perennial habitat and 3.6 miles of potential intermittent habitat. None of the springs are known to contain snails or springsnails.

Adverse Effects

Riparian vegetation removal could adversely affect ecological functions of riparian vegetation on a short-term basis, although the affected area would represent a relatively minor portion of the overall riparian zone. Streamside vegetation removal could decrease the amount of woody debris deposited in the stream, although the BLM proposes to place down logs and other wood from felled pinyon-juniper into streams to improve stream habitat.

The adverse effects of mechanical treatments on water quality would be expected to be localized and of short-term in duration, with water quality returning to pre-disturbance conditions within several days or weeks after treatment is completed. Adverse effects for all proposed riparian zone projects could result from soil disturbance and erosion, and the spill of fuel or lubricants into water bodies. Habitat alteration or loss at a particular site would be considered relatively minor in relation to the overall habitat in the stream, especially since treatments would be focused on degraded stream habitat. Instream disturbance would occur in Lahontan cutthroat trout occupied (Willow Creek) or recovery (Henderson and Vinini Creeks) streams, and game fish streams (Roberts and McClusky Creeks), as part of habitat enhancement. The BLM would consult with the USFWS and NDOW regarding designing treatments in a manner that would minimize direct effects to Lahontan cutthroat trout. This approach would avoid significant impacts to Lahontan cutthroat trout.

The adverse effects of mechanical treatments on water quality would be expected to be short-term in duration, with water quality returning to pre-disturbance conditions within several days or weeks after treatment is completed. Adverse effects for all proposed riparian zone projects could result from soil disturbance and erosion, and the spill of fuel or lubricants into water bodies. Habitat alteration or loss at a particular site would be considered relatively minor in relation to the overall habitat in the stream. Riparian treatments would be localized and targeted for areas that are generally degraded in terms of riparian vegetation quality or characterized by the absence or limited number of riparian species. The BLM would consult with the USFWS and NDOW regarding designing treatments in a manner that would minimize direct effects to Lahontan cutthroat trout. This approach would avoid significant impacts to Lahontan cutthroat trout. Treatment methods used in Birch and Willow Creeks within the Roberts Mountains WSA would have to meet non-impairment criteria for WSAs, but would not include the use of vehicles or building of new roads.

Prescribed fire would result in erosion and runoff from burned areas and sediment could enter streams if the disturbance area is within a few hundred feet of streams. The BLM has the option of using prescribed fire to the stream's edge, if it would meet the restoration goals and objectives. However, the USFWS and NDOW would be consulted to determine whether a fire exclusion buffer should be maintained for Lahontan cutthroat trout occupied streams. Adverse effects on stream habitat and aquatic species would vary depending on the precipitation conditions. Under average and dry year precipitation conditions, measured effects of prescribed fire would be relatively small or undetectable due to less runoff and erosion input to drainages (Clifton et al. 2006). Effects would be greater in wet years due to more frequent precipitation events and runoff. If large storm events occur within the first few years after prescribed fire, there could be substantial erosion that could adversely affect aquatic habitat.

Beneficial Effects

The BLM's highest priority is to use vegetation treatments to restore high priority subbasins within key watersheds to benefit fish and other aquatic organisms. Over the short term, adverse effects to aquatic organisms from vegetation treatment activities proposed by the BLM could occur, but treatments would lead to improved conditions for aquatic species over the long term. The eventual growth of desirable vegetation in treated areas would moderate water temperatures, buffer the input of sediments from runoff, promote bank stability, and contribute woody debris to aquatic bodies. Ongoing efforts by the BLM to enhance riparian vegetation would also help to increase the number of miles of BLM-administered streams that are classified as Proper Functioning Condition.

Removing invasive vegetation such as pinyon-juniper could increase streamflow, while replacing noxious weeds and invasive non-native species with native vegetation would stabilize streambanks and moderate streamflows. Furthermore, replacing noxious weeds and invasive non-native vegetation with shrubs and trees would also increase the amount of woody debris in water bodies that can be used as habitat by fish (USDOI BLM 2007c:4-69).

The beneficial effects of riparian treatments would include aquatic habitat enhancements. Various treatment methods would be used to improve issues involving headcuts and stream incisions. The treatment activities would include streambank bioengineering, grade stabilization, and vegetation plantings to initiate stream restoration. These treatment activities would enhance pool and riffle habitat by increasing depths and providing additional in-stream structure by adding cobble and boulder substrates and woody debris. After restoration is completed, aquatic habitat would occur on a more consistent basis as a result of increased stability of the channel banks and substrates. The habitat improvements also would be beneficial to macroinvertebrates by stabilizing bottom substrates and creating a diverse composition of substrate types. Macroinvertebrates represent an important food source for fish species. As a result of the stream restoration activities, habitat for Lahontan cutthroat trout (in both occupied and recovery streams) and game fish species would be improved in terms of functionality and structure. Habitat improvements in the Lahontan cutthroat trout recovery streams may assist in the reintroduction of this species into habitats that were used historically, which would meet the goals and objectives of the *Lahontan Cutthroat Trout Recovery Plan* (Coffin and Cowan 1995). In addition, wet meadows and stream reaches could be created under this treatment, which would provide additional aquatic habitat for fish and invertebrates.

Vegetation treatments to thin or remove pinyon-juniper from within floodplains and near streams would help to create fire breaks and would benefit aquatic animals by reducing the risk that a large, uncontrolled wildfire would destroy a large amount of high quality aquatic habitat. Fire can adversely affect aquatic organisms by degrading water quality and raising water temperature (USDOI BLM 2007c:4-70).

After restoration, treatment areas would be protected using temporary fencing to ensure that restored sites and plantings are not damaged by livestock, wild horse, and wild ungulate foraging or by trampling. Also, fencing would be used to protect riparian habitat at Denay Pond, Lone Spring, and Treasure Well.

Aspen Treatments

Adverse Effects

Potential adverse impacts to fish and other aquatic resources from the three aspen treatments associated with stream habitat would be similar to those for riparian treatments. However, only about 15 acres of aspen would be treated annually under the proposed action, and only 4 miles of stream are associated with aspen treatments. Aspen treatments would occur in areas that are occupied, or could be occupied, by Lahontan cutthroat trout. Treatments could result in erosion that could adversely impact nearby stream habitat and aquatic resources, including game and non-game fish.

Beneficial Effects

Restoration of aspen stands could benefit fish and other aquatic species, primarily through an improvement in water quality. Pinyon-juniper would be removed to reduce competition between aspens and pinyon-junipers for space and nutrients, and may occur near roads to improve their effectiveness as fuel breaks. Fuel breaks would help to slow the spread of wildfire, reducing the chances that a large, uncontrolled wildfire would destroy a large amount of high quality aquatic habitat. Downed trees and other large woody material from felled trees could be placed in streams as a source of woody debris for fish. The additional woody debris would provide improvements in the quantity and quality of fish cover and an additional source of organic material to the stream. The BLM would remove or burn slash and downed wood if there is the potential for the material to increase the risk of wildfire.

If fencing is installed near streams, it would benefit aquatic habitat and species by restricting livestock, wild horses, and wild ungulates from entering the stream. This would reduce direct alteration of aquatic habitat and minimize erosion from livestock, wild horse, and wild ungulate use. Fencing would also help to ensure that aspen restoration treatments are successful, as herbivory has been shown to adversely impact the development of new shoots in aspen stands.

Pinyon-juniper Treatments

Adverse Effects

Approximately 5 miles of stream are associated with riparian management projects that occur within the larger pinyon-juniper management area. Seven miles of perennial stream treatments are associated exclusively with pinyon-juniper management projects, including the Birch Creek, Upper Pete Hanson, Tonkin South, Upper Roberts Creek, and Vinini treatment units. These pinyon-juniper project areas also overlap with Lahontan cutthroat trout and other fish habitat—Atlas (Roberts Creek), Birch Creek (Birch Creek), Lower Pete Hanson (Pete Hanson Creek), Pete Hanson (Pete Hanson Creek), and Vinini Unit (Henderson Creek). Habitat alteration could occur near streams that provide known or potential Lahontan cutthroat trout habitat (Birch, Pete Hanson, and Henderson Creeks).

The types of impacts to these perennial and intermittent streams would be similar to those discussed earlier, including increased sediment loads into streams, spill of fuel or lubricants into streams, and flow reduction due to use of water for fire control. Approximately 30 percent of the treatment area for these units has moderate to high water erosion

risk, and mechanical treatments, in particular, could cause soil disturbance that could lead to erosion and sedimentation of streams. The effects of treatments on water quality would be short-term, with water quality returning to pre-disturbance conditions within several days or weeks after treatment is completed. However, this risk is negligible in areas where pinyon-juniper are felled using chainsaws, or pinyon-juniper are shredded, as the resultant woody debris would help to protect the soil. If large amounts of woody debris are left on the ground, however, it could provide fuel for a wildfire.

Fire treatment could result in increased turbidity in streams due to runoff from burn areas. Sediment input could adversely affect stream substrate composition due to increased silt deposition. The magnitude of sediment input would depend on gradient in the burned portion of the drainage area and the extent of vegetation growth between the burn area and the receiving streams. Densely vegetated areas could capture and reduce the sediment input to streams. Standard operating procedures would reduce the sediment input to downgradient streams, but would not eliminate all sediment input into drainages. Sediment input could adversely affect aquatic habitat and the health of fish and invertebrate species.

High severity fires tend to burn much of the organic material on a site, exposing mineral soil, and sometimes creating hydrophobic soil layers. This hydrophobic condition increases the rate of water runoff and erosion. Nearly all of the treatment acreage associated with treatment units near perennial streams has soils with a moderate to high risk of fire degradation. The BLM would reduce this risk by conducting low severity prescribed burns. It is unlikely that burning would be conducted along streams with Lahontan cutthroat trout due to the potential for adverse impacts to stream water quality and loss of vegetative cover adjacent to streams. The BLM would consult with the USFWS before conducting treatments near streams occupied by Lahontan cutthroat trout.

Water may be needed for fire control. If water sources include perennial streams or springs connected to surface flow, temporary flow reductions could occur in streams. The magnitude of the effect would depend on the water volume and timing of the withdrawal.

Beneficial Effects

The removal of pinyon-juniper vegetation in riparian zones could increase stream flows and improve aquatic habitat as a result of reduced water uptake by vegetation. Manual, mechanical, and fire treatments in pinyon-juniper management areas would improve aquatic habitat by placing woody debris at strategic locations to expand the size of the streams and result in the creation or expansion of pool habitats. These treatments would benefit Lahontan cutthroat trout habitat in Birch, Pete Hanson, and Willow Creeks. Habitat improvements near Henderson Creek could assist in the recovery of Lahontan cutthroat trout. The stream structures (i.e., logs and pools) could also serve as fuel breaks to slow the spread of wildland fire and reduce fire effects on aquatic habitat and species.

Prescribed fire treatments could benefit aquatic species by reducing hazardous fuel loads, and therefore the risk of a destructive high-intensity wildfire. In many cases, pre-treatment fuels reductions (e.g., thinning and pile burning) would be necessary to reduce the severity of prescribed burns near or within riparian zones (USDOI BLM 2007b:4-70). Removal of pinyon-juniper and shredding of sagebrush to create fuel breaks would help to contain and limit the spread of wildfire, to the benefit of aquatic resources.

Sagebrush Management

Adverse Effects

Four streams (Birch, Henderson, Pete Hanson, and Vinini Creeks) provide potential Lahontan cutthroat trout, with 1.6 miles of potential perennial and 4.4 miles of intermittent habitat within sagebrush treatment areas. However, there is no occupied Lahontan cutthroat trout habitat in the sagebrush treatment areas. None of the springs are known to contain snails or springsnails.

Most of the sagebrush projects (Alpha, Kobeh East, Nichols, Roberts Mountain Pasture, South Simpson, Three Corners, and Whistler Sage) overlap with intermittent/ephemeral, but not perennial streams. Potential habitat and water quality effects in these streams would mainly affect invertebrate communities, but fish could also be present during spring runoff.

Approximately 5 miles of perennial stream are associated with riparian management projects within the larger sagebrush management area (Lower Henderson 1 and 3, and Lower Vinini Creek units). Only 1.3 miles of perennial stream habitat are associated exclusively with sagebrush management projects—Table Mountain (Henderson and Vinini Creeks), and West Simpson Park (unnamed) units. Lahontan cutthroat trout potential habitat occurs in Henderson and Vinini Creeks, while native fish (speckled dace) have been reported in Coils Creek. Manual and mechanical treatments could result in increased water runoff and erosion, and spills of fuels and lubricants, to the possible detriment of water quality and aquatic habitat.

Fire treatments could result in increased turbidity in streams due to runoff from burned areas. Adverse effects on stream habitat and aquatic species would vary depending on the precipitation conditions. Under average and dry year precipitation conditions, measured effects of prescribed fire would be relatively small or undetectable (Clifton et al. 2006). If large storm events occur within the first few years after prescribed fire, erosion could be substantial. Potential water use for prescribed fire treatment would be the same as discussed for riparian treatments.

Biological control has been identified for use in the Table Mountain 1 and 2, Rocky Hills, and West Simpson Park units. Grazing using livestock as biological control could be used for short periods to remove undesirable vegetation before using other treatment methods. Grazing can contribute to the spread of noxious weeds and invasive non-native vegetation through preferential grazing of native vegetation over noxious weeds and invasive non-native vegetation, and by movement of undesirable vegetation into uninfested areas in livestock feces (USDOI BLM 2009b). Livestock could also degrade vegetation and soils, and deposit fecal material in or near streams, which would adversely affect water quality and habitat for aquatic species. Livestock grazing also could directly alter aquatic habitat if animals have access to the stream channels.

Beneficial Effects

The beneficial effects of sagebrush treatments would include improvements in aquatic and riparian habitats and a reduction in wildfire risk. Grade stabilization structures, streambank bioengineering, removal/reconstruction of water development, and vegetation planting to initiate stream restoration would be used at the Henderson 1 and 2 units and Lower Vinini Unit that are within the sagebrush treatment area and would benefit aquatic species and habitat. Trees that are removed as part of this treatment could be placed in streams to expand the stream width and help create or expand pool habitats. The woody structures also would provide additional in-stream cover for fish and organic material to the stream environment.

Sagebrush treatments would result in improved sagebrush habitat and improved resiliency to wildfire, and would open up the sagebrush canopy to slow the spread of fire. The BLM would also use mowers and shredders to create fuel breaks. A decreased risk of wildfire would benefit aquatic habitat and species by reducing the occurrence of catastrophic wildfires and the associated adverse effects on habitat and species.

3.14.3.3.3 Direct and Indirect Effects under Alternative B (No Fire Use Alternative)

Under Alternative B, the number of acres of riparian treatments (4,000 acres) and miles of stream improved to restore channel morphology and function (31 miles) would be similar to Alternative A.

Because the BLM would have to rely more on mechanical treatments to reduce hazardous fuels and improve woodland health, improve the health of aspen stands, and control non-native vegetation, short-term soil disturbance and erosion would be similar to that under Alternative A even though fewer acres would be treated. However, fire-related effects on water quality and aquatic habitat would not occur under Alternative B. Although this would be beneficial to fish in the short term, in the long term there would be a higher risk of wildfire as a result of buildup of hazardous fuel materials that could have been removed through the use of prescribed fire and wildland fire for resource benefit. Fire would also not be used to improve woodland health and for stand replacement treatments in Phase II and III pinyon-juniper stands. These stands would be highly susceptible to a wildfire. Adverse effects on aquatic habitat and species could result from wildfires near perennial streams and springs.

Under Alternative B, the BLM would be able to demonstrate that it is restoring landscapes and addressing multiple resource issues. The BLM would also make gains toward meeting Proper Functioning Condition objectives on several streams in the project area. Treatment benefits to fish and other aquatic organisms under Alternative B would be less than under Alternative A, but not substantially less, as fire would be used sparingly to improve habitat for fish under Alternative A. However, risks to fish from wildfire would be greater under this alternative than for Alternative A.

3.14.3.3.4 Direct and Indirect Effects under Alternative C (Minimal Land Disturbance Alternative)

Under this alternative, the BLM would only treat vegetation using manual and classical biological control methods. Overall, only about one-fourth as many total acres, acres of wetland, floodplain, and riparian habitat, and miles of stream restoration would be treated under Alternative C than under Alternative A. Short-term soil disturbance and erosion would occur in watersheds as a result of manual and classical biological treatments, but effects would be substantially less under this alternative than under the other action alternatives because fewer acres would be treated, and because manual and biological treatments cause less soil disturbance compared to mechanical and fire treatments.

The BLM would have limited success in restoring channel morphology and function in degraded streams to benefit Lahontan cutthroat trout and other aquatic organisms. The BLM would be able to hand place rocks, logs, and other material in streams to slow water flows, and may be able to make minor changes to the stream morphology using hand tools, but these improvements would be minor.

Pinyon-juniper would be removed using chainsaws. Phase I woodlands and a limited acreage of Phase II woodlands would be targeted for treatments. Most treatments would occur near streams and roads to promote their use as fire breaks, to the benefit of aquatic resources. However, the BLM would not be able to conduct fire treatments to reduce hazardous fuels, or use mechanical equipment to create fire and fuel breaks, and thus the risks of wildfire and its effects on fish and other aquatic resources would be greater under this alternative than under the other action alternatives.

Under Alternative C, the BLM would do little to slow the spread of noxious weeds and other invasive non-native vegetation, including cheatgrass, or protect fish and wildlife habitat from devastating wildfire effects. Thus, benefits to fish and other aquatic organisms under Alternative C would be less than under Alternatives A and B. Although the BLM would make some gains toward meeting Proper Functioning Condition objectives on several streams in the project area, these gains would be less than for Alternatives A and B.

3.14.3.3.5 Direct and Indirect Effects under Alternative D (No Action Alternative)

There would be no direct effects to fish or other aquatic resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would not create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; reconstruct stream channels and improve riparian habitat; thin and/or remove pinyon-juniper and sagebrush to encourage understory development; restore fire as an integral part of the ecosystem; or reduce the risk of a large-scale wildfire to the benefit of fish and other aquatic resources and their habitats. Alternative D poses the greatest threat to Lahontan cutthroat trout, through long-term habitat loss and degradation.

3.14.3.4 Cumulative Effects

The CESA for fish and other aquatic resources is approximately 1,841,698 acres and includes those watersheds at the Hydrologic Unit Code 10 level that are all or partially within the 3 Bars Project area (**Figure 3-1**). Approximately 92 percent of the area is administered by the BLM, 6 percent is privately owned, and 2 percent is administered by the Forest Service. Past and present actions that have influenced fish and other aquatic resources in the 3 Bars ecosystem are discussed in Section 3.2.2.3.3.

3.14.3.4.1 Cumulative Effects under Alternative A (Preferred Alternative)

As discussed in Section 3.2.2.3.3, historic livestock use has contributed to soil erosion and water quality degradation, especially in riparian zones and near streams occupied, or potentially occupied, by Lahontan cutthroat trout and other fish. This degradation in habitat is a major reason why the BLM is conducting stream channel and habitat restoration along 31 miles of streams. The BLM also proposes to install fencing to limit livestock and wild horse access to riparian zone and aspen treatment areas. These actions should help to improve water quality in affected streams. In addition, the BLM would use fencing to restrict livestock access to upland treatment areas, as appropriate, and manage livestock and horse numbers to ensure they are appropriate to ensure healthy rangeland conditions.

The BLM would continue to use ground-based herbicide applications to remove noxious weeds and other invasive non-native vegetation, and aerial-based application methods to remove cheatgrass, and would restore burned areas under the Burned Area Emergency Stabilization and Rehabilitation program, under existing authorizations on about 1,000 acres annually. The BLM primarily uses 2,4-D, glyphosate, imazapyr, imazapic, metsulfuron methyl, and picloram on the 3 Bars Project area. These herbicides have negligible to low risks to fish and other aquatic resources, except under accidental spill situations, which would be unlikely (USDOI BLM 2007b:4-80).These treatments could have a short-term adverse effect on non-target vegetation. These treatments would have long-term beneficial effects by helping to reduce hazardous fuels, improve native vegetation, slow the spread of noxious weeds and other invasive non-native vegetation, and reduce surface runoff and erosion associated with burn sites to the benefit of fish and other aquatic resources.

Recreation activities, primarily off-road vehicle travel, could impact stream habitat. Approximately 496 miles of road are within 500 feet of streams within the CESA. Those, approximately 16 miles are within 500 feet of perennial streams including Birch, Denay, Henderson, Pete Hanson, Vinini, and Willow Creeks. Approximately 11 miles of known or potential Lahontan cutthroat trout habitat occurs near roads. In addition, 76 miles of off-highway vehicle routes are within 500 feet of streams. Of those, approximately 11 miles of off-highway vehicle routes are within 500 feet of the same perennial streams that are near roads. Two miles of streams within 500 feet of off-highway vehicle routes contain known or potential Lahontan cutthroat trout habitat. Unpaved roads and off-highway vehicle routes near streams could contribute runoff and sediment to streams. Fishermen may also harvest Lahontan cutthroat trout and other game fish.

As discussed in the Mount Hope Project EIS, there is concern that water withdrawals for future livestock and domestic uses, mine projects, and agricultural activities could reduce surface water flows in streams associated with the Diamond Mountains, Diamond Valley, Roberts Mountain, Kobeh Valley, and Pine Valley. Water drawdown could adversely impact habitat used by Lahontan cutthroat trout, and could also impact habitat for other aquatic organisms and potential habitat for Lahontan cutthroat trout on Henderson Creek (USDOI BLM 2012c:4-48 to 4-50). If deemed necessary by the BLM based on water monitoring, the Mount Hope Project proponent would augment water flows at several springs and at Henderson and Roberts Creeks (USDOI BLM 2012c:3-93 to 3-105).

Future mining activities within the CESA may create adverse impacts to surface water resources, mainly by altering drainage features, by dewatering springs or stream segments, and by water quality impacts from runoff from disturbed areas or escapes from processing facilities. Most of these potential impacts from mining activities would be avoided or reduced through state and federal mining regulations and related compliance programs.

Surface water features within the CESA generally resemble those within the project area, consisting mainly of streams, springs, ponds, and playas in various conditions. In some locations, notably along Henderson and Pine Creeks and near the town of Eureka, irrigation return flows may have poorer water quality than rangeland streams and springs. These areas are not used by Lahontan cutthroat trout, but could be used by other fish and aquatic resources.

Land development, mineral development, and oil, gas, and geothermal exploration and development could affect about 10,000 acres in the reasonably foreseeable future, including about 8,335 acres of disturbance associated with the Mount Hope Project, and acreage associated with potential land sales (although it is unlikely that all of this land would be developed), roads, and rights-of-way for power and telephone lines. These projects would disturb soil, and could lead to soil erosion and water quality impacts in streams used by game fish and other aquatic resources. Land development and development of natural resources would involve the use of equipment and drilling of wells that could result in hydrocarbon and other spills of hazardous materials that could impact surface water and groundwater; a recent oil spill at the Blackburn oil well in Pine Valley impacted over 3 acres (USDOI BLM 2012c:4-47).

Hazardous fuels reduction, habitat improvement, and noxious weed and invasive non-native vegetation control projects would occur on up to approximately 142,000 acres (about 127,000 for the 3 Bars Project and about 15,000 acres for other hazardous fuels projects in the CESA), or 8 percent of the CESA. As discussed under direct and indirect effects, these treatments would lead to short-term increases in soil erosion and surface water runoff, but long-term benefits to water quality and possibly water flows to the benefit of fish and other aquatic organisms. Fire treatments could cause the development of hydrophobic soils, increasing surface water runoff. Soils over much of the CESA are susceptible to fire degradation. The disturbance effects resulting from restoration activities are predicted to have less impact and be less severe than fire effects and erosion caused by wildfire. Based on historic numbers, approximately 140,000 acres could burn during the next 20 years within the CESA.

3 Bars Project treatments would have short-term adverse effects on about 4,000 acres of riparian habitat, 9 miles of occupied Lahontan cutthroat trout streams, and 68 miles of potential Lahontan cutthroat trout streams. In addition, treatments under Alternative A could affect aquatic organisms found in almost 1,000 miles of perennial and intermittent/ephemeral streams on the 3 Bars Project area. Adverse effects from treatments would generally be short term, while benefits would be long term and would accumulate with fish and other aquatic resources habitat effects that occur on other portions of the CESA. Because stream restoration and enhancement treatments on the 3 Bars Project area under Alternative A would affect less than 0.2 percent of the acreage on the CESA, these effects would be negligible. About 17 percent of the 3 Bars Project Area and 8 percent of the CESA would be treated to reduce hazardous fuels, and slow the trend toward large-sized fires of moderate to high severity in sagebrush and large stand-replacing fires in pinyon-juniper. A reduction in wildfire risk on the CESA would benefit aquatic organisms, and would be greatest under Alternative A.

3.14.3.4.2 Cumulative Effects under Alternative B (No Fire Use Alternative)

Under Alternative B, effects from non-3 Bars Project reasonably foreseeable future actions on fish and other aquatic resources would be similar to those described under Alternative A. Acres and types of wetland and riparian habitat treated under this alternative would be similar to Alternative B. However, less effort would be spent by the BLM on treatments to reduce wildfire risk and its associated impacts to aquatic habitat from soil erosion, including use of fire to restore natural fire regimes.

Adverse effects to fish and other aquatic resources would generally be the same as described for Alternative A. However, by not using fire, there would be no risks to fish and other aquatic resources or their habitat from fire on up to several thousand acres annually within the 3 Bars Project area. However, the use of fire could occur on several hundred acres annually on other portions of the CESA.

Because of the large number of acres treated, water quantity and quality should improve within the 3 Bars Project area and provide a benefit to fish and other aquatic resources within the CESA, although not to the extent as would occur under Alternative A.

Under Alternative B, restoration projects would occur along about 31 miles of streams, including about 9 miles of streams with occupied by Lahontan cutthroat trout, and on about 2,000 acres of wetland and riparian habitat. Hazardous fuels reduction and habitat improvement projects could occur on about 63,000 acres within the 3 Bars Project area, and on an additional 15,000 acres within the CESA, or about 4 percent of the acreage within the CESA. The trend toward large-sized wildfires of moderate to high severity in sagebrush and large stand-replacing fires in pinyon-juniper should slow, but treatments to reduce this risk on the CESA would be less under Alternative B than under Alternative A.

3.14.3.4.3 Cumulative Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, effects from non-3 Bars Project reasonably foreseeable future actions on fish and other aquatic resources would be similar to those described under Alternative A. Adverse, short-term effects to fish and other aquatic resources associated with the use of fire and mechanized equipment would not occur under Alternative C. However, fire use and mechanized equipment would be used on other portions of the CESA to improve habitat, remove hazardous fuels, and reduce the risk of wildfire. Treatments in the CESA would affect about 47,000 acres, or about 2 percent of the CESA; less than 0.2 percent of acreage on the CESA would be affected annually. 3 Bars Project restoration treatments would have short-term adverse and long-term beneficial effects on fish and other

aquatic resources, but these effects would be negligible in the context of the acreage within the CESA and other types of activities that have effects on water resources, such as the Mount Hope Project. By not being able to use mechanical methods and fire to reduce hazardous fuels, treat vegetation to make it more fire resilient, create fire and fuel breaks, and remove downed wood and slash, however, the risk of wildfire and its impacts on water resources would likely increase on the 3 Bars Project area, to the potential detriment of fish and other resources that depend upon water in the CESA.

3.14.3.4.4 Cumulative Effects under Alternative D (No Action Alternative)

Under Alternative D, effects from non-3 Bars Project reasonably foreseeable future actions on fish and other aquatic resources would be similar to those described under Alternative A. There would be no cumulative effects on fish and other aquatic organisms from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; slow the spread of noxious weeds and other invasive non-native vegetation using ground-based and aerial application methods of herbicides, especially cheatgrass; restore fire as an integral part of the ecosystem; and reduce the risk of a large-scale wildfire under current and reasonably foreseeable future authorized actions, but on a very limited acreage.

Based on historic treatments in the 3 Bars Project area, only about 1,500 acres would be treated annually in the CESA to reduce hazardous fuel levels and improve ecosystem health. Hazardous fuel levels would likely increase, and only a limited number of miles of fuel and fire breaks would be constructed under this alternative compared to the action alternatives. The BLM would conduct stream bioengineering and riparian habitat enhancements only on a limited acreage and these projects would have to be authorized through separate decisions. Stream channels and riparian habitat would likely remain degraded and contribute to water quality concerns. Thus, riparian habitat used by Lahontan cutthroat trout and other aquatic organisms would remain degraded and contribute to water quality concerns. The trend toward large-sized fires of moderate to high severity in sagebrush, and large stand-replacing fires in pinyon-juniper, would likely increase. Of note, large regional wildfires have contributed to runoff, erosion, and water quality issues within the CESA, particularly outside treatment areas in the eastern mountainous parts of Grass Valley and Pine Valley. It is likely that wildfire incidence and severity would remain high under Alternative D. These effects would be detrimental to fish and other aquatic organisms.

3.14.3.5 Unavoidable Adverse Effects

Unavoidable adverse effects on aquatic biological resources include treatments that disturb soil and increase sedimentation, which could result in short-term adverse effects on water quality and aquatic species. In addition, removal of pinyon-juniper in riparian treatment areas could reduce stream shading, which could increase stream temperatures and adversely affect aquatic species. These adverse impacts generally would be short-term in duration (several months to several years) and would be addressed by resource protection measures implemented during and after the project treatment activities.

3.14.3.6 Relationship between the Local Short-term Uses and Maintenance and Enhancement of Long-term Productivity

As discussed under direct and indirect effects, treatments could lead to short-term habitat loss, and possibly loss of aquatic organisms, due to removal of vegetation and erosion. Long term, control of aquatic and riparian vegetation would improve habitat quality for fish and other aquatic resources, improve hydrologic function, and reduce soil erosion. Vegetation treatments that reduce hazardous fuels would benefit aquatic organisms by reducing the chances

of a large, uncontrolled wildfire, which could result in the destruction of a large amount of high quality wetland and riparian habitat, especially if followed by heavy rainfall. Hazardous fuels reduction would also decrease the likelihood that wildfire suppression activities would occur in or near aquatic habitats. Treatments that restore natural fire regimes and native vegetation near streams should ensure a steady supply of large woody debris that would provide habitat for aquatic organisms in the long term (USDOI BLM 2007b:4-248).

3.14.3.7 Irreversible and Irretrievable Commitment of Resources

Loss of control over a prescribed fire could also harm aquatic habitat and cause mortality or injury to aquatic organisms. Treatments would likely result in short-term habitat degradation and some reduction in populations of fish and other aquatic organisms. These effects, however, would be reversible, as habitats would improve and aquatic organism populations would likely increase as a result (USDOI BLM 2007b:4-252).

3.14.3.8 Significance of the Effects under the Alternatives

3 Bars Project restoration treatments and other actions in the CESA should not have a significant adverse impact on fish and other aquatic resources. One of the goals of the 3 Bars Project is to improve habitat for Lahontan cutthroat trout and other fish and wildlife by restoring stream and habitat functionality through in-channel activities such as re-contouring and installing grade-control structures and plantings. Treatments could occur on several miles of streams annually and could lead to short-term stream channel instability and degradation. The BLM would also remove encroaching pinyon-juniper and noxious weeds and other invasive non-native vegetation on about 3,900 acres of riparian habitat, and revegetate treatment areas with native vegetation. The BLM would work with the USFWS and NDOW to ensure that treatments would not result in a long-term (greater than 3 year in duration) alteration or loss of habitat in streams or springs containing Lahontan cutthroat trout (current populations or recovery sites). The BLM also would limit livestock, wild horse, and wild ungulate access to treated areas until site-specific treatment goals and objectives were met. These treatments are expected to improve stream habitat within 2 to 3 years. Stream restoration is not planned on other portions of the CESA, but could occur in the future should funding become available.

Nearly all 3 Bars Project restoration treatments would cause short-term erosion that leads to increased sedimentation in streams or ponds that could harm aquatic species, and which could last for several years. These risks would be greatest in restoration areas with moderate to severe water or wind erosion potential, or where soils are susceptible to fire degradation. Treatments that disturb the soil or remove large amounts of vegetation, including use of mechanical treatments such as disking and plowing, and prescribed fire and wildland fire for resource benefits, would also lead to short-term erosion and sedimentation. Long term, restoration treatments would lead to conditions that should reduce the risk of erosion, including revegetation of treatment sites with native vegetation and conducting treatments to stimulate growth of the understory. Treatments that reduce the risk of wildfire, including hazardous fuels treatments, control non-native vegetation, and create fire and fuel breaks would also reduce the risk of fire-associated erosion and its effects on water quality. Thus, none of the alternatives would result in a significant long-term (greater than 3 years) increase in erosion and the associated increased sedimentation in streams or ponds.

Under all alternatives, there is potential for short-term releases of fuels and lubricants from equipment into water bodies that could affect Lahontan cutthroat trout or other aquatic species, although this risk would be negligible. The BLM would prevent or minimize the movement of fuels and lubricants into water bodies by fueling and servicing equipment off-site at least 300 feet from streams. Operators would also carry absorbent material and other spill clean-up materials to use should a spill occur in a water body. By retaining buffers between treatment areas and water

bodies where feasible, and following other SOPs that protect water quality, it is unlikely that there would be a change in water quality that would often or regularly exceed Nevada water quality standards.

Prescribed fire could be used near streams and cause a long-term (greater than 3 year in duration) loss of riparian vegetation in streams or springs containing Lahontan cutthroat trout (current populations or recovery sites), or other aquatic species. As discussed below under Mitigation, the BLM would avoid conducting treatments in streams during spawning periods, and removing vegetation near streams using prescribed fire or other methods if it could be detrimental to Lahontan cutthroat trout. The BLM would consult with the USFWS and NDOW before conducting treatments near streams occupied by Lahontan cutthroat trout.

Treatments under all alternatives would not cause a flow reduction lasting more than 1 month in streams containing Lahontan cutthroat trout (current populations or recovery sites), or other aquatic species. The BLM could divert water while reconstructing streams and use water to manage prescribed fires and wildland fires for resource uses. The BLM would prevent livestock, wild horse, and wild ungulate access to treatment sites near water in riparian and aspen treatment areas until these areas were restored and able to accommodate use by these animals. It is anticipated that access restrictions would be 2 to 3 years, while use of water for fire control would last only a few days. If access is restricted, the BLM would provide water gaps to allow livestock, wild horses, and wild ungulates to access portions of the stream within treatment areas. Thus, there should be no significant long-term diversion, access restriction, or consumptive use of surface water that substantially reduces water availability and the uses recognized by Nevada Department of Water Resources in the analysis area or immediately adjacent to it under all alternatives. This would include flows and seasons of use in springs or streams where existing beneficial water uses, as defined by Nevada Division of Environmental Protection and recorded by Nevada Department of Water Resources, may be affected.

Poorly designed, installed, or maintained culverts have impacted stream flows and fish movement on several streams on the 3 Bars Project area (AECOM 2010). The BLM would work to replace these culverts, and would ensure that any future culverts used in stream reconstruction would not cause permanent barriers to fish movement in streams.

3.14.4 Mitigation

The following mitigation measures would be implemented to reduce or avoid impacts to fish and other aquatic biological resources:

1. If instream disturbance is required as part of treatment, activities would be scheduled to avoid spawning periods of game fish species or Lahontan cutthroat trout. The measure would be effective in protecting spawning periods of game or special status fish species.

2. If water is required for fire control, perennial streams with game or special status species or springs with connections to these perennial streams would not be used as water sources. This measure would be effective in avoiding flow reductions in streams with important aquatic species by restricting their use as water sources for fire control.

3. The BLM would consult with the NDOW before conducting prescribed fire and other treatments that could adversely impact Lahontan cutthroat trout when working near Lahontan cutthroat trout occupied or potential habitat. The measure would be effective in protecting stream habitat for Lahontan cutthroat trout.

In addition, fish and other aquatic resources would benefit from mitigation measures identified in Section 3.17.4 (Livestock Grazing Mitigation).

3.15 Wildlife Resources

3.15.1 Regulatory Framework

3.15.1.1 Endangered Species Act

In accordance with Section 7 of the Endangered Species Act, federal agencies must "insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species." The purpose of the Act is to provide a means for conserving the ecosystems upon which threatened and endangered species depend, and to provide a program for protecting these species. The Act defines an endangered species as a species that is in danger of extinction throughout all or a major portion of its range. A threatened species is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a major portion of its range. This Act also addresses species that have been proposed for listing as either threatened or endangered, but for which a final determination has not been made. These so-called "candidate" species are those for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the Act, but for which development of a proposed listing regulation is precluded by other, higher priority listing activities. Critical habitat is a specific area or type of area that is considered to be essential for the survival of a species, as designated by the USFWS under the Act. There are no federally listed wildlife species on the 3 Bars ecosystem; the Columbia spotted frog, greater sage-grouse, and yellow-billed cuckoo are candidates for listing.

3.15.1.2 BLM Special Status Species

BLM Special Status Species are defined as those plant and animal species for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or a significant current or predicted downward trend in habitat capability that would reduce the species' existing distribution. These animals are protected under provisions of the Act or under BLM Manual 6840, *Special Status Species Management* (USDOI BLM 2008h). In addition, there is a Nevada State Protected Animal List (Nevada Administrative Code §§ 501.100 - 503.104) that BLM has incorporated, in part, into the Special Status Species list.

3.15.1.3 BLM and Nevada Department of Wildlife Memorandum of Understanding

Wildlife and fish resources and their habitat on public lands are managed cooperatively by the BLM and NDOW under a Memorandum of Understanding as established in 1971. The Memorandum of Understanding describes the BLM's commitment to manage wildlife and fisheries resource habitat, and the NDOW's role in managing populations. The BLM meets its obligations by managing public lands to protect and enhance food, shelter, and breeding areas for wild animals. The NDOW assures healthy wildlife numbers through a variety of management tools including wildlife and fisheries stocking programs, hunting and fishing regulations, land purchases for wildlife management, cooperative enhancement projects, and other activities.

3.15.1.4 Nevada Department of Wildlife Programs

The NDOW is responsible for the restoration and management of fish and wildlife resources within the state. The NDOW administers state wildlife management and protection programs as set forth in Nevada Revised Statutes Chapter 501, Wildlife Administration and Enforcement, and Nevada Administrative Code Chapter 503, Hunting, Fishing and Trapping; Miscellaneous Protective Measures. Nevada Revised Statute § 501.110 defines the various

categories of wildlife in Nevada, including protected categories. Nevada Administrative Code §§ 503.010 to 503.080, 503.110, and 503.140 list the wildlife species currently placed in the state's various legal categories, including protected species, game species, and pest species.

3.15.1.5 Migratory Bird Treaty Act and Migratory Bird Conservation Act

Migratory birds, with the exception of native resident game birds, are protected under the provisions of the Migratory Bird Treaty Act of 1918. Under this act, nests with eggs or the young of migratory birds may not be harmed, nor may any migratory birds be killed. Measures to prevent bird mortality must be incorporated into the project's design.

The Migratory Bird Conservation Act of 1929, as amended, makes it unlawful to directly or indirectly harm migratory birds. If the USFWS determines that migratory birds could be harmed by BLM vegetation treatment actions, the two agencies would develop a site-specific assessment and mitigation to prevent harm to these birds.

Per the *BLM Nevada Wildlife Surveys* protocol, the BLM is required to conduct migratory bird surveys in and adjacent to (within 100 meters; 328 feet) a project area prior to disturbance. These surveys are adequate for up to 14 days. Additional surveys must be conducted after 14 days have elapsed if the project has not been implemented (USDOI BLM 2013j).

3.15.1.6 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC § 668) applies primarily to taking, hunting, and trading activities that involve any bald or golden eagle. The Act prohibits the direct or indirect take of an eagle, eagle part or product, nest, or egg. The term "take" includes "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." Disturb is defined as to "agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: 1) injury to an eagle, or 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." Golden eagles are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, both of which prohibit take. Prior to conducting a treatment, the BLM would survey for eagles as per guidance in the *BLM Nevada Wildlife Surveys* protocol (USDOI BLM 2013j).

3.15.1.7 Other Regulations

The Sikes Act is federal legislation that authorizes the USDOI to plan, develop, maintain, and coordinate programs with state agencies for the conservation and rehabilitation of wildlife, fish, and game on public lands. The Fish and Wildlife Conservation Act of 1980 encourages federal agencies to conserve and promote the conservation of non-game fish and wildlife species and their habitats.

3.15.2 Affected Environment

3.15.2.1 Study Methods and Analysis Area

The NDOW provided a list of wildlife species that have been observed within the project area, or which NDOW biologists believe have a strong potential to occur within the project area, based on knowledge of the species' habitat preference and conditions. BLM biologists reviewed these lists prior to their incorporation into this document. The NDOW *Wildlife Action Plan* and the NDOW *Draft Nevada Wildlife Action Plan Public Review* provided information

about key habitats and the species that depend on them, including species descriptions, range maps, and habitat needs (Wildlife Action Plan Team 2006, 2012). The *Revised Nevada Bat Conservation Plan* provided in-depth analysis of Nevada's bat species, habitat and conservation needs, and distribution (Bradley et al. 2006). The *Nevada Comprehensive Bird Conservation Plan* was used as a supplemental resource for information about bird life history and habitats, especially for those species not covered in either the 2006 or 2012 Wildlife Action Plans (Great Basin Bird Observatory 2010).

Several previous studies in or near the project area provided useful reference and analysis relevant to the proposed project. The most significant of these was the Mount Hope Project EIS (USDOI BLM 2012c). The Mount Hope Project is in the southeast corner of the 3 Bars Project area, and the study area for some aspects of the Mount Hope EIS included much the 3 Bars Project area. Finally, numerous Geographic Information System data files for wildlife species presence and seasonal habitat range were consulted in conjunction with the above referenced documents.

The project area for analysis of direct and indirect effects to wildlife resources is the 3 Bars Project area. The cumulative effects analysis area includes the 3 Bars Project area, and areas within 10 miles of the project area boundary, as shown in **Figure 3-1**.

3.15.2.2 Wildlife Habitat

Important wildlife habitat in the area includes big sagebrush (mountain, basin, and Wyoming big sagebrush), low sagebrush, pinyon-juniper woodlands, aspen, riparian, and salt desert scrub vegetation types. The components of these habitats are described in Section 3.11, Native and Non-native Vegetation Resources, while wetland, floodplain, and riparian habitats within the project area are described in Section 3.10, Wetlands, Floodplains, and Riparian Zones.

3.15.2.2.1 Sagebrush

Sagebrush communities in Nevada provide habitat for approximately 100 bird species and 70 mammal species, including at least 28 rodent species (Braun et al. 1976). Big sagebrush provides important habitat for many sagebrush obligate and facultative wildlife species. "Obligate" species are those that live only within a particular habitat type, while "facultative" species prefer a particular habitat, but are not restricted to it. Sagebrush lizard, greater sage-grouse, sage thrasher, sage sparrow, Brewer's sparrow, sagebrush vole, pygmy rabbit, and pronghorn antelope are sagebrush obligate species (Paige and Ritter 1999, Knick et al. 2003). Low sagebrush areas provide seasonal habitat for some species and year-round habitat for smaller animal species. Sagebrush provides important nesting and foraging habitat, and protection from predators and from the weather. The deep, often sandy or loose soils are easy to dig, and burrowing and denning species are common. Sagebrush range in good condition typically supports a lush undergrowth of bunchgrasses and forbs. This highly productive understory is critical to the needs of wildlife species, including sagebrush vole and several species of shrew that depend on the productivity of the grass component for both prey production and cover (Wildlife Action Plan Team 2012).

Wildfire, spread of noxious weeds and invasive non-native species, and pinyon-juniper encroachment are major threats to sagebrush habitat and associated wildlife (Connelly et al. 2004). The decline in sagebrush habitat in the western U.S. has resulted in the greater sage-grouse being petitioned for listing as threatened or endangered, and shrubland birds are declining faster than any other group of species in North America (Knick et al. 2003). The Brewer's sparrow population has declined by over 50 percent since 1966, and the loggerhead shrike population continues to decline across its range (Wildlife Action Plan Team 2012).

3.15.2.2.2 Pinyon- juniper Woodland

Pinyon-juniper woodlands provide a variety of sheltering functions for wildlife that range from hiding cover to cavities and nest sites for birds, bats, and small mammals. Numerous wildlife species frequent pinyon-juniper habitats in the western United States. At least 70 species of birds and 48 species of mammals have been associated with these woodlands (Gottfried et al. 1995). Over the past 150 years, pinyon-juniper has expanded into sagebrush, riparian, and aspen habitats, to the detriment of species that use these habitats. Ironically, despite the increase in amount of pinyon-juniper habitat on the landscape, resident seed and fruit eating bird species such as pinyon jay, western scrub jay, and mountain chickadee are undergoing substantial population declines in the pinyon-juniper biome, while migratory insectivore populations are little changed (Sauer et al. 2008 *in* Great Basin Bird Observatory 2011).

The pinyon-juniper woodlands provide important thermal protection for wildlife during winter, and shelter from the intense sun during the summer. For birds and bats in particular, pinyon-juniper woodlands provide structure for nesting and roosting and locations for foraging that would otherwise be missing from the mid-elevation cold desert. The pinyon nut crop is an important food source for a number of species, including pinyon jay and a variety of small mammals. The juniper berry crop is also an important food resource for birds and small mammals (Wildlife Action Plan Team 2012). Pinyon-juniper at different successional stages offers different benefits for different species, and pinyon-juniper communities can range from open stands with a diverse understory of shrubs and grasses to closed woodlands with little understory vegetation. Open pinyon-juniper/big sagebrush/bunchgrass stands are mid-successional and characterized by herbaceous, shrub, and tree layers, and often host a high diversity of wildlife species. As western juniper dominance increases, structural diversity declines. Old growth stands also differ structurally from post-settlement woodlands, including having a greater density of cavities, which benefits cavity nesting species (Miller et al. 2005).

3.15.2.2.3 Aspen and Riparian

Wildlife use riparian zones disproportionately more than any other type of habitat in the Great Basin (see review in Thomas et al. 1979, Wildlife Action Plan Team 2012). Riparian habitat in the Great Basin supports a rich diversity of wildlife, including more than one-half of the bird species that breed regularly in the Great Basin (Wildlife Habitat Council 2005). Riparian areas provide important habitat for numerous wildlife species on the 3 Bars Project area, but several species, including northern leopard frog, Lewis' woodpecker, northern goshawk, mountain quail, willow flycatcher, Cassin's finch, montane shrew, and numerous species of bats preferentially use riparian zones (USDOI BLM 2003b, Wildlife Action Plan Team 2012).

Biological diversity is higher in aspen stands than in any other upland forest type in the West (Finch and Ruggiero 1993 *in* Kay 2003). Numerous wildlife species use aspen areas and aspen stands typically have high bird abundance and richness, but several species, including Lewis' woodpecker, northern goshawk, Cassin's finch, mountain quail, mule deer, and numerous species of bats preferentially use aspen habitats on the 3 Bars Project area (Wildlife Action Plan Team 2012). Aspen are found on scattered tracts on the 3 Bars Project area, but their future is uncertain. Studies in California, Oregon, and Nevada have shown that 12 percent of aspen stands have been completely replaced by pinyon-juniper, and pinyon-juniper was dominant or co-dominant in another 65 percent of stands (Kerr and Salvo 2007). Studies in Nevada and on the 3 Bars Project area have shown that unless protected by fencing, aspen stands are degraded by livestock. In areas where aspen were protected from grazing, they successfully regenerated and formed multi-aged stands. Aspen have also declined from fire suppression, but even if burned, will not regenerate if ungulate herbivory is excessive (Kay 2001, 2003, USDOI BLM 2010d).

Aspen communities are particularly important to cavity nesting species in Nevada because stems attain sizes over 10 inches diameter at breast height and the wood is soft and easy to excavate. Because large diameter aspen occur more frequently in riparian aspen stands, these areas tend to be preferred by cavity nesting species. In addition to cavities and peeling bark, mature aspen communities provide larger diameter trees utilized by wildlife as forage substrate or nesting. For example, northern goshawks can live in and utilize high-elevation shrub-steppe habitats because stringers of large-diameter aspen trees with closed canopies in the riparian zones will support their nesting needs. Birds and small mammals utilize mid-story structure and herbaceous/shrub understory of aspen communities for forage, nesting, and protective cover. Downed trees in aspen habitat can create slow moving water conditions favorable to Columbia spotted frog, a federal candidate species and BLM Special Status Species.

3.15.2.2.4 Salt Desert Scrub

The intermountain cold desert shrub, including salt desert scrub, is the most important habitat in Nevada for several BLM Special Status Species, including pale kangaroo mouse and loggerhead shrike. The shrub habitat provides nesting structure and protection from predators and the weather. This habitat is important to loggerhead shrike, which can attain high breeding densities in valley bottoms where individual shrubs can be quite large and provide good cover and nest protection. Soils tend to be loose and either sandy or gravelly and are often easy to dig, providing important denning and burrowing habitat. Small and medium mammals including rabbits, jackrabbits, and various rodents that forage in the brush serve as prey for raptors. Washes provide unique habitat for certain terrestrial species including amphibians. By retaining higher soil moisture than surrounding upland areas, they can serve as enhanced movement and migration pathways for these species and facilitate their distribution across the landscape, perhaps serving an important role in amphibian metapopulation maintenance. As a result of the limited water availability associated with salt desert scrub, the habitat is used seasonally by larger animals and provides a lower abundance of smaller animals than found in the more mesic plant communities (Wildlife Action Plan Team 2012).

3.15.2.3 Wildlife Species

Wildlife species and habitats occurring in the project area are typical of the central Basin and Range region, and are relatively abundant within and adjacent to the project area. Wildlife species that are not special status species are discussed below; a discussion of special status species, such as those listed as federally threatened or endangered, or BLM Special Status Species, follows. These discussions only address a portion of the wildlife species that occur within the 3 Bars Project area, and focus on those species where the BLM has the most information.

3.15.2.3.1 Reptiles and Amphibians

Records for amphibian occurrence within the project study area are lacking. Based on amphibian records in areas adjacent to the project study area, species occurrence could include the Great Basin spadefoot toad, western toad, northern leopard frog, and Columbia spotted frog (Petersen 2012). The Columbia spotted frog is discussed under BLM Special Status Species.

Potential habitat for amphibians within the project study area includes springs, wet areas, and streams. Many of the toad species, such as Great Basin spadefoot, utilize terrestrial habitats throughout most of the year, but they move to aquatic habitats for breeding in the spring or early summer.

The northern leopard frog was petitioned for listing, but the status review and 12-month finding concluded that listing the western population is not warranted at this time (USDOI USFWS 2011). Habitat for northern leopard frog typically includes springs and wet areas. Breeding typically occurs in the spring or early summer for leopard frogs.

There are a variety of snakes and lizards that are known either to occur or have the potential to occur within the project area, in almost every habitat type. Likely species include rubber boa and ringneck snake, which can occupy a variety of grassland and woodland habitats including aspen woodlands, and often occur near riparian zones. The greater short-horned lizard also uses a variety of habitats including sagebrush, open pinyon-juniper, and spruce-fir forests, and prefers areas where substrate is stony, sandy, or firm, but usually where there is some fine loose soil**.** Desert horned lizard and long-nosed leopard lizard tend to prefer arid shrublands, and may occur in the project area, and the great basin rattlesnake is likely to occur in the broken rocks and brush habitats within the project area. Other reptiles known or likely to occur in the project area include coachwhip, common sagebrush lizard, great basin collared lizard, western fence lizard, long-nosed snake, and striped whipsnake (NDOW 2008a, 2009b, Wildlife Action Plan Team 2012).

3.15.2.3.2 Birds

Waterfowl

Waterfowl and wading birds occur in shallow lakes, marshes, grassy meadows, and wetlands. These birds may use the project area for breeding, as a wintering ground, as year-round habitat, or during migration. Snow geese, tundra swans, and other waterfowl overwinter within the project area, while mallards and Canada geese overwinter and breed here. Great blue heron forage in shallow water and marshy areas year-round, while populations of American bittern, black-crowned night heron, and sora use these habitat areas during the breeding season. Other species of waterfowl, including several species of teal as well as egret, rails, and coots, are known to occur in the project area. Migratory and breeding populations of sandhill crane use the wet meadows, riparian zones, and agricultural lands for foraging, and often congregate in large numbers in eastern Nevada, including all of Eureka County (Wildlife Action Plan Team 2006, 2012, Great Basin Bird Observatory 2010, Cornell Lab of Ornithology 2011).

Doves and Quail

Mourning dove and chukar are small game birds that occur on the project area. Mourning doves primarily inhabit open country, areas with scattered trees, and woodland edges, and forage for seeds on the ground. They are frequently found along unimproved roads where they obtain gravel for food digestion, or near springs and artificial sources of water (Cornell Lab of Ornithology 2011, USDOI BLM 2012c). Mourning doves are a year-round resident in Nevada (Otis et al. 2008). Chukar partridge were introduced to Nevada in the 1940s and are now widely distributed. Optimum habitat for chukar partridge consists of steep rugged canyons with numerous talus slopes and rocky outcrops; the species typically inhabits rock outcrops and ledges adjoining grassy and sagebrush hillsides. Chukar partridge eat a variety of leafy green food, weed seeds, fruits, berries, insects, and beetles. Chukar partridge are common in the Roberts Mountains, Whistler Mountain, and Sulphur Spring Range. Occupation of seasonal habitat varies with moisture and snow levels. The birds typically move to lower elevations and south-facing slopes during heavy snow events, and concentrate around water sources during the summer months (USDOI BLM 2012c).

Raptors

A variety of raptors are known to use the project area for roosting, nesting, and/or hunting. Golden eagle, northern harrier, prairie falcon, Cooper’s hawk, ferruginous hawk, red-tailed hawk, Swainson’s hawk, sharp-shinned hawk,

American kestrel, and western burrowing owl have been known to nest in the area. Nesting data since 2006 indicates active use of the area by prairie falcons, and kestrels. Northern goshawk, a BLM Special Status Species, occurs in riparian habitat in the Roberts Mountains area. There are also numerous historic nesting records for ferruginous hawk, another BLM Special Status Species, within open habitat areas of the 3 Bars project area, including a site in the southeastern section of the project area that has been used within the past 10 years, Flammulated owls may occur in woodland areas in the north-central part of the project area. Additional raptors sighted in the area include merlin and rough-legged hawk (Wildlife Action Plan Team 2006 and 2012, NDOW 2009c, 2010a, USDOI BLM 2012c).

Migratory Birds

Neo-tropical migrant birds are bird species that migrate from the temperate portions of the continent to winter in the tropics of North and South America. Neo-tropical migrants are most commonly associated with habitats having a strong vertical component of woody shrubs and trees. A number of migratory birds that breed in North America and winter in the neotropical region of South America also breed in the project area and vicinity.

Species commonly occurring in pinyon-juniper habitats and that are known to occur or have the potential to occur in the project area include the pinyon jay, western bluebird, Virginia's warbler, black-throated gray warbler, and Scott's oriole. Sage thrasher, Brewer's sparrow, and sage sparrow use sagebrush habitats within the project area, while loggerhead shrike and green-tailed towhee also have potential to occur in the sagebrush habitats in the project area. Gray flycatcher is known to occur within the project area and may use pinyon-juniper, tall sagebrush, or riparian habitats (Great Basin Bird Observatory 2010, USDOI BLM 2012c, Wildlife Action Plan Team 2012). Other migratory species known to occur within the project area include common nighthawk, common raven, mountain bluebird, black-throated sparrow, lark sparrow, and western meadowlark.

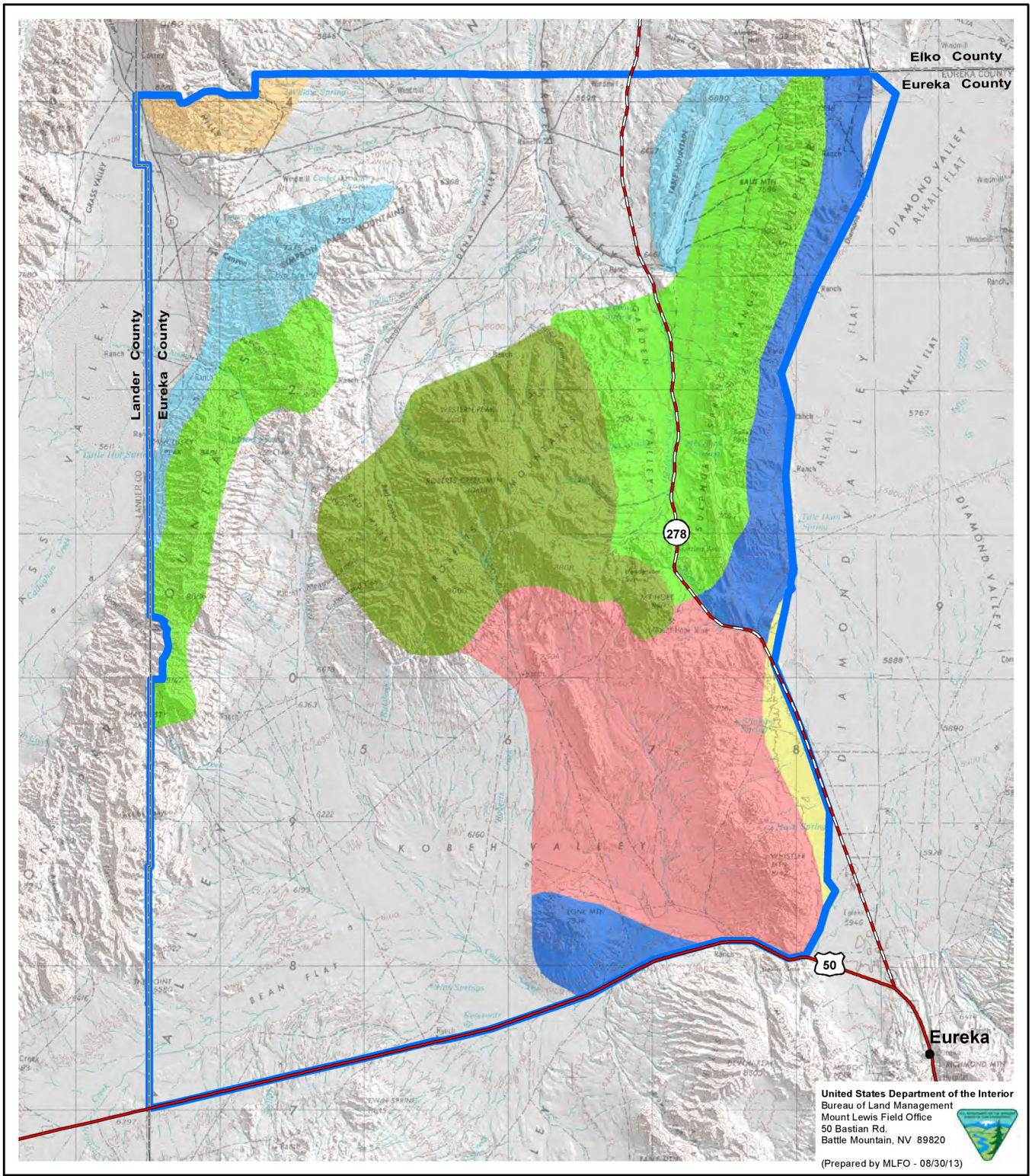
3.15.2.3.3 Mammals

Large Game

Mule deer use a variety of vegetation types and habitats seasonally within the project area in their pursuit of forage, thermal cover, and escape cover for seasonal needs. Vegetation important for mule deer includes serviceberry, snowberry, mountain mahogany, sagebrush, aspen, cottonwood, willow, chokecherry, wild rose, singleleaf pinyon pine, Utah juniper, eriogonum, arrowleaf balsamroot, penstemon, phlox, sorrel, hawksbeard, lupine, and numerous forbs. Riparian vegetation along streams, meadow areas, and aspen stands are important fawn-rearing areas (USDOI BLM 2007g). Six mule deer herds have all or a portion of their range within the project area, including the Sulphur Spring herd, Whistler herd, Fish Creek herd, Roberts Mountain herd, Simpson Park herd, and Cortez Mountains herd (**Figure 3-40**). Mule deer habitat is concentrated primarily in the eastern half of the project area, including the Roberts Mountains area, and in the Simpson Park area.

Habitat for mule deer over much of the 3 Bars Project Area is in decline, and proposed treatments are designed to slow or reverse this trend (**Figure 3-41**). Factors contributing to this decline include pinyon-juniper encroachment into shrublands, decadent and unhealthy pinyon-juniper stands, high levels of hazardous fuels that could lead to a catastrophic wildfire and loss of deer habitat, livestock grazing, noxious weeds and other invasive non-native vegetation, and human-related disturbance.

The mule deer population in NDOW hunt units 141 through 145 has been stable to slightly increasing from 2009 to 2011, with a December 2011 population estimate of nearly 1,500 animals (NDOW 2012b, c). The Roberts Mountains deer are migratory in nature. Mule deer leave Roberts Mountains in October or November and migrate south into the



Legend

Mule Deer Habitat
- Summer Range
- Crucial Summer Range
- Winter Range
- Crucial Winter Range
- Transition Range
- Year-round Range
- Agricultural Lands/ Unique Habitat
- 3 Bars Project Area

Source: NDOW 2009d.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-40

Mule Deer Habitat

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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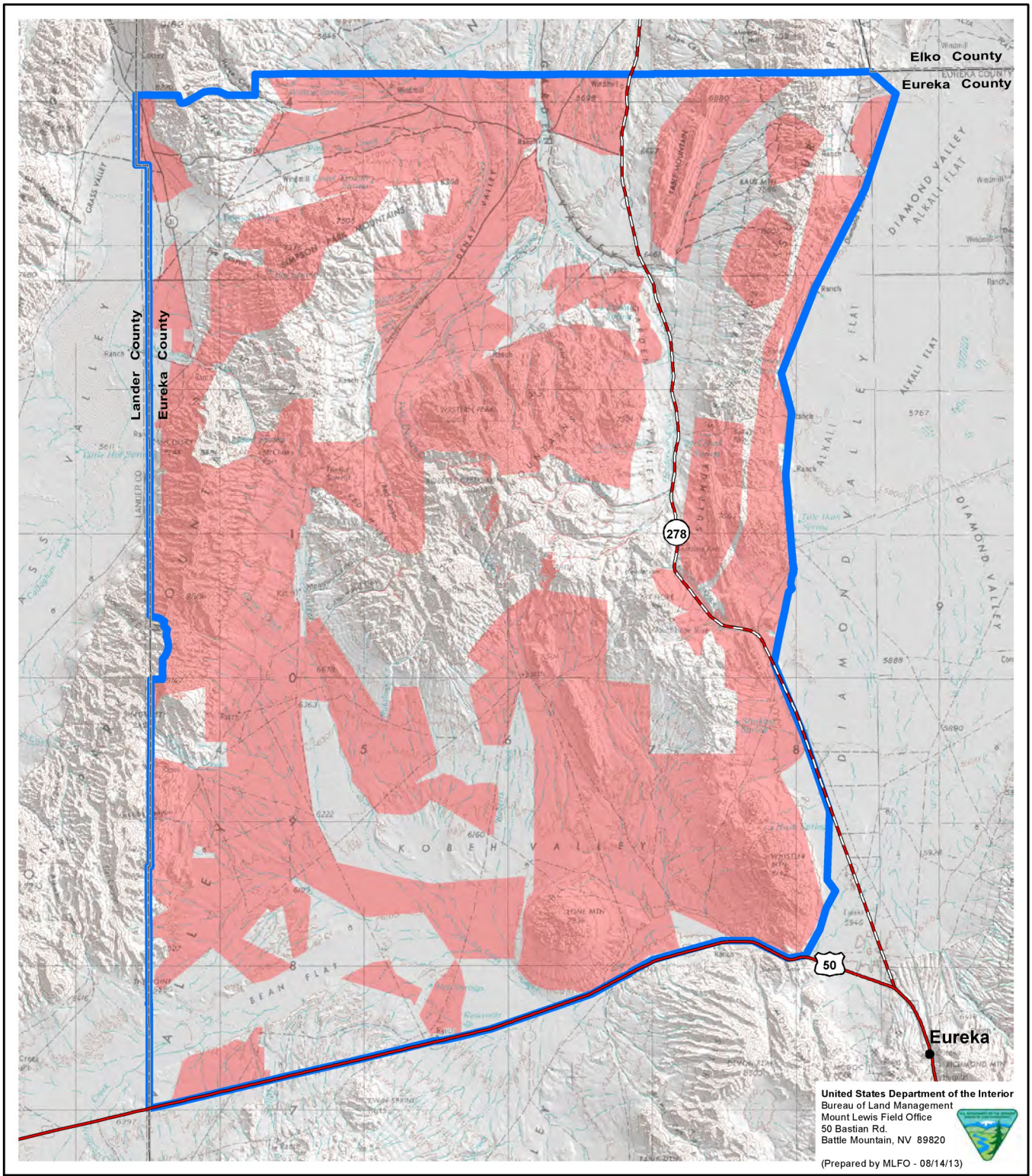

Legend

Degraded Habitat

3 Bars Project Area

Source: BLM 2009a.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-41

Areas with Degraded Habitat Conditions

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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Mountain Boy and Fish Creek Ranges south of U.S. Highway 50. The migration pattern includes moving south from Roberts Creek Ranch to Lone Mountain and from Henderson Summit along Whistler Mountain to Devils Gate (USDOI BLM 2012c).

Pronghorn occupy the lowlands and the foothills of the project area and are mostly absent from the Roberts Mountains area (**Figure 3-42**; NDOW 2008b). Pronghorn numbers have increased throughout the area in recent years, partially in response to vegetation changes resulting from past range fires. Wyoming big sagebrush habitat is particularly important to pronghorn (Tsukamoto 2003). Important vegetation species for pronghorn include low sage, black sage, serviceberry, shadscale, winterfat, rabbitbrush, greasewood, ricegrass, needlegrasses, lupine, spurge, balsamroot, several eriogonum species, scarlet globe-mallow, phlox, locoweed, and other perennial forbs. Ten antelope herds have all or a portion of their range within the project area. The 2006 population estimate for the NDOW hunt units was 450 animals, up from 240 in 2002, and population growth was observed in 2011 (NDOW 2012c). The pronghorn antelope population in Kobeh Valley is low and variable with most of the antelope observed in the southern part of the valley near Lone Mountain and U.S. Highway 50 (USDOI BLM 2012c).

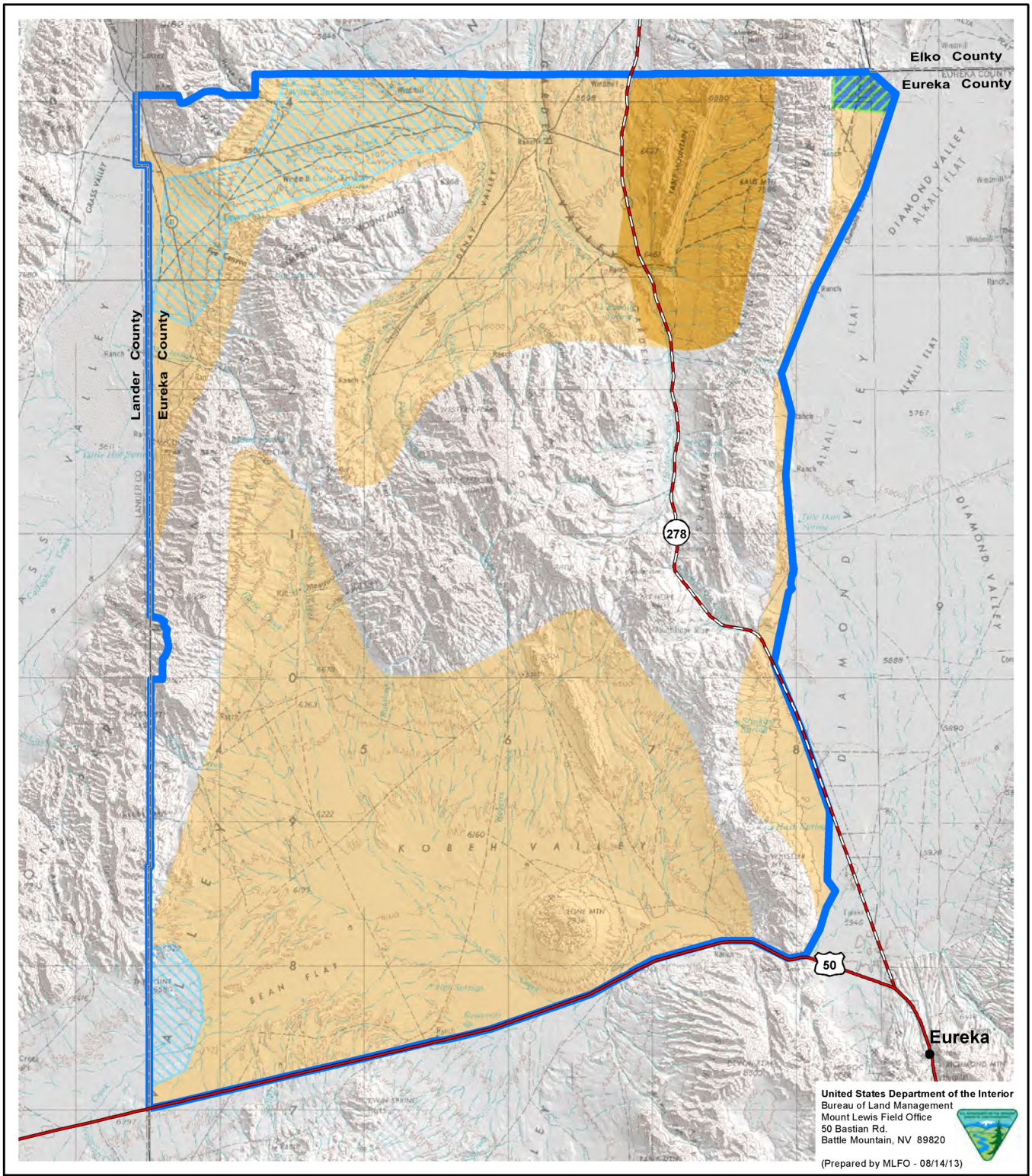
Habitat for pronghorn antelope over much of the 3 Bars Project Area is in decline, and proposed treatments are designed to slow or reverse this trend (**Figure 3-41**). Factors contributing to this decline include pinyon-juniper encroachment into shrublands, high levels of hazardous fuels that could lead to a catastrophic wildfire and loss of pronghorn antelope habitat, livestock grazing, noxious weeds and other invasive non-native vegetation that displace native forbs and grasses, dense stands of Wyoming big sagebrush, and human-related disturbance.

Bighorn sheep occur in mesic to dry grasslands or shrub-steppe in mountains, foothills, or river canyons, in areas with access to steep, rugged terrain for escape from predators. While historic populations of bighorn sheep were in most mountain ranges within Nevada, there are no known bighorn sheep populations with the 3 Bars Project area. The most recent NDOW sighting for bighorn sheep in the project area was in 1983, on the east side of the Roberts Mountains (NDOW 2008a, 2010b). Potential habitat for bighorn sheep exists in the Roberts Mountains area, the Whistler Range, Lone Mountain, the Simpson Park Mountains, and the Cortez Mountains (NDOW 2010b).

Other Mammals

Cougars are found primarily in the mountainous portions of the 3 Bars Project area, and bobcats have been seen throughout the 3 Bars Project area, including near Table Mountain in the Sulphur Spring Range, along Vinini Creek on the Roberts Mountains, and in the central area south of Roberts Mountains. Coyotes occupy almost all habitat types and have been observed in the southern part of the project area (NDOW 2012d). One of the most diverse groups represented in the project area is rodents, with species of chipmunks, mice, ground squirrels, jumping mice, kangaroo rats, and voles present throughout. Members of the rabbit family, including pygmy rabbit, black-tailed jackrabbit, and mountain cottontail, also occur in the project area (USDOI BLM 2012c). Pika could be found on Roberts Mountains.

The *Revised Nevada Bat Conservation Plan* and NDOW data show several records for bat occurrences within the project area. Bats inhabit or utilize many niches across the 3 Bars landscape. These include caves, abandoned mines, cliffs, springs, riparian, aspen, pinyon-juniper, subalpine coniferous forest, and desert shrub habitats. The only documented bat occurrences in the project area are for long-eared myotis, which has been recorded on the eastern edge of the project area and in the Roberts Mountains. Townsend's big-eared bat and western small footed myotis may occur on the southeastern edge of the project area (Bradley et al. 2006, NDWO 2008a). Bat species are discussed in greater detail in the Special Status Species section.



Legend

Pronghorn Habitat

- Summer Range
- Winter Range
- Crucial Winter Range
- Year-round Range
- Crucial Year-round Range
- 3 Bars Project Area

Source: NDOW 2008b.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-42

Pronghorn Habitat

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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3.15.2.3.4 Special Status Species

The following discussion of BLM Special Status Species is based on two lists: the BLM's Special Status Species list for the Battle Mountain District, and the NDOW list of species known to occur within the 3 Bars Project area or which NDOW biologists believe have the potential to occur within the project area, based on habitat needs and habitat conditions (NDOW 2012d). The lists were cross-referenced with each other to obtain a list of Special Status Species known to occur or with potential to occur within the 3 Bars Project area. NDOW Geographic Information System data were used to verify whether there are current or historic occurrences of a species within the project area, but because absence of a Geographic Information System record does not necessarily indicate that the species is absent, only that no record has been made of its presence in a particular location, the following section considers all BLM Special Status Species suspected or known to occur within the 3 Bars Project area.

There are 25 BLM Sensitive Species wildlife in the planning area, including 13 birds, 11 mammals, and 1 amphibian (**Table 3-45**). Of these, none are federally listed as threatened or endangered. Three species, greater sage-grouse, yellow-billed cuckoo, and Columbia spotted frog, are federal candidate species.

Amphibians

Columbia Spotted Frog

Columbia spotted frogs are closely associated with clear, slow-moving or ponded surface waters, with little shade, and relatively constant water temperatures. Breeding and egg-laying occurs in waters with floating vegetation and larger ponds such as oxbows, lakes, stock ponds, and beaver-created ponds; in some areas, this species is critically tied to beaver ponds. Adults are opportunistic feeders, and eat insects, mollusks, crustaceans, and spiders. Tadpoles eat decomposed plants and live green algae.

Columbia spotted frogs occur in three geographically separated subpopulations in the Jarbidge and Independence Mountains, the Ruby Mountains, and in the Toiyabe Mountains. There are no recorded occurrences in the project area.

Birds

Greater Sage-grouse

Greater sage-grouse are largely dependent on sagebrush for nesting and brood rearing and feed almost exclusively on sagebrush leaves during the winter. Greater sage-grouse are known to occur in foothills, plains, and mountain slopes where sagebrush meadows and aspen are in close proximity. A dense sagebrush overstory and an herbaceous understory of grasses are important to provide shade and security, and both new herbaceous growth and residual cover are important in the understory.

Greater sage-grouse have specific habitat requirements to carry out their life cycle functions. Early spring habitats or breeding sites called "leks" are usually situated on ridge tops or grassy areas surrounded by a substantial brush and herbaceous component (USDOI BLM 2012c). Leks have less herbaceous and shrub cover than the surrounding areas. In early spring, males gather in leks where they strut to attract females. Nests are located in thick cover in sagebrush habitat and consist of a shallow depression on the ground. Habitat for brood-rearing in early spring is critical to brood survival. Important habitat components for brood rearing include a sagebrush overstory, an herbaceous understory, and the presence of plentiful insects, especially wasps, bees, ants and beetles, which provide a high-protein diet for

TABLE 3-45

Special Status Species Known or with Potential to Occur on the 3 Bars Project Area

Common Name/Group	Scientific Name	Status	Habitat
REPTILES AND AMPHIBIANS			
Columbia spotted frog	*Rana luteiventris*	Federal Candidate	Clear, open, slow moving or still water with consistent temperature.
BIRDS			
Bald eagle	*Haliaetus leucocephalus*	BLM Sensitive	Large conifers for roosting.
Black rosy-finch	*Leucosticte atrata*	BLM Sensitive	Barren, rocky, or grassy areas and cliffs among glaciers or above timberline.
Brewer's sparrow	*Spizella breweri*	BLM Sensitive	Sagebrush and large openings in pinyon-juniper.
Ferruginous hawk	*Buteo regalis*	BLM Sensitive	Pinyon-juniper edges, sagebrush, and other open areas and wooded edges.
Golden eagle	*Aquila chrysaetos*	BLM Sensitive	Open or sparsely wooded habitats in mountainous areas.
Greater sage-grouse	*Centrocercus urophasianus*	Federal Candidate	Sagebrush.
Lewis' woodpecker	*Melanerpes lewis*	BLM Sensitive	Aspen and riparian.
Loggerhead shrike	*Lanius ludovicianus*	BLM Sensitive	Desert scrub, especially creosote bush. Nests in sagebrush.
Northern goshawk	*Accipiter gentilis*	BLM Sensitive	Aspen and riparian.
Peregrine falcon	*Falco perigrinus*	BLM Sensitive	Desert scrub, including sage and steppe habitat near cliffs.
Pinyon jay	*Gymnorhinus cyanocephalus*	BLM Sensitive	Pinyon-juniper.
Sage thrasher	*Oreoscoptes montanus*	BLM Sensitive	Sagebrush.
Swainson's hawk	*Buteo swainsoni*	BLM Sensitive	Wooded riparian near sage and brushland.
Western burrowing owl	*Athene cunicularia*	BLM Sensitive	Sagebrush.
Yellow-billed cuckoo	*Coccyzus americanus*	Federal Candidate	Riparian obligate and dense riparian cottonwood-willow stands.
MAMMALS			
Dark kangaroo mouse	*Microdipodops megacephalus*	BLM Sensitive	Sagebrush.
Pygmy rabbit	*Brachylagus idahoensis*	BLM Sensitive	Sagebrush.
California myotis	*Myotis californicus*	BLM Sensitive	Desert to forest.
Fringed myotis	*Myotis thysanodes*	BLM Sensitive	Desert to forest.
Hoary myotis	*Lasiurus cinereus*	BLM Sensitive	Forests/woodlands, including pinyon-juniper and forested riparian zones.
Little brown bat	*Myotis lucifugus*	BLM Sensitive	Associated with coniferous forest with a nearby water source.
Long-eared myotis	*Myotis evotis*	BLM Sensitive	Coniferous forests.

TABLE 3-45 (Cont.)

Special Status Species Known or with Potential to Occur in the 3 Bars Project Area

Common Name/Group	Scientific Name	Status	Habitat
MAMMALS (Cont.)			
Long-legged myotis	*Myotis volans*	BLM Sensitive	Pinyon-juniper woodland and montane coniferous forests. May use shrub habitat including sagebrush.
Silver-haired bat	*Lasionycteris noctivagans*	BLM Sensitive	Forests and wooded areas near water, including pinyon-juniper forests and wooded riparian corridors.
Townsend's big-eared bat	*Corynorhinus townsendii*	BLM Sensitive	Caves and mines in a variety of habitats, including pinyon-juniper and mahogany woodlands.
Western pipistrelle	*Parastrelluss hesperus*	BLM Sensitive	Desert habitats including sagebrush, and occasionally in pinyon-juniper habitat with rock outcrops and canyons.
Western small-footed myotis	*Myotis ciliolabrum*	BLM Sensitive	Various, including grasslands, shrubland, coniferous forest, and urban settings.

Sources: Bradley et al. (2006), Great Basin Bird Observatory (2010), and Wildlife Action Plan Team (2012).

broods. Insects are especially important in the diet of newly hatched broods. Over the fall, birds shift from consuming large amounts of forbs to eating mostly sagebrush. Access to sagebrush for food and cover in winter is critical to their survival.

Greater sage-grouse habitat is found over most of the 3 Bars Project area. The distribution of greater sage-grouse on the project area is closely tied to the sagebrush ecosystem that provides nesting, brood-rearing, and fall/winter cover as well as forage throughout the year. Summer habitat consists of sagebrush mixed with areas of wet meadows, riparian, and irrigated agricultural fields. Fall habitat consists of a mosaic of low-growing sagebrush and Wyoming big sagebrush. Winter habitat is contingent on the severity of winter weather, topography, and vegetative cover, but access to sagebrush for food and cover in winter is critical to greater sage-grouse survival.

Late spring habitat and nesting sites are in thick cover in sagebrush habitat beneath sagebrush or other shrubs. Individual greater sage-grouse move seasonally between habitat types throughout the year (USDOI BLM 2012c). With the exception of a few of the higher elevation areas, all of the 3 Bars project area is within the summer distribution range for greater sage-grouse. Nearly all of the foothills and lowland areas are within the winter range of the species, and Kobeh Valley and Denay Valley are within nesting range.

The NDOW defines lek status as active, inactive, historic, or unknown. An active lek is defined as a lek that had two or more birds present during at least one of three or more surveys in a given breeding season. For a strutting ground to attain this status, it must also have had two or more birds present during at least 2 years in a 5-year period. An inactive lek is a lek that has been surveyed three or more times during one breeding season with no birds detected during the surveys and no sign observed on the lek. If a lek is only surveyed once during a breeding season and was surveyed

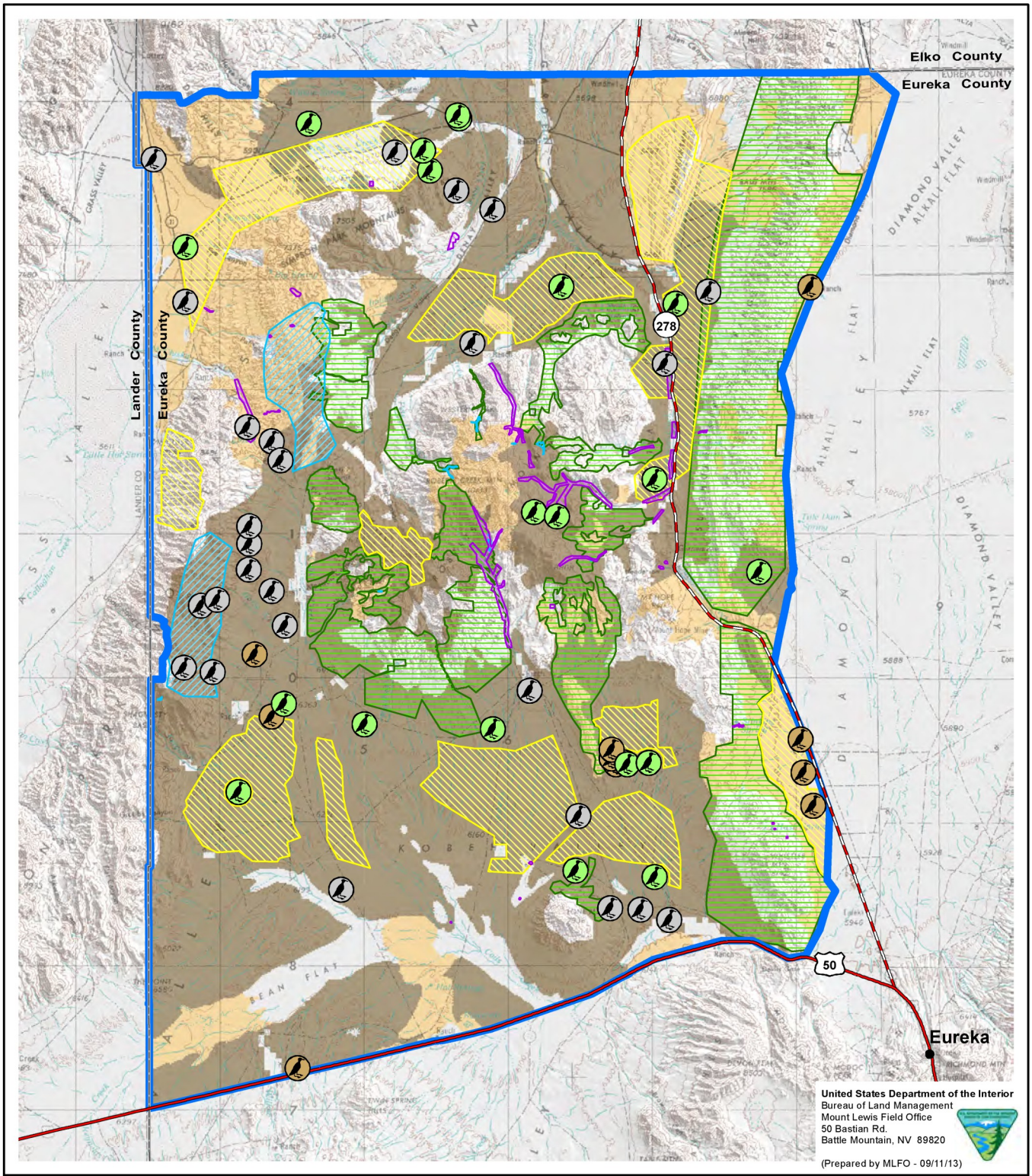
under adequate conditions and no birds were observed at the location during the current and the previous year and no sign was observed at the lek, then an inactive status can be applied to the lek. An unknown lek is a lek that may not have had birds present during the last survey, but could be considered viable due to the presence of sign at the lek. This designation could be especially useful when weather conditions or observer arrival at a lek could be considered unsuitable to observe strutting behavior. The presence of a single strutting male would invoke the classification of the lek as unknown. A lek that was active in the previous year, but was inadequately sampled (as stated above) in the current year with no birds observed could also be classified as unknown. An historic lek is a lek that has not had bird activity for 20 years or more and has been checked according to protocol at least intermittently. Another means of classifying a lek as historic is to photograph a lek location and determine if the habitat is suitable for normal courtship displays. For example, if a lek location lies in a monotypic stand of sagebrush that is 3 to 4 feet tall, then conditions are no longer suitable for leking activity.

The BLM and Forest Service are developing a National Greater Sage-Grouse Planning Strategy for identifying important sage-grouse habitat. Currently agencies are utilizing two interim habitat classifications to guide land use decisions—Preliminary Priority Habitat and Preliminary General Habitat. Areas of Preliminary Priority Habitat and Preliminary General Habitat indicate where land-use changes could result in an expected negative impact to sage-grouse population health and are shown on **Figure 3-43** for the 3 Bars Project area. These classifications are a conglomeration of NDOW seasonal sage-grouse data.

Preliminary Priority Habitat consists of a combination of essential and irreplaceable (Category 1) and important (Category 2) habitats. These areas include breeding habitat (lek sites and nesting habitat), brood-rearing habitat, winter range, and important movement corridors. Preliminary Priority Habitat primarily consists of sagebrush, but may also include riparian communities, perennial grasslands, agriculturally-developed land, and restored habitat, including recovering burned areas. The BLM and the Forest Service define Preliminary Priority Habitat as having the highest conservation value to maintaining sustainable greater sage-grouse populations.

Preliminary General Habitat consists of habitat types of moderate importance (Category 3), however, Preliminary General Habitat may also include areas of higher quality habitat that lacks bird survey and inventory data to support a priority habitat ranking. Preliminary General Habitat provides some benefit to greater sage-grouse populations but, in many instances, lacks a key component, such as adequate shrub height or density or sufficient herbaceous understory, which prevents it from meeting its full ecological potential. Preliminary General Habitat also may include areas burned recently that have not sufficiently recovered or sagebrush communities with pinyon-juniper encroachment. Preliminary General Habitat has the potential to be reclassified as Preliminary Priority Habitat if restoration efforts enhance the habitat quality or ongoing field efforts document greater sage-grouse use.

The greater sage-grouse population trends are tracked based on the number of males per lek (Sage and Columbian Sharp-Tailed Grouse Technical Committee 2008). Individual greater sage-grouse counts can vary year to year and approximately 10 years of data are required to establish population trends. Populations in Eureka County showed a 25 percent increase between 2011 and 2012, but are only 55 percent of the highest recorded levels in 1986. The peak male attendance at ten comparable leks surveyed in 2012 was 259, for an average of 25.9 males per lek. In 2011, 207 males were counted for an average of 20.7 males per lek. The average in 2006 was 41 males, which is the highest average since the 1986 average of 47 males. In addition to trend counts there were additional leks monitored by the NDOW, BLM, and University of Nevada-Reno graduate students in 2012. The 18 leks monitored in 2012 had 346 males in attendance for an average of 19.2 males per lek. In 2011, these same leks had 307 males yielding an average of 17.1 males per lek for a 12 percent increase from 2011 to 2012. Within the 3 Bars project area, there were 21 active



Legend

Greater Sage-grouse Leks and Habitat

- Active Lek
- Historic Lek
- Unknown Lek Status
- Preliminary Priority Habitat (PPH)
- Preliminary General Habitat (PGH)
- Pinyon-juniper Treatment Area
- Sage Treatment Area
- Aspen Treatment Area
- Riparian Treatment Area
- 3 Bars Project Area

Source: BLM 2012g,k.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-43

Greater Sage-grouse Leks and Habitat

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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leks surveyed in 2012; 339 males were counted, for an average of 16.1 males per lek. An additional 27 leks have a status of unknown, and there are 10 historic lek sites (**Figure 3-43**; Podborny 2012).

Habitat for greater sage-grouse over much of the 3 Bars Project Area is in decline, and proposed treatments are designed to slow or reverse this trend (**Figure 3-41**). The most significant threats to greater sage-grouse in Nevada are natural system modifications due to wildfire and the subsequent loss of habitat as well as impacts of invasive species (cheatgrass) and pinyon-juniper encroachment. Other threats include habitat fragmentation and disturbance, particularly roads and utility service lines as a result of both renewable and non-renewable energy resources, and degradation caused by overgrazing, mining, and recreational activities.

Bald Eagles

Bald eagles are found throughout Nevada as part of the species winter range and are known to occur within the project area, with most occurrences along the northeastern edge of the project area boundary. Bald eagles roost preferentially in large conifers or other sheltered sites in winter and typically select the larger, more accessible trees. There are no known bald eagle nesting sites within the project area (NDOW 2009c).

Golden Eagle

Golden eagles are found throughout Nevada and the project area. Golden eagles are generally found in a variety of open to semi-open landscapes, especially in hilly or mountainous regions, and avoid heavily forested areas. This species typically nests on rock ledge on cliffs or occasionally in large trees. Pairs may have several nests, and may use the same nest in consecutive years or shift to using an alternate nest in different years. Nests have been recently found in the project area (USDOI BLM 2012c). Golden eagles feed mainly on small mammals (e.g., rabbits, marmots, ground squirrels), although they are opportunistic and may also eat insects, snakes, birds, young deer or pronghorn, and carrion.

Northern Goshawk

Northern goshawks breed and winter throughout the state. Northern goshawks rely on open sagebrush adjacent to riparian and aspen stands for foraging, and aspens are a key habitat feature. Nests are generally constructed in the largest trees in dense, large tracts of mature or old growth aspen stands with high canopy closure (60 to 95 percent) and sparse ground cover, near the bottom of moderate slopes, and near water or dry openings. Prey items include tree squirrels, ground squirrels, rabbits, and various bird species, depending on availability. Within the project area, northern goshawks are known from aspen and riparian habitat in the west-central Roberts Mountains (NDOW 2009c).

Peregrine Falcon

Peregrine falcons use various open environments including steppe, over open water, and desert shrub habitats including sagebrush, usually in close association with suitable nesting cliffs. They can also be found in mountainous, open forested regions, and human population centers. Peregrine falcons often nest on ledges or in holes on rocky cliff faces, commonly in sites sheltered by an overhang. There is an historic NDOW record for peregrine falcons in the Roberts Mountains (NDOW 2009c). Peregrine falcons feed primarily on birds, ranging in size from medium songbirds up to small waterfowl. They may also hunt small mammals, such as bats, or lizards, fishes, and insects.

Swainson's Hawk

Swainson's hawks are a spring and summer resident of Nevada, including the project area. Open riparian woodlands including aspen woodlands, with significant expanses of pasture, agricultural fields, wet meadow, or open shrublands with grass cover in immediate vicinity, provide an ideal landscape for the Swainson's hawk. The preferred nesting site is in large riparian trees. Small mammals are typical prey (Great Basin Bird Observatory 2010).

Ferruginous Hawk

Ferruginous hawks are year-round and breeding residents in central Nevada, including the 3 Bars Project area. Habitat includes open country, sagebrush, saltbush-greasewood shrubland, and the periphery of pinyon-juniper and other woodland and desert communities. In Nevada, ferruginous hawks nest primarily in live juniper trees. Mammals are the primary prey during the breeding season, although birds, amphibians, reptiles, and insects are also taken. Ferruginous hawk sightings in the 3 Bars Project area have occurred around the perimeter of the project area in relatively level, open terrain. There are over 50 records for nesting sites within the project area, although only one of these, in the southeastern corner of the project area, has been observed active within the past 10 years (NDOW 2009c). Small mammals are the primary prey during the breeding season, although birds, amphibians, reptiles, and insects also are taken.

Western Burrowing Owl

Western burrowing owls are mostly migratory in northern Nevada, although some individuals may overwinter. Preferred habitat is characterized by short vegetation and the presence of fresh small mammal burrows, indicating an abundance of the deer mice and meadow voles that are preferred food. Western burrowing owls typically nest and roost in burrows abandoned by grounds squirrels, badgers, fox, and tortoise, although they occasionally excavate fresh burrows (Wildlife Action Plan Team 2006).

Within the project area, there are records for western burrowing owl from the open lands surrounding the Roberts Mountains. The most recent record is for two owls sighted at a burrow in 2006, in the southwestern quadrant of the project area. (NDOW 2009c).

Yellow-billed Cuckoo

Yellow-billed cuckoo is a federal candidate species, with listing status "warranted" (USDOI USFWS 2011). Historically, the species was found state-wide areas of large, contiguous, densely wooded cottonwood-willow riparian habitat. The species nests in willows and forages for large insects, its primary food source, in cottonwood trees. The last sighting of yellow-billed cuckoo in or near the project area was in 1976, just outside of the southeast corner of the project area boundary (Nevada Natural Heritage Program 2006).

Lewis' Woodpecker

Lewis' woodpecker is a year-round resident within the project area. Important habitat features include an open tree canopy, a brushy understory with ground cover, dead trees for nest cavities, dead or downed woody debris, perching sites, and abundant insects. In Nevada, this species is most strongly associated with deciduous riparian woodlands dominated by aspen or cottonwood (Great Basin Bird Observatory 2010). The species is a weak excavator, and as such it is dependent on dead trees, and tends to nest in existing tree cavities. Key habitat factors include the presence

of large, partly decayed snags, an open forest structure for aerial foraging, and a well-developed shrub or native herbaceous layer that promotes healthy populations of flying insects.

Lewis' woodpecker feeds on insects including ants, beetles, flies, grasshoppers, tent caterpillars, and mayflies during the summer, and ripe fruit and nuts in the fall and winter. Unlike other woodpeckers, Lewis' woodpecker does not bore for insects but will catch them in flight, glean insects from tree branches or trunks, and forage on the ground. Lewis' woodpecker are suspected, but not documented, within the project area (Great Basin Bird Observatory 2010).

Loggerhead Shrike

Loggerhead shrike is a year-round resident throughout the state. This species breeds in open country with scattered trees and shrubs, savanna, desert scrub, and, occasionally in open woodlands. Loggerhead shrikes often perch on poles, wires, or fence posts and suitable hunting perches are an important part of the habitat. Nesting habitat includes shrubs and small trees, including cholla cactus and sagebrush.

Loggerhead shrike feed primarily on large insects, small birds, lizards, frogs, and rodents, and will occasionally scavenge. While there are no records for loggerhead shrike within the project area, there are occurrence records near the southeastern edge of the project area.

Sage Thrasher

Sage thrasher occupies the Great Basin region of Nevada including the project area. Sage thrasher breeds and forages in sagebrush, juniper, mountain mahogany, and aspen communities, and has a preference for patchy habitat with adequate shrub cover. The species occasionally nests on the ground but more typically nests in low shrubs, typically sagebrush. Sage thrasher feeds on a wide variety of insects, including grasshoppers, beetles, weevils, ants, and bees, as well as fruits and berries. There are extant sage thrasher records for the southeastern corner of the project area (Great Basin Bird Observatory 2010).

Black Rosy-finch

Black rosy-finch winters in central Nevada, including the project area (Ellsworth 2013). This species uses barren, rocky, or grassy areas and cliffs among glaciers or beyond timberline as habitat. During migration and winter this species also occurs in open fields, cultivated lands, brushy areas, and around human habitation. Black rosy-finch usually nests in rock crevices or in holes in cliffs above snow fields, although it may nest in old abandoned buildings, mine shafts, or other protected sites. The black rosy-finch forages on the ground for seeds. In the spring, it gleans wind-blown insects from the snow, and later in the season it may glean insects from vegetation or may chase flying insects and catch them in the air.

Brewer's Sparrow

Brewer's sparrow breeds in northern Nevada, including the project area, but does not overwinter in the project area. The species is strongly associated with healthy sagebrush habitats, and prefers areas with patchy cover by scattered tall shrubs and short grasses. Brewer's sparrow can be found to lesser extent in mountain mahogany, rabbitbrush habitats, bunchgrass grasslands with shrubs, bitterbrush, ceanothus, and manzanita, and in large openings in pinyon-juniper stands. Sagebrush is the preferred nesting habitat.

Brewer's sparrow is primarily a ground forager, and during the summer eats a variety of insects, and in the fall and winter transitions to a diet of seeds. Brewer's sparrow nest throughout in sagebrush throughout the 3 Bars Project area (Ellsworth 2013).

Pinyon Jay

Pinyon jay is a year-round resident anywhere in Nevada where pinyon pine occurs, including appropriate habitats in the project area. Pinyon jays have a strong preference for pinyon-juniper woodlands, and occur less frequently in pine habitats. During the non-breeding season, this species may also occur in scrub oak and sagebrush. Pinyon jays nest in shrubs or trees when adequate numbers of pine seeds are available. The pinyon jay diet consists of pinyon nuts and other pine seeds, berries, small seeds, and grain, as well as insects including beetles, grasshoppers, caterpillars, and ants. Pinyon jays may also eat bird eggs and hatchlings. Pinyon jay has been observed on Roberts Mountains and Sulphur Spring Range (Ellsworth 2013).

Mammals

Dark Kangaroo Mouse

The dark kangaroo mouse inhabits stabilized dunes and other sandy soils in valley bottoms and alluvial fans dominated by big sagebrush, rabbitbrush, and horsebrush. These nocturnal rodents typically occur in sandy habitats below the elevation where pinyon-juniper occur and above elevations where greasewood and saltbush predominate. Although restricted to sand, it displays a broad tolerance for soils with varying amounts of gravel. Seeds are the primary food source although it will also eat some insects. It does not appear to use free-standing water and probably gets moisture from its food sources. It is believed to store food in seed caches within the burrow system.

There is one extant record for dark kangaroo mouse within the project area. This record is from 2005, in the southeast Kobeh Valley near Whistler Mountain (NDOW 2008a). The potential range of the species includes appropriate habitat throughout the project area.

Pygmy Rabbit

The pygmy rabbit is a diminutive native species that is found primarily on plains dominated by big sagebrush and on alluvial fans where plants occur in tall, dense clumps. Deep, loose soils are required for burrow excavation, although they will occasionally occupy burrows dug by other animals in harder soils. Big sagebrush is the primary food and may comprise up to 99 percent of food taken in winter and 51 percent in the summer. Wheatgrass and bluegrass are highly preferred foods in the summer. Cheatgrass invasion is detrimental to pygmy rabbits. Shrub cover is necessary for protection during dispersal and cheatgrass monocultures may provide a barrier to dispersal. Pinyon-juniper encroachment decreases understory species and, in turn, decreases suitable pygmy rabbit habitat. Pygmy rabbits spend the majority of their lives within 40 feet of their burrows (Utah Division of Wildlife Resources 2003), although occasionally males will venture more than 2 miles during the breeding season (Katzner and Parker 1998).

Pygmy rabbits are found in several locations in the project area, including along the east side of the Kobeh Valley, several locations along riparian systems in the central and southern portion of Roberts Mountains, and in the Parks Mountains north of Cottonwood Canyon. Surveys conducted in the southeast portion of the project area as part of the Mount Hope Project EIS found 19 burrows and 10 pygmy rabbits. The majority of the sightings and burrows were along the old railroad grade to the west of and paralleling State Route 278, and numerous sightings and burrow complexes were also along the alluvial fan east of Mount Hope Spring (NDOW 2009c, e, USDOI BLM 2012c).

California Myotis

California myotis is found throughout Nevada, primarily at elevations below 6,000 feet amsl. The species is somewhat of a habitat generalist, and is found in habitats ranging from desert scrub to forested areas. This bat roosts in crevices, including those found in mines, caves, buildings, rocks, hollow trees, and under bark. California myotis forages in the open for a variety of small insects such as moths, flies, and beetles. Most records for the species are from southern Nevada, but the species has the potential to occur in the project area (NDOW 2008a).

Fringed Myotis

Fringed myotis is found throughout central and southern Nevada in a wide range of appropriate habitat, from low desert scrub to high elevation coniferous forests, including white fir forests and pinyon-juniper woodlands. This species roosts in mines, caves, trees, and buildings, and may also use rock crevices, tree hollows, and rock crevices in cliff faces. Nurseries and hibernacula are generally mines or caves. Foraging occurs in and among vegetation, with some gleaning activity. In some areas, there is evidence that fringed myotis use forest edges as well as areas above the forest canopy for foraging. The fringed myotis eats a variety of insects but seems to preferentially select beetles. There are no records for fringed myotis within the project area (NDOW 2008a).

Hoary Bat

Hoary bat is a tree-roosting species, found primarily in forested/woodland upland habitats such as pinyon-juniper and conifers, as well as in gallery forest riparian zones. Hoary bats day roost 10 to 18 feet above ground in trees that offer good protective leaf cover, but that are open below to facilitate flying in and out of the roost. Hoary bats may migrate for the winter or hibernate on tree trunks, in a tree cavity, or in a squirrel’s nest. Food items include a variety of insects but moths, dragonflies, and beetles feature prominently. Foraging is generally over the tree canopy. In the open, rapid descending arcs are exhibited. Hoary bats will follow watercourses for foraging and drinking. The nearest records for hoary bat are southwest of the project area although their range includes the project area (NDOW 2008a).

Little Brown Bat

Little brown bat is found primarily at higher elevations, and is often associated with coniferous forest and with larger bodies of water or rivers. Often, roost sites are associated with these aquatic features. Little brown bats have adapted to using human-made structures for resting and maternity sites, but will also use caves, hollow trees, and rock outcrops. These bats feed heavily on aquatic insects such as caddisflies, midges, and mayflies, although a variety of other terrestrial insects may be eaten. Foraging occurs in open areas among vegetation, along water margins, and sometimes a few feet above the water surface.

In the eastern U.S., little brown bats suffer from white-nose syndrome, with over 5 percent mortality in some areas, Should the disease spread to the west, white nose syndrome would be a significant threat to the overall viability of the species. Little brown bat is more common in the northern part of Nevada. There are no records for little brown bat in the project area (NDOW 2008a).

Long-eared Myotis

Long-eared myotis is usually associated with coniferous forests. Individuals roost under exfoliating tree bark, and in hollow trees, and occasionally in caves, mines, cliff crevices, sink-holes, and rocky outcrops on the ground. It is often described as a hovering gleaner that feeds by eating prey off foliage, tree trunks, rocks, and from the ground. The

species is found throughout the state and its range includes the project area; there are species records for long-eared myotis in the Roberts Mountains (NDOW 2008a).

Long-legged Myotis

Long-legged myotis is found in pinyon-juniper woodland and montane coniferous forest habitats, and is occasionally found in salt desert scrub, blackbrush, mountain shrub, and sagebrush habitats. This species roosts primarily in hollow trees, particularly large-diameter snags or live trees with lightning scars, and may use rock crevices, caves, mines, and buildings when available. Long-legged myotis feeds primarily on moths, but also feeds on beetles, flies, and termites.

The species is found throughout the state and its range includes the project area. There are no species records for long-eared myotis in the project area (NDOW 2008a).

Silver-haired Bat

Silver-haired bat is a forest-associated species and is more commonly found in mature forests. These bats are found primarily at higher latitudes and altitudes in coniferous and mixed deciduous and coniferous forests/woodlands of pinyon-juniper, limber pine, aspen, cottonwood, and, willow. These bats forage for a wide variety of insects above the forest canopy or along wooded edges, roadsides, and the edges of streams and waterbodies. Moths appear to be a major portion of their diet. Loss of foraging habitat in riparian zones is a threat.

The species is found throughout the state and its range includes the project area. There are no species records for silver-haired bats in the project area (NDOW 2008a).

Townsend's Big-eared Bat

Townsend's big-eared bat roosts in mines, caves, and cave-like spaces in pinyon, curl-leaf mountain mahogany, blackbrush, sagebrush, salt desert scrub, agricultural, and occasionally urban habitats. Foraging associations include the edge of habitats along streams that are adjacent to and within a variety of wooded habitats. Townsend's big-eared bats are moth specialists, with nearly all of their diet consisting of moths.

The species' range includes the entire state including the project area. The nearest records to the project area for Townsend's big-eared bat are immediately north and northwest of the project area and southeast of the project area (NDOW 2008a).

Western Pipistrelle

Western pipistrelle can be found in Sonoran desert habitats of blackbrush, creosote, salt desert shrub, and sagebrush, with occasional occurrence in pinyon-juniper woodlands, usually in association with rock features such as granite boulders and canyons. The species typically roosts in rock crevices, but may use mines, or, less frequently, buildings and vegetation. Food includes small moths, leafhoppers, mosquitoes, and flying ants. Foraging occurs in the open.

The species is found throughout most of the state, primarily in the southern and western portions. The species has the potential to occur in the project area although there are no records for western pipistrelle in the project area (NDOW 2008a).

Western Small-footed Myotis

Western small-footed myotis is found in a variety of habitats including desert scrub, grasslands, sagebrush steppe, blackbrush, greasewood, pinyon-juniper woodlands, pine-fir forests, agricultural, and urban areas. This species is a crevice rooster and uses mines, caves, buildings, rock crevices, hollow trees, and exfoliating bark on trees. Western small-footed myotis forages early in the evening on a variety of insects including small moths, flies, ants, and beetles that occur in open areas.

The species is found throughout Nevada except for the far southeastern corner of the state. The species has been observed near the southeast corner of the project area (NDOW 2008a).

3.15.3 Environmental Consequences

3.15.3.1 Key Issues of Concern Considered during Evaluation of the Environmental Consequences

Based on the AECC and public scoping comments, a number of concerns specific to wildlife and 3 Bars ecosystem restoration were identified and are discussed in this section. These include:

- Reduction in the amount of key wildlife habitat because of degraded range conditions due to past rangeland management practices and past range disturbances.
- Project actions could have large-scale effects ranging from increased sedimentation of streams to major fragmentation of pinyon jay, Virginia's warbler, greater sage-grouse, Brewer's sparrow, and other sensitive species' habitat.
- Encroachment and expansion of pinyon-juniper into important habitat for greater sage-grouse or other wildlife species.
- Proposed treatments in pinyon pine woodlands and any resulting impacts to pine nuts could impact several species of birds and mammals, including pinyon jay and mule deer.
- There is a need to thin pinyon and juniper along drainages to improve water flows in streams and to open up corridors for animal movement on the south and east side of drainages.
- There is a need to assess treatment impacts on wildlife species that are dependent on old growth pinyon-juniper as well as on other species that may nest in the area or migrate through it.
- There is a need to assess how sagebrush treatments would impact habitat for pygmy rabbit, sage sparrow, and other sagebrush species.
- The potential to fragment remaining patches of sagebrush by mowing and chopping could hasten the decline of the greater sage-grouse population.
- That all factors affecting greater sage-grouse (including predators and hunters) be considered, not just loss of habitat.
- Need to address movements of greater sage-grouse hens with broods from valley nesting and early brood rearing sites to upper elevation sagebrush and riparian communities on Roberts Mountains.

- Thinning of the pinyon-juniper woodlands along creek bottoms may be beneficial to the survival of greater sage-grouse.
- The effects of invasion of undesirable plant species into greater sage-grouse and other wildlife habitats.
- The high, very high, or extreme risk of catastrophic wildfire in important greater sage-grouse habitats.
- Fences can cause avian mortality from collisions, including significant greater sage-grouse mortality, and can serve as perches for predators or observation posts for the brown-headed cowbird.
- Proper size, shape, and design of vegetation treatments to create an edge effect would be critical in the success of the project for wildlife.
- Whether greater sage-grouse, pygmy rabbit, pinyon jay, loggerhead shrike, and other species in the 3 Bars ecosystem are present at levels that provide viable populations in the short, mid, and long term, especially under continued livestock degradation of habitats, utility corridor developments, mining and energy developments, and the spread of cheatgrass and noxious weeds and other invasive non-native vegetation that would be promoted by the various vegetation and woodland removal plans the BLM may be contemplating.
- Whether there is an opportunity for the reintroduction of bighorn sheep into the 3 Bars Ecosystem if domestic sheep operations voluntarily relinquish their permits, a change of livestock occurs, or further research is conducted into bighorn sheep diseases.

3.15.3.2 Significance Criteria

Impacts to wildlife would be considered significant if BLM actions resulted in:

- A substantial, long-term (greater than 10 years) reduction in the quantity or quality of habitat critical to the survival of local populations of common wildlife species.
- Injury or mortality to common wildlife species, such that species populations would not recover within 5 years.
- Mortality to a listed species or species proposed for listing that could result in a “take” under the Endangered Species Act.
- A reduction in the population, habitat, or viability of a species of concern or sensitive species that would result in a trend toward endangerment or the need for federal listing.
- Any loss of birds, eggs, or nesting habitat critical to migratory birds under the Migratory Bird Treaty Act, in the project area.

3.15.3.3 Direct and Indirect Effects

3.15.3.3.1 Direct and Indirect Effects Common to All Action Alternatives

Adverse Impacts

Adverse effects to wildlife common to all treatments include injury and loss of life, noise and other disruptions associated with treatment applications, and temporary and long-term habitat effects.

The use of vehicles and treatment equipment for restoration poses a risk of injury or death by crushing animals or their nests or roosts, and vehicle weight may collapse burrows or compact soils. Soil compaction may also make burrow or den excavation difficult. Fuel spills could have negative effects to wildlife species on land if fuel is ingested, and could negatively impact water quality. The likelihood of such an impact is negligible, though, as refueling would generally occur off-site or away from treatment areas.

Hand-held equipment, including chainsaws, and transport vehicles create noise that can disturb animals and cause them to flee or alter their behavior or habitat use. Most researchers agree that noise can affect an animal's physiology and behavior, and if it becomes a chronic stress, noise can be injurious to an animal's energy budget, reproductive success and long-term survival (Radle 2007). The loudness of normal conversation is about 65 decibels, while the loudness of a chainsaw is about 110 decibels. These effects would be short term and occur within a relatively small area, however, and would not likely to have much effect on the long-term health and habitat use of wildlife in the treatment area.

Over the short term, treatments could make habitats less suitable for some wildlife species, requiring displaced wildlife to find suitable habitat elsewhere. If these habitats were already near or at capacity in the number of wildlife they could support, displaced animals might perish or suffer lower productivity. In many cases, the treatments would return all or a portion of the treated area to an early successional stage, favoring early successional wildlife species. In areas where fire suppression has historically occurred, vegetation treatments could benefit native plant communities by mimicking a natural disturbance component that has been missing from these communities. Treatments would also restore native vegetation in areas where noxious weeds and other invasive non-native vegetation have displaced native plant species. Wildlife that occurred historically in these areas would likely increase in numbers, while species that have adapted to the disturbed conditions, such as chukar partridge, would decline (USDOI BLM 2007c:4-75).

Species that are mobile or that are not dependent on a specific habitat type can relocate during treatment activities and adapt to a new environment. Species that require very specific habitat conditions or that cannot relocate easily may be more vulnerable to impacts. Treatments that cover a large area have more potential to affect species, because there may be less opportunity for an animal in the interior of a treatment area to vacate, and because the number of individual animals affected is likely to be greater for a large area (USDOI BLM 2007c:4-74).

Fencing would be used to protect treatment sites. Although fencing would benefit wildlife habitat, it can also modify wildlife movements and wildlife may collide with fences. Stevens (2011) found that sage-grouse collisions with fences were fairly common in Idaho, especially in areas near leks.

Beneficial Impacts

Proposed treatments would occur across the 3 Bars Project landscape, would target areas with declining habitat quantity and quality, and would facilitate wildlife movement across the landscape. There has been a loss of habitat diversity and complexity due to pinyon-juniper encroachment into riparian, woodlands, and sagebrush habitats, and decrease in the abundance and diversity of animals that can be supported in areas with pinyon-juniper encroachment. Loss of habitat at the landscape level would be addressed by reducing levels of pinyon-juniper encroachment into other habitats, reducing the spread of noxious weeds and other invasive non-native vegetation, and reducing the risk of catastrophic wildfire. Treatments that slow or reverse pinyon-juniper encroachment and promote the development of native vegetation would improve habitat structure and species composition (USDOI BLM 2007c:4-85).

Cheatgrass and other noxious weeds and invasive non-native plants provide few wildlife benefits, often occur in monocultures across the landscape, and alter wildfire cycles to the detriment of native vegetation and wildlife. By slowing or reversing the spread and occurrence of noxious weeds and other invasive non-native vegetation on the landscape, greater numbers and types of wildlife would be supported by the area, and risks to special status species and other species found in low numbers in treated ecosystems would be reduced.

Treatments that reduce hazardous fuel loads, slow the spread of pinyon-juniper, reduce woodland densities, reduce the incidence of disease within pinyon-juniper communities, reduce the spread of noxious weeds and other invasive non-native vegetation, and create fuel and fire breaks would reduce the risk of catastrophic wildfire harming wildlife or their habitat. Treatments aimed at restoring natural fire cycles would improve vegetation resilience and increase plant diversity across the landscape, to the benefit of wildlife (USDOI BLM 2007c:4-85).

Improvements in habitat quality would increase the carrying capacity of the landscape and allow it to support larger and healthier wildlife populations. In particular, treatments would benefit mule deer, pronghorn antelope, and greater sage-grouse by removing pinyon-juniper that reduces habitat quality or thinning vegetation (pinyon-juniper and sagebrush) to allow more desirable vegetation, such as forbs and grasses, to better compete and thrive. Thinning and removing vegetation would also benefit local and seasonal movements of wildlife, including mule deer and greater sage-grouse. Removing pinyon-juniper could benefit greater sage-grouse because they are thought to avoid trees and other tall vegetation during migration and local movements. Because water is scarce on the 3 Bars Project area, the BLM would implement stream and riparian restoration projects to improve water availability for wildlife. In addition, slash piles left from thinning pinyon-juniper or selective thinning in sagebrush would be used provide microhabitat and cover for reptiles, rabbits and other small mammals, and songbirds.

Wildfire, spread of invasive plants, and other factors have caused habitat fragmentation and the loss of connectivity between blocks of habitat, especially in lower elevation riparian zones, woodlands, and sagebrush. Fragmentation has isolated some animal populations and reduced the ability of populations to disperse across the landscape by increasing the distance that wildlife must travel between suitable habitat patches. Treatments that restore native vegetation in disturbed areas should reduce fragmentation and restore connectivity among blocks of similar habitat, allowing wildlife to move more easily across the landscape (USDOI BLM 2007c:4-85).

3.15.3.3.2 Direct and Indirect Effects under Alternative A (Preferred Alternative)

Because of the increase in the amount of habitat treated, both short-term impacts and long-term benefits to wildlife would be greatest under this alternative. Species would benefit through the slowing of pinyon-juniper encroachment; removal of crested wheatgrass, forage kochia, and cheatgrass; creation of a matrix of habitat types; reseeding and replanting of native shrubs, forbs, and grasses to restore habitat; a reduction in the threat of a catastrophic wildfire; and increase in edge habitat. Species that would benefit from edge habitat would include greater sage-grouse that might forage in meadows and near streams, but seek shrub cover for shelter; raptors that perch in pinyon-juniper trees but forage in adjacent grassland and sagebrush habitats; and mule deer that forage in meadows but seek shelter and thermal cover in adjacent pinyon-juniper woodlands.

Riparian Treatments

Adverse Effects

Treatment activities may result in a permanent or temporary loss of cover along riparian zones, potentially exposing animals to predators and causing the loss of thermal cover during temperature extremes. Loss of wooded areas adjacent to streams may make the habitat unsuitable for species that prefer wooded riparian zones.

Treatment work at several streams, ponds, wells, and springs would involve using heavy equipment to reconstruct streams and improve riparian habitat. Heavy equipment and placement of rock and other structures in streams pose a risk of injury or death by crushing animals or their breeding sites; amphibians would be most susceptible to harm or injury from use of heavy equipment near streams. If not done properly, stream reconstruction could worsen stream channel morphology, alter water depths and flows, and cause the loss of additional riparian habitat. Changes in water availability and flow rates would be especially harmful to amphibians that lay their eggs in water and require relatively stable water conditions for their eggs and hatchlets. Loss of riparian vegetation would contribute to sedimentation via increased runoff and erosion, affecting in-stream habitat for aquatic species including amphibians that forage, breed, or hide in stream gravel or spaces between stones (Pilliod et al. 2003).

Manual and mechanical methods and prescribed fire would be used at Hash Spring and several other springs, as well as at sites where Lahontan cutthroat trout habitat improvements are planned. About half of the pinyon-juniper treatments would occur in Phase I stands, and the remaining treatments would be split nearly evenly between Phase II and III stands. Most of the Phase II and III treatments would occur along Roberts Creek. This would reduce the amount of habitat available to pinyon-juniper dependent species, including pinyon jay, gray flycatcher, juniper titmouse, Bewick's wrens, blue-gray gnatcatchers, black-throated gray warblers, and ferruginous hawks (Miller et al. 2005). Removal of Phase III trees and decayed and malformed trees could eliminate habit for cavity-nesting birds, such as woodpeckers and owls, and nesting and roosting habitat for small mammals, such as bats, squirrels, and mice. Removal of pinyon-juniper, particularly large trees, would also reduce the capacity of woodlands to intercept snow and provide snow-intercept thermal cover during winter (Hunter 1990). Loss of winter cover may negatively affect mule deer that use pinyon-juniper areas during the winter (Miller et al. 2005). Fire and fuel breaks could serve as a barrier to small mammal and amphibian movement.

Prescribed fire treatments pose a risk of death to animals, especially smaller mammals, reptiles, and amphibians that may not be able to flee the area or enter burrows during a burn (Lyon et al. 2000a). Large animals would likely not be affected unless the fire is large, fast-moving, and produces copious smoke. Impacts to wildlife from fire would vary depending upon the time of year. Spring burning is more likely to adversely affect wildlife with offspring, including mule deer with fawns, antelopes with kids, and bird nests and chicks, compared to a late season burn (USDA Forest Service 2000, USDOI BLM 2007c:4-76). Fall prescribed burning and late-summer wildland fires may harm amphibians that are migrating to water or settling under leaf litter to overwinter.

Fire effects on habitat could be a greater risk than that of direct mortality, as fire can remove vegetative cover, reduce wildlife food availability and hunting success, and make animals more vulnerable to predation (USDA Forest Service 2000). Fires may locally extirpate some insect groups, and the immediate loss of this important prey could affect growth and survival for some animals, including amphibians (Komarek 1969, Folk and Bales 1982 *in* Pilliod et al. 2003).

Exclosure fences erected at riparian treatment sites could have an adverse effect on some small mammals, birds, and reptile populations because fences may provide perches for raptors and ravens that predate on small mammals such as mice, bats, and squirrels. Fences could also provide scanning perches for brown-headed cowbirds, thereby helping them to locate and parasitize bird nests and small mammals, such as bats, squirrels, and mice.

Beneficial Effects

Riparian treatments are designed to enhance water quality and quantity for wildlife, while also promoting improved habitat conditions that lead to higher quality forage and cover. Approximately 85 percent of riparian treatment acreage is within mule deer summer or winter range habitat, while over 80 percent of the riparian treatment acreage is within the summer or winter range for greater sage-grouse (**Figures 3-40** and **3-43**; NDOW 2008a, 2009d). Proposed treatments would focus on restoring degraded riparian habitat, including restoring about 1,250 acres of mule deer habitat, 177 acres of pronghorn antelope habitat, and 1,993 acres of greater sage-grouse preliminary priority habitat (**Figure 3-43)**.

A key feature of healthy riparian habitat is a high diversity of microhabitats. However, riparian habitat systems on the 3 Bars Project area have been altered through actions such as stream channelization, construction of water diversions for livestock, construction of roads, introduction of noxious weeds and other invasive non-native vegetation, and pinyon-juniper encroachment. For many wildlife species, these alterations often mean a loss of habitat (Tsukamoto 1983, Wasley 2004, Wildlife Action Plan Team 2012).

Manual and mechanical treatments are often more effective than other treatment methods, especially in sensitive areas, such as wetland and riparian habitat, or near habitats of plant and animal species of concern, where greater control over treatment effects is required or effects to non-target species are a concern (USDOI BLM 2007c:4-88). Stream restoration using manual and mechanical methods would reduce stream erosion and episodes of bank failure, improving both water quality and stream access for wildlife, while fencing and plantings would improve cover, shoreline stability, and wildlife habitat value. Treatments in riparian zones would create wet meadows and meandering streams and reduce water loss associated with stream downcutting; this would benefit amphibians and provide improved forage and habitat for birds and mammals. Riparian zones in rangelands typically produce more edge habitat in a small area than other habitat types. Mule deer spend a disproportionate amount of time in riparian habitats, including use as fawning habitat (Thomas et al. 1979), and would see an increase in habitat area and quality as a result of treatments. Riparian zones also produce large quantities of insects, which in turn provide food for wildlife, including greater sage-grouse and bats.

Reducing the cover of pinyon-juniper on up to 900 acres in riparian treatment areas could improve water flows, allow more desirable riparian, woodland, and sage-brush vegetation to thrive, and open up movement corridors for greater sage-grouse and other wildlife (see review in Miller et al. 2005:35). Use of felled trees in streams to slow water would create pools that provide breeding habitat for amphibians and open-water drinking areas for bats and other wildlife. By mulching or piling trees, cover and thermal habitat would be created that would provide protection and warmth to amphibians, reptiles, birds, and small mammals. Removal of pinyon-juniper should also improve flows in nearby creeks as water uptake by trees is lessened. For example, Buckhouse (2008) found that in areas where all juniper were cut from a watershed in Oregon, that late season spring flow, days of recorded ground flow, and late season soil moisture increased compared to pretreatment conditions.

Fire would enhance the regeneration of native grasses and forbs and encourage new growth on woody species. Since fire causes a plant community to revert to an earlier successional stage, the use of fire can benefit wildlife that prefer

early successional communities, which are typically characterized by herbaceous species (NDOW 2006, USDOI BLM, 2007c:4-85).

Replacement of fire-adapted vegetation by fire-intolerant associations generally leads to overall declines in herpetofauna abundance and diversity. Prescribed fire is an appropriate management tool that can be used with other tools to benefit herpetofauna by restoring a historical mosaic of successional stages, habitat structures, and plant species composition (USDOI BLM 2007c:4-85).

Greater sage-grouse would benefit from riparian treatments that remove pinyon-juniper within those corridors used by sage-grouse for seasonal movements, and improve habitat quality within brood-rearing areas. Pinyon-juniper treatments within riparian corridors on the Roberts Mountains would be particularly beneficial because dense woodlands likely contribute to a high mortality rate for female greater sage-grouse and their young as they move from nest sites in the surrounding valleys to higher elevation meadows. It is likely that the removal of pinyon-juniper and regeneration of a riparian and shrub community would facilitate movements and improve greater sage-grouse survival. Wet meadow and other riparian restoration treatments would increase the availability of insects and other food items needed by greater sage-grouse chicks and adults. Forbs and insects comprise the bulk of greater sage-grouse chick diets until they are about 12 weeks old (Crawford et al. 2004), and are important to greater sage-grouse chick survival (Drut et al. 1994). Atamian et al. (2010) found that greater sage-grouse and their broods preferred higher elevation, moist sites with riparian shrubs or sagebrush during late brood rearing, and lack of this habitat could be a limiting factor for greater sage-grouse chick survival (Dru et al. 1994).

Aspen Treatments

Adverse Effects

The primary impact to wildlife from treatments would be from noise, which could cause wildlife to leave the treatment area for a short period of time. There is concern that noise and other disturbance could cause wildlife, including northern goshawk, to abandon nests, however treatment areas would be surveyed for nesting birds prior to treatment and if nests are found, treatments would be delayed until young have fledged.

There also would be loss of pinyon-juniper habitat where trees are felled to slow pinyon-juniper encroachment into aspen stands, and to create fire and fuel breaks. About 10 acres of pinyon-juniper would be treated annually near aspen stands. The BLM may also burn a few acres annually to stimulate aspen stand suckering. Effects to wildlife and their habitat from pinyon-juniper removal and prescribed fire would be similar to those described under Riparian Management.

Beneficial Effects

Aspen treatments would benefit a variety of wildlife. All of the aspen treatment sites are within mule deer summer or winter range, and 60 percent of the sites are within pronghorn summer or winter range (**Figures 3-40** and **3-42**; NDOW 2008b, 2009d). Of the 151 acres of proposed aspen treatments, about 146 acres are within areas where the BLM has determined that mule deer habitat is degraded and 88 acres are within degraded pronghorn antelope habitat; treatments could improve habitat conditions for these species (**Figure 3-41**). Lewis' woodpecker, northern goshawk, and several species of bats are special status species that have been observed using aspen habitats on the 3 Bars Project area. Northern goshawk preferentially use mature aspen communities for nesting, foraging, and roosting, and Lewis's woodpecker and several species of bats use cavities and peeling bark in aspen stands (Wildlife Action Plan

Team 2012). Northern goshawk use mature aspen almost exclusively for nesting in the Great Basin (Wildlife Action Plan Team 2012), and their apparent decline in Nevada has been attributed to the loss of mature aspen stands that provide structural support for goshawk nests (Great Basin Bird Observatory 2010). DeByle (1985) noted that stimulation of suckering substantially increased the number of shrub-nesting birds associated with the stand.

Aspen areas provide important habitat for a variety of wildlife, and are being lost to pinyon-juniper encroachment. Mule deer use stream corridors within aspen habitat for fawning and as movement corridors, and treatments would improve both mule deer access and habitat quality. About half of the cavity-nesting birds in the western U.S nest in aspen stands (DeByle 1985). Bird species richness and diversity in sagebrush communities are strongly and positively correlated with the presence of nearby aspen stands, while encroachment of pinyon-juniper into aspen stands negatively impacts bird species diversity and richness. Manual and manual treatments to remove encroaching pinyon-juniper would help to ensure the long-term health and longevity of aspen and other woodlands by removing competing pinyon-juniper and encouraging aspen stand regeneration via seeds and suckering.

Historically, fire was an important factor in preventing the conversion of aspen stands to pinyon-juniper woodlands (Miller et al. 2005). Beneficial effects from fire include promoting aspen regeneration. By killing overstory trees and injuring roots, fire creates a hormonal stimulation for rooting. This, combined with the nutrient boost from fire and increased solar warming of the blackened soil, can result in rapidly growing aspen shoots. In stands of pure aspen, fire tends to burn around the perimeter and stimulates new growth around the perimeter. This can result in a mixed-age stand that benefits both species that nest or excavate cavities in mature trees, as well as browsers such as mule deer that prefer younger shoots. In mixed aspen-conifer stands, prescribed crown fire can be used to increase understory vegetation diversity, forage production, and water yield, and improve habitat for many wildlife species (Sheppard 2008).

The BLM would remove pinyon-juniper within 200 feet of aspen stands to improve their effectiveness as fire breaks. Fire breaks would help to protect mature aspen stands from fire and slow or compartmentalize wildland fire, to the benefit of wildlife and their habitat. Proposed prescribed fire treatments and protective fencing in aspen stands would help to slow or reverse the loss of aspen habitat.

Pinyon-juniper Treatments

Adverse Effects

Treatments proposed by the BLM that remove or reduce pinyon-juniper habitat could adversely impact wildlife that use these woodlands. The types and magnitude of adverse effects would differ according to the pinyon-juniper phase that treatments are conducted in. In general, adverse effects to wildlife habitat would be less in Phase I than Phase II or III woodlands. Adverse effects from Phase I treatments to wildlife habitat would primarily be related to loss of woodland edge habitat. For example, ferruginous hawks use pinyon-juniper/sagebrush/grassland edge habitat for nesting and foraging. Treatments in Phase I woodlands would not impact species that use the understory vegetation because chainsaws would be the primary treatment tool. Phase I treatments would not target old growth pinyon-juniper, so bats and birds that use old growth stands would not be impacted. Chainsaw thinning in Phase I stands would cause only a slight increase of fuels and wildfire risk. Treatments in Phase II and III habitat would open up pinyon-juniper woodland to stimulate understory vegetation to the benefit of some species, but would also remove old trees that provide winter cover and trees with rough bark used by roosting bats.

Over 70 species of birds nest in pinyon-juniper, and removal of pinyon-juniper could adversely impact migratory birds that use pinyon-juniper, including gray flycatcher, juniper titmouse, Bewick's wrens, and black-throated gray warbler (Miller et al. 2005). Populations of several of these species are in decline despite the increase in pinyon-juniper on the landscape. These species generally favor stands that have an open canopy with a significant shrub understory, and the interface between pinyon-juniper and sagebrush; densely wooded interior locations and Phase III stands are generally bird poor (Noson 2002 *in* Miller et al. 2005, Great Basin Bird Observatory 2011).

Pinyon-juniper stands provide important winter habitat for wildlife. In Oregon, higher winter bird densities occur in open juniper woodlands than in any other plant community (Miller 2001). Mule deer are also an important inhabitant. Dense stands of pinyon-juniper provide habitat for mule deer during severe winter weather because of the reduced snow cover and increased thermal cover in these areas. Bats favor old growth trees that have rough bark and crevasses. Removal of pinyon-juniper in Phase II and III stands could mean a loss of this wildlife benefit. Pinyon-juniper woodlands also provide habitat structure that would be lost if woodlands were converted to grasslands (Maser and Gashwiler 1978).

Downed trees and other woody material left on the ground from thinnings and tree removal could serve as fuel for a wildfire. Slash from shredding and other treatments in late Phase II and Phase III woodlands can create a fire hazard for at least 2 years, and may leave sites vulnerable to the introduction of invasive plant species (Tausch et al. 2009, Gottfried and Overby 2011). Slash piles can aid in the establishment of new vegetation or seedlings and pose a long-term benefit for wildlife species that prefer more herbaceous and shrub cover. A delayed understory response to treatments is common, and it may be several years before a treated site regains full habitat value (USGS 2009). In the interim, the treated area may run the risk of noxious weeds and other invasive non-native vegetation colonization and associated decline in habitat value for wildlife species, or be at higher risk of erosion and associated declines in aquatic habitat quality if streams are nearby.

The BLM does not plan to conduct burns in Phase I stands, but would conduct stand-replacement burns that could several thousand acres annually in Phase II and III stands. As noted earlier, about 60 percent of treatments would occur in Phase II and III stands. These burns could have adverse and beneficial effects on pinyon jays and other wildlife. Prescribed fires would open up pinyon-juniper stands and stimulate the growth of native forbs and grasses. However, given that prescribed fire burns would be less selective in controlling vegetation than manual or mechanical methods, and several thousand acres (but no more than 70 percent of the area) per treatment area could be burned annually, there could be a loss of mountain and Wyoming big sagebrush and other shrubs that are desirable for pronghorn antelope and mule deer. Numerous studies have shown that it can take decades for Wyoming big sagebrush to recover from fire, and that sage-grouse avoid burn areas (Sage- and Columbian Sharp-tailed Grouse Technical Committee 2008). Treated areas must then be reseeded to ensure that burned areas do not become infested with noxious weeds and other invasive non-native vegetation, to the detriment of wildlife. It is likely that large, older pinyon-juniper trees that provide juniper berries and pinyon nuts for pinyon jay and mule deer would also be lost (Balda and Masters 1980). Removal of mature and decadent and diseased trees would eliminate habitat used by cavity-nesting birds, roosting bats, and small mammals. In addition, large burns create more homogenous conditions that are less favored by wildlife, and remove thermal and hiding cover needed by mule deer (USDOI BLM 1991c).

The large size of a treatment area that may make it difficult for animals to flee during disturbance, especially fire, and may increase fire mortality. Species that are small or not very mobile may find it difficult to relocate into new, appropriate habitat in the wake of treatment activities, if the treated area is not immediately suitable for use. Greater sage-grouse chicks and roosting bats would likely not be able to escape fire. To minimize or avoid loss to greater

sage-grouse chicks, the BLM would not conduct treatments in brood-rearing areas, including the Atlas, Frazier, Gable, Henderson, Upper Roberts, and Vinini units, between May 15 and August 15.

Wildland fires for resource benefit in the Sulphur Spring Wildfire Management Unit would be allowed during the summer, and could be more intense than prescribed fires and could lead to noxious weeds and other invasive non-native vegetation problems. At a minimum, it could take longer for native forbs and grasses to establish on sites burned by wildfire than on sites burned with prescribed fire because wildfires tend to burn hotter and are more intense. Because of the large treatment area and the inability to anticipate when or where a wildfire would occur, there would be limited opportunities to control which areas burn in order to minimize the loss of Wyoming sagebrush or other more desirable vegetation, to survey for sensitive species, or to mitigate for impacts to sensitive wildlife species within the time frames described in the SOPs (**Appendix C**). Large-scale fires could also increase habitat fragmentation, to the detriment of birds including Brewer's sparrow, pinyon jay, and Virginia's warbler, and to less mobile species, such as reptiles and small mammals. Use of bulldozers and other firefighting equipment, and possibly aerial retardants, to protect private property could disturb wildlife and their habitats and cause harm or injury to less mobile species.

Beneficial Effects

Although one of the primary objectives of pinyon-juniper management is to improve woodland health and reduce the risk of high-intensity crown fires in dense woodland stands, treatments would also benefit wildlife by 1) removing pinyon-juniper to develop and enhance movement corridors for greater sage-grouse; 2) removing pinyon-junipers to slow encroachment into greater sage-grouse leking and nesting areas; 3) removing and thinning pinyon-juniper to break up the continuity of fuels and reduce the risk of catastrophic wildfire; and 4) improving wildlife habitat on the Sulphur Spring Wildfire Management Unit using wildland fire for resource benefit.

Most land managers target Phase I and II stands, which are often the most valuable to pinyon-juniper dwelling birds. Approximately 40 percent of treatments would be in Phase I stands and primarily involve the use of chainsaws to remove scattered trees. The BLM proposes to treat Phase II and III stands by opening up the canopy to stimulate growth in the shrub and herbaceous layers, and to reduce wildfire risk. About 40 percent of treatments would be in Phase II, and 20 percent, in Phase III stands, using mostly mechanical methods, prescribed fire, and wildland fire for resource benefit (Sulphur Spring Wildfire Management Unit). While Phase I treatments may benefit greater sage-grouse habitat, there may also be limited benefit to resident bird species that favor pinyon-juniper/sagebrush woodland edge habitat. By targeting Phase II and III stands, however, the BLM may enhance habitat for some pinyon-juniper dwelling species by opening up dense pinyon-juniper stands and creating more edge habitat (Great Basin Bird Observatory 2011).

As observed throughout the Great Basin, as pinyon-juniper cover has increased, the cover of shrubs and herbaceous understory species has declined, to the detriment of wildlife (Willis and Miller 1999 *in* Miller et al. 2005). The overall goal is to manage pinyon-juniper for wildlife by restoring the balance between pinyon-juniper and understory plants such as shrubs, grasses, and forbs (Miller 2001). All of the pinyon-juniper treatment sites are within mule deer summer or winter range, 60 percent of sites are within pronghorn summer or winter range, while about half of the treatment area is within Preliminary Priority Habitat for greater sage-grouse (see **Figures 3-40, 3-42,** and **3-43**; NDOW 2008b, 2009d).

Manual and mechanical treatments would be used to control the encroachment of pinyon and juniper into sagebrush, riparian, and aspen sites. The most common method to remove pinyon-juniper is with chainsaws. These treatments

would generally occur in Phase I stands. With chainsaws, pinyon-juniper can be removed or thinned, while still retaining some patches for wildlife. Chainsaws offer flexibility in the timing of application and the ability to precisely control treatment boundaries or target specific trees, including selective cutting of diseased trees or leaving habitat trees. Some cut trees, slash, or chips would be left on site to control erosion, aid in seedling establishment, and provide wildlife habitat (USGS 2009). Miller et al. (1999) found that avian species diversity was greater on plots where juniper was removed and slash remained than on closed woodlands. Pronghorn and mule deer benefit from mechanical treatments by foraging on strips of grasses and forbs that would be created for fuel breaks.

Much of the focus of treatments would be on thinning or removing pinyon-juniper from sagebrush habitat to benefit greater sage-grouse and other wildlife using mechanical methods, such as chaining, in Phase II and III stands. This would improve food and cover for small mammals by increasing shrub and herbaceous recruitment and seed production. Opening dense stands of pinyon-juniper benefits edge species, ground-feeding and ground-nesting birds, and small mammals. Openings of 250 acres or less created by mechanical means benefit deer, small mammals, and birds. Studies have shown that breeding bird densities increase as pinyon-juniper stands are opened up and treatments that create patches of treated and untreated pinyon and juniper promote species diversity (Scott and Boeker 1977, O'Meara et al. 1981, Payne and Bryant 1998). In addition to removing the downed trees, the BLM would place larger wood into streams to slow water flow and provide habitat for amphibians and other wildlife.

In pinyon-juniper woodlands, female cone production declines as woods close in and the competition between trees increases; thinning or removing Utah juniper using manual and mechanical methods should enhance cone and seed production and improve food and cover for small mammals by increasing shrub and herbaceous recruitment and seed production. Juniper cones are consumed by deer mice, golden-mantled ground squirrel, Lewis' woodpecker, scrub jay, mountain bluebird, and cedar waxwing, and the berries are the primary winter food for American robin and Townsend's solitaire. Mule deer, mountain cottontail, and coyote also consume juniper cones, and woodrats, cottontail, black-tailed jackrabbit, and porcupine forage on juniper foliage at certain times of the year. There are reports of twice as many species and up to a 60 percent increase in deer mice, piñon mice, and Ord's kangaroo rat in thinned versus unthinned pinyon-juniper stands, and small mammal numbers generally increase when pinyon-juniper is thinned or completely cut, as long as slash remains (Miller et al. 2007).

Treatments on the Atlas, Frazier, Gable, Henderson, Upper Roberts, and Vinini units would help to open up greater sage-grouse travel corridors between lower elevation winter and leking habitats and upper elevation nesting and brood-rearing habitats, by removing pinyon-juniper that are encroaching into these drainages. Treatments would also provide forage for greater sage-grouse and other wildlife by promoting development of native grasses, forbs, and shrubs through removal of pinyon-juniper. Several studies have shown that greater sage-grouse avoid pinyon-juniper stands and that the number of greater sage-grouse using an area increases after pinyon-juniper removal (see review *in* USDOI USFWS 2008:60-61). In general, adult survival is high, but is offset by low juvenile survival (Crawford et al. 2004). Removal and thinning of pinyon-juniper in drainages should improve brood survivorship during movements from between breeding areas in the valleys and brood-rearing areas on Roberts Mountains, while these treatments in conjunction with riparian treatments should improve brood habitat and survivorship.

Treatments could also benefit pinyon jay by opening up closed-canopy woodlands, while protecting old-growth pinyon-juniper habitat, should ensure that roosting habitat is maintained for bats. However, some chaining may be done in Phase III stands to break up fuel continuity on Roberts Mountains, which may be detrimental to bat habitat.

The Atlas and Henderson units also provide habitat for pygmy rabbits. Pygmy rabbits forage primarily on sagebrush, so treatments that remove pinyon-juniper and stimulate the growth of sagebrush and herbaceous vegetation would

benefit pygmy rabbits long-term. Pinyon-juniper encroachment has adversely impacted pygmy rabbit populations (Grayson 2006), and has shifted pygmy rabbit habitat to lower elevation in the western U.S. (Larrucea and Brussard 2008). Although pygmy rabbits would use areas with limited pinyon-juniper cover, stands with 40 percent or greater cover provide only marginal habitat for pygmy rabbits (Miller et al. 2005). Treatments to thin or remove younger pinyon-juniper trees, while retaining more mature trees for nesting habitat, would provide habitat favored by raptors, while treatments that promote development of sagebrush, other shrubs, and herbaceous species would benefit pygmy rabbits.

Prescribed fire, in addition to manual and mechanical treatments, would be used to enhance habitats. Fire almost always reduces pinyon-juniper canopy or density, but is most effective when used in conjunction with mechanical treatments, such as chaining, that first reduce juniper competition and increase herbaceous growth that fuels the fire (Ansley and Rasmussen 2005).

The BLM would reduce hazardous fuels on up to 10,000 acres annually on the Cottonwood/Meadow Canyon, Dry Canyon, Three Bars Ranch, Tonkin North, and Whistler units. Proposed treatment areas provide important year-round habitat for greater sage-grouse and pronghorn antelope, and crucial summer range for mule deer. In addition to reducing hazardous fuels and risk of loss of wildlife and their habitat from a catastrophic wildfire, treatments would improve shrub and herbaceous diversity, improve wildlife habitat, and improve hydrologic function. Treatments would kill most of the pinyon-juniper overstory and set back plant development and succession, and would increase forage for wildlife. When conditions are favorable for a stand-replacing fire, burning kills most of the pinyon-juniper overstory and increases plant diversity and patchiness. While loss of pinyon-juniper can reduce thermal and hiding cover for ungulates, an increase in plant species diversity after fire can benefit deer as well as ground-nesting birds (Lyon et al. 2000b).

In 2010 and 2011, the BLM mapped pinyon-juniper phases and areas with old growth trees on the 3 Bars Project Area (AECOM 2011a). There are several old-growth pinyon-juniper stands on Roberts Mountains; these stands would be left untreated. Protection of old growth pinyon-juniper favors wildlife species that preferentially use pinyon-juniper old growth. Old growth juniper have more cavities than young trees, and offer significant habitat benefit to cavity nesting species including red-breasted nuthatches, mountain bluebirds, mountain chickadees, and northern flicker (Miller et al. 2005). Bushy-tailed woodrat is also common in old-growth pinyon-juniper, where it nests in cavities.

Sagebrush Treatments

Adverse Effects

Alpha, Coils Creek, Kobeh East, Nichols, Roberts Mountain Pasture, South Simpson, Three Corners, and Whistler Sage units are heavily used by greater sage-grouse, and greater sage-grouse leks are found near the Alpha, Coils Creek, Kobeh East, Roberts Mountain Pasture, and South Simpson units. Sagebrush in these areas is dominated by mature monocultures of Wyoming big sagebrush that have little grass or forb cover. The BLM would use a roller chopper, rangeland mower, or smooth chain to open up sagebrush stands on about 1,000 acres annually. While these treatments would open up sagebrush stands, they would lead to the fragmentation and loss of habitat for species that favor large expanses of sagebrush cover, such as sage sparrow and Brewer's sparrow (Wyoming Interagency Vegetation Committee 2002, McAdoo et al. 2004). It may take a decade or more for treated sites to meet the habitat requirements of breeding sage-grouse.

The BLM proposes to use prescribed fire on a few acres annually in the Three Corners Unit to open up the big mountain sagebrush canopy, slow the spread of pinyon-juniper, and create a mosaic of treated and untreated areas to benefit wildlife edge species. Risks to wildlife from prescribed fire include the risk of death or injury to small or slow moving species and the loss of nests for species that nest on the ground or in sagebrush. In mountain big sagebrush, Nelle et al. (2000 *in* Connelly et al. 2000) found that prescribed burning had long-term negative impacts on sage-grouse nesting and brood-rearing habitats. They also found that canopy cover did not provide appropriate nesting habitat 14 years after burning. In addition, cheatgrass will often occupy sites after burning.

With any fire, there is a risk that the fire could escape controls and become an unplanned wildland fire, and burn more habitat than originally planned. This can be especially damaging in sagebrush, due to the decades-long recovery time from fire. Fire treatments could also lead to infestations of noxious weeds and other invasive non-native vegetation in treated areas, to the detriment of wildlife habitat.

Domestic livestock could be used to remove cheatgrass. Livestock can directly harm wildlife by trampling on animals or their nests, and grazing can alter grassland structure, to the detriment of birds and small mammals (Wiens and Dyer 1975). Given that grazing would be limited to areas dominated by cheatgrass, which has low habitat value for wildlife, these risks to wildlife would be low.

In several treatment areas, the BLM would plant sagebrush seedlings and reseed with native grasses and forbs to encourage establishment of sagebrush and herbaceous vegetation near historic leks (Rocky Hills Unit), and to restore areas degraded by cheatgrass (Table Mountain, West Simpson Park, and Whistler Sage units). The BLM would use native seeds and plants whenever possible, but could also use non-native grasses such as crested wheatgrass and forage kochia. Crested wheatgrass and forage kochia have limited value for most wildlife, including greater sage-grouse. However, they do provide forage for livestock, wild horses, and wild ungulates, help to stabilize soils and reduce erosion in areas burned by wildfire, and exclude cheatgrass. Crested wheatgrass and forage kochia plantings would be limited to those areas where there is a cheatgrass monoculture, and where the site could be restored in the future with native vegetation. The only unit where crested wheatgrass and forage kochia are proposed for use is Table Mountain (Foree 2012a). Crested wheatgrass and forage kochia can establish with minimal seedbed preparation, can survive periods of drought, and can compete with noxious weeds and other invasive non-native vegetation species. These species, however, are prolific seed producers that can dominate a site and exclude native vegetation, including the native bunchgrasses and big sagebrush that offer better wildlife value (Kettle and Davison 1998, Monson 2002, Braun 2006).

Beneficial Effects

The 3 Bars Project area provides important habitat for greater sage-grouse, mule deer, pronghorn antelope, and other wildlife. Approximately 98 percent of proposed treatment acres are within pronghorn antelope summer or winter range, 65 percent are within summer or winter range for greater sage-grouse, and 55 percent are within mule deer summer or winter range (see **Figures 3-40, 3-42,** and **3-43**; NDOW 2008b, 2009d, 2012d, e).

An estimated 50 percent of the original sagebrush habitat in the Great Basin has been lost in the past century, with increasing occurrence of wildfire being a major contributor to this loss (Sage and Columbian Sharp-tailed Grouse Technical Committee 2009). Loss and degradation of sagebrush habitat has also occurred on the 3 Bars Project area, and proposed treatments would focus on restoring sagebrush habitat. Over 85 percent of the acres treated would occur where the BLM has determined that pronghorn antelope habitat is declining, nearly half of the acres treated would

occur where greater sage-grouse habitat is declining, and 45 percent of the acres treated would occur where mule deer habitat is declining (**Figure 3-41**).

Pinyon-juniper treatments to enhance sagebrush habitat would benefit sage obligate species, including greater sage-grouse, sage sparrow, Brewer's sparrow, sage thrasher, pygmy rabbit, sagebrush vole, pronghorn antelope, and sagebrush lizard. Several shrub-steppe birds show population decreases when pinyon-juniper density and total area of cover increase. Sage thrasher in particular is very sensitive to pinyon-juniper encroachment into sagebrush, and one study found a 90 percent decline in a population with a 6 percent increase in pinyon-juniper cover. Brewer's sparrow and vesper sparrow are also sensitive to pinyon-juniper encroachment (Miller et al. 2005). Removing or thinning pinyon-juniper creates openings for raptors to use while hunting. Ferruginous hawks prefer more open country, sagebrush, and the periphery of pinyon-juniper and sagebrush. They nest in pinyon-juniper trees (Wildlife Action Plan Team 2012). Thus, treatments to create mosaic of pinyon-juniper and sagebrush habitat on the Whistler Unit, and to restore sagebrush on the Rocky Hills and Table Mountain units, should benefit ferruginous hawks by making it easier for hawks to find prey, while creating new sagebrush habitat for prey species.

Removing pinyon-juniper from sagebrush habitat improves fawning habitat for mule deer, and improves browse resources (Wasley 2004). It also benefits pronghorn antelope, which preferentially use open, shrub-steppe communities (such as sagebrush) rather than stands with scattered trees or woodlands (Tsukamoto 2003, Wasley 2004). Pinyon-juniper encroachment has also impacted pygmy rabbit populations (Grayson 2006), especially when pinyon-juniper cover exceeds 40 percent. Pinyon-juniper removal projects on the Three Corners and Whistler Sage units could benefit pygmy rabbits, although treatments would occur in Phase I stands where pinyon-juniper cover is less than 40 percent. Because pinyon-juniper can uptake large amounts of water, removal of pinyon-juniper may also improve water supply and flow in creeks, which would benefit wildlife.

Chainsaws would be used to thin and remove pinyon-juniper in Phase I stands that have encroached into sagebrush habitat. The effects to wildlife and their habitat from pinyon-juniper removal and thinning in Phase I stands are discussed under Pinyon-juniper Treatments.

The BLM would use manual and mechanical methods to thin low-elevation Wyoming big sagebrush. Lek attendance, nesting, and early brood rearing occur in habitat dominated by sagebrush with a healthy herbaceous understory. Studies have shown that forb production may be 30 to 50 percent greater where the sagebrush cover is 20 percent than where it is 35 to 40 percent (Blaisdell 1953, Goodrich and Huber 2001 *in* Wambolt et al. 2002). Ideal breeding habitat has a sagebrush cover of 20 percent or greater and a total shrub cover of 40 percent or greater (Kolada et al. 2009).

The BLM may use chaining to thin sagebrush stands. Chaining is often favored because it does not kill all of the sagebrush and retains native grasses and forbs important to wildlife and their young. Chaining can further benefit wildlife if chaining is done in strips, rather than blocks, and by using natural terrain features to maximize edge effect (Autenrieth et al. 1982). In Utah, one-way chained sites had 43 percent less sagebrush cover and 140 percent more browse than unchained sites (Walker 2002). Multiple mechanical treatments, over many years, could be used in large, even-aged, homogeneous sagebrush to create different age classes of sagebrush in large areas to improve greater sage-grouse nesting and early brood-rearing habitat. Chaining or other treatments that thin sagebrush would be followed by seedings with native species. These treatments would increase understory vegetation in sagebrush-dominated areas, to the benefit of greater sage-grouse, pronghorn antelope, pygmy rabbit, sagebrush vole, western burrowing owl, vesper sparrows, meadowlarks, and other wildlife.

The BLM would also use manual and mechanical methods, such as chainsaws, smooth chain, or roller chopper, and prescribed fire to thin mountain big sagebrush, remove pinyon-juniper, and create a mosaic of habitat types. In some areas, dense cover of sagebrush is crowding out native forbs and grasses. In others at higher elevations, extensive areas of mountain big sagebrush have been invaded, and in some places replaced, by pinyon-juniper. By opening up dense stands of sagebrush and removing pinyon-juniper to promote the reestablishment of grasses, forbs, and sagebrush, summer habitat for greater sage-grouse and their broods should improve (USDOI BLM 2007c:4-86). Treatments that thin the sagebrush canopy to enhance forb and grass production would also benefit pygmy rabbits, however large-scale habitat conversion of dense sagebrush cover to more open cover could harm pygmy rabbits. The BLM proposes to treat no more that 20 percent of units, which would reduce this risk to pygmy rabbits, while still providing benefits to greater sage-grouse. After opening up stands, the BLM would reseed the treatment area to re-establish a native herbaceous component.

Some neotropical migratory birds have been harmed by the loss of sagebrush habitat to wildfire and invasive species, and conversion to agriculture and other uses. Because these species have different habitat needs, ranging from a closed canopy to a more open canopy, the BLM would attempt to meet the species' needs by conducting treatments that would create openings in dense stands of sagebrush, but limit the area treated to no more than 20 percent of units. By creating a mosaic of habitats, species that use edge habitat would benefit.

Prescribed fire would be avoided in habitats dominated by Wyoming big sagebrush, but prescribed fire treatments could be used to control pinyon-juniper and to increase forb and grass components in mountain big sagebrush communities. Prescribed fire within mountain big sagebrush communities would be small and patchy in size, and designed to create a mosaic of sagebrush and grasslands. Mosaics of grass and sagebrush are suitable for greater sage-grouse as long as key sagebrush habitats are protected (e.g., greater sage-grouse nesting and brooding habitat), and native grasses and forbs are present (Connelly and Braun 1997, Crawford et al. 2004, Sage and Columbian Sharp-tailed Grouse Technical Committee 2009, Rhodes et al. 2010). Likewise, small burns are favored because they create a greater variety of food and cover conditions than do larger burned or unburned areas, and the risk of a prescribed fire becoming a wildland fire is much less (Short and McCulloch 1977, USDOI BLM 2007c:4-86). Fire has been shown to increase grass production, which benefits mule deer and bighorn sheep (Lauer and Peek 1976, Willms et al. 1981, Payne and Bryant 1998). Goodrich et al. (2008), found that mountain big sagebrush cover was greater than 15 percent at most burned sites 15 years post burn and that the ground cover was greater than 80 percent at most sites 5 years post burn. They felt that habitat sustainability for sage-grouse in mountain big sagebrush stands could be met with a fire interval of 25 to 30 years and by treating no more than 3 to 4 percent of the landscape per year. Small burns are favored because they create a greater variety of food and cover conditions than do larger burned or unburned areas, and the risk of a prescribed fire becoming a wildfire is much less (Short and McCulloch 1977, USDOI BLM 2007c:4-86).

Several leks were found on the Rocky Hills Unit before the 1999 Trail Canyon Fire. West Simpson Park, which provides mule deer winter range, was also burned by the 1999 Trail Fire and is now dominated by cheatgrass. Table Mountain has been burned by several wildfires in the past few decades. It also has cheatgrass issues, and provides only marginal habitat for greater sage-grouse, although several leks are nearby. Plowing and disking, and prescribed fire, could be used to reduce the reproduction of cheatgrass and crested wheatgrass. Treatments that break the fire-cheatgrass-fire cycle and risk of future wildfire on treated and nearby sagebrush habitat, should improve wildlife habitat by increasing the cover of native shrubs, grasses, and forbs that provide better habitat value for wildlife, and possibly encourage greater sage-grouse to again nest in these units.

The BLM may use livestock and pathogens to control cheatgrass and other non-native vegetation, as livestock can reduce cheatgrass dominance, while a naturally-occurring pathogens such as *Ustilago bullata* can cause head smut in cheatgrass (Pellant 2002). On the West Simpson Park Unit, the BLM may use livestock to remove some cheatgrass before the unit is seeded. These treatments would be used to restore degraded rangeland that provides few wildlife benefits. Noxious weeds and other invasive non-native vegetation can hinder pygmy rabbit movement and increases a predators' ability to detect the rabbits. Treatments to control noxious weeds and other invasive non-native vegetation at West Simpson Park could encourage nearby pygmy rabbits to use this unit.

The BLM would use mechanical methods to create fuel breaks within homogeneous stands of sagebrush. In addition to providing openings for grasses and forbs to develop, and creating edge habitat and travel lanes for wildlife, treatments would also slow the spread of wildfire. To further protect greater sage-grouse habitat, wildfires would be suppressed in all breeding habitats, as protecting sagebrush communities from invasive species is easier than restoring communities already degraded by cheatgrass (Wambolt et al. 2002).

3.15.3.3.3 Direct and Indirect Effects under Alternative B (No Fire Use Alternative)

The types and magnitude of effects for manual, mechanical, and biological control treatments would be similar between Alternatives A and B. Because the BLM would not be able to use fire, there would be no harm to or loss of wildlife from prescribed fire and wildland fire for resource benefit. The few wildlife that use dense stands of pinyon-juniper would not experience habitat loss under this alternative, and may even see habitat gains as more pinyon-juniper habitat shows Phase II or III characteristics.

Acres and types of wetland and riparian habitat and miles of streams treated would be similar to Alternative A. However, less effort would be spent by the BLM on slowing pinyon-juniper encroachment into sagebrush and riparian communities, reducing the amount of Phase II and III pinyon-juniper treated using stand-replacement fires, restoring habitat where sagebrush should occur based on ecological site description reference, desired state, or management objective, and reducing the acres of priority habitat treated to improve species diversity, especially through cheatgrass control.

Under Alternative B, the BLM would be limited to disking, plowing, and chaining sagebrush and replanting/reseeding to promote the growth of native forbs and grasses. It would also be difficult and costly to conduct follow-up treatments without adversely harming planted species. As a result, the likelihood of restoring sagebrush habitat on these units would be less than under Alternative A.

Because fire would not be available to reduce hazardous fuel loads, Alternative B may pose a greater long-term risk for wildfire due to the accumulation of fuels. The BLM would also be less able to promote more fire resilient and diverse habitat on the 3 Bars Project area.

The inability to use prescribed fire and wildland fire for resource benefits would probably have few short-term adverse effects. Longer term, however, mule deer, greater sage-grouse, migratory birds, and other wildlife would experience fewer of the benefits associated both with creating openings in dense pinyon-juniper habitat and with creating a mosaic of pinyon-juniper and sagebrush habitat. Prescribed fire to treat non-native vegetation on the Rocky Hills, Table Mountain, West Simpson Park, and Whistler Sage units also would not be available under this alternative.

3.15.3.3.4 Direct and Indirect Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, the BLM would only be able to use manual and classical biological control methods to treat vegetation. The BLM has not identified areas where it would use classical biological control, but if nematodes, insects, or fungi are used on the 3 Bars Project area, treatments would generally be small in size and effects would be localized, or if used on cheatgrass, could cover large areas of habitat that are little used by wildlife. Thus, the effects on wildlife from classical biological control would be minor and primarily restricted to those species using vegetation treated by these methods. The BLM would not be able to use livestock to remove cheatgrass on the Table Mountain, West Simpson Park, and Whistler Sage units under Alternative C nor reduce the competitiveness of exotic species such as crested wheatgrass and forage kochia on the Rocky Hills Unit.

Most of the treatments under this alternative would be to thin and remove pinyon-juniper using chainsaws where it is encroaching into riparian, aspen, and sagebrush habitats. There would be fewer direct impacts to wildlife from treatments under this alternative than the other alternatives, because adverse impacts, such as harm to or death of wildlife, and noise and other disturbances, would be much less with manual methods than the other methods. Since fewer acres would be treated, there would be fewer benefits to wildlife under this alternative than under Alternatives A and B. Manual treatments would be small in scale and mostly targeted to pinyon-juniper stands. Benefits to special status species and migratory birds would primarily be limited to those species that use the pinyon-juniper and sagebrush interface, while greater sage-grouse, pygmy rabbit, and other sagebrush dependent wildlife would see few benefits.

3.15.3.3.5 Direct and Indirect Effects under Alternative D (No Action Alternative)

There would be no direct effects to wildlife resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would not create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; thin and/or remove pinyon-juniper and sagebrush to encourage understory development; restore fire as an integral part of the ecosystem; or reduce the risk of a large-scale wildland fire to the benefit of wildlife and their habitats. Because no habitat would be restored, Alternative D also poses the greatest threat to special status species, including migratory birds, through long-term habitat loss and degradation. Species at greatest risk from habitat degradation are greater sage-grouse, pygmy rabbit, northern goshawk, cavity nesting birds, and migratory birds through densification of pinyon-juniper and sagebrush, loss of aspen habitat, and pinyon-juniper encroachment.

3.15.3.4 Cumulative Effects

The wildlife CESA is approximately 1,883,729 acres and extends 10 miles beyond the 3 Bars Project area (**Figure 3-1**). Approximately 92 percent of the area is administered by the BLM, 6 percent is privately owned, and 2 percent is administered by the Forest Service. Past and present actions that have influenced wildlife resources in the 3 Bars ecosystem are discussed in Section 3.2.2.3.3.

3.15.3.4.1 Cumulative Effects under Alternative A (Preferred Alternative)

The BLM would continue ongoing management reviews to determine if livestock grazing management is resulting in utilization levels that are moderate to severe and adversely impact wildlife habitat and other resources, and if needed, would determine if changes in the current terms and conditions of the grazing permit would be required to maintain the long-term success of the proposed treatments through subsequent decisions separate from the 3 Bars Project

process. Wild horse management activities would include wild horse gathers, Appropriate Management Level reviews and adjustments, and implementation of habitat projects that keep herd numbers near sustainable levels and help to distribute wild horses more evenly across the rangeland.

The BLM also proposes to install temporary fencing to limit livestock and wild horse access to riparian and aspen treatment areas. These actions should help to improve water quality in affected streams, restore streams to Proper Functioning Condition, and improve riparian habitat to the benefit of amphibians, greater sage-grouse, and other wildlife. In addition, the BLM would use temporary electric fencing to restrict livestock access to upland treatment areas, as appropriate, and manage livestock and wild horse numbers to ensure they are appropriate to ensure healthy rangeland conditions.

The BLM would also manage livestock to meet greater sage-grouse habitat objectives. These objectives include having suitable sagebrush cover and utilization levels to ensure that adequate habitat would be available for greater sage-grouse during all life stages (see further discussion in Section 3.2.2.3.3; USDOI BLM 2013g).

The BLM would continue to treat noxious weeds and other invasive non-native vegetation in areas with known infestations, including areas burned by wildfire or prescribed fire, and in new areas under the Early Detection and Rapid Response program. Noxious weeds and other invasive non-native vegetation would typically be found in newly burned or disturbed areas, along roads, near mining and energy developments, and in areas where livestock and wild horses congregate. These treatments would benefit wildlife and their habitat, except for those few species that use cheatgrass and other noxious and invasive species. Cheatgrass is usually most prevalent in areas that have been burned by wildfire.

Five herbicides are typically used on the 3 Bars Project area—2,4-D, glyphosate, imazapyr, metsulfuron methyl, and picloram. For the 3 Bars Project, it is likely that the BLM would also use imazapic to treat cheatgrass. Based on analysis done for the 17-States PEIS, formulations of 2,4-D could have moderate to high risks, while risks from the other herbicides to wildlife would have low to negligible risks to wildlife. A detailed analysis of the risks to wildlife and their habitat from the use of herbicides is provided in the 17-States PEIS (USDOI BLM 2007b:4-96).

Recreational use of the 3 Bars Project area would adversely impact wildlife by disturbing animals and possibly from fuel or other petroleum product spills from recreation vehicles that could impact drinking water. Wildlife could be injured or killed by recreational vehicles, or from illegal hunting. Visitor use of the CESA would result in increased risk of a wildland fire due to accidental or intentional ignition of vegetation from a campfire, cigarette, hot vehicle muffler, or other human-caused ignition source. Recreational users can spread noxious weeds and other invasive non-native vegetation that attaches itself to vehicles or to clothing or shoes, and can later cause new noxious weeds and other invasive non-native vegetation infestations and degrade wildlife habitat. Garbage and other debris left behind by recreational users could be ingested by wildlife and harm or kill animals, or attract ravens and other scavengers. As the local population increases, there would be increased hunting pressure on greater sage-grouse and other wildlife. However, there are no studies that have demonstrated that regulated hunting is the cause of the decline of greater sage-grouse in recent time (Connelly et al. 2004). Pine nut harvesting would cause a loss of pine nuts as food for wildlife.

Utility and infrastructure projects could kill, injure, or disturb wildlife, cause loss and fragmentation of habitat, and possibly alter wildlife migration patterns and movements. Wildlife can strike fences and be injured or killed, be killed by vehicles on roads, and powerlines and communication sites may be used as perches by raptors, to the detriment of their prey. During a 10-year study of the effects of the Falcon-Gonder transmission line, which is in the eastern

portion of the 3 Bars Project area, researchers found that counts of common ravens along the transmission corridor, and raven-associated disturbances of greater sage-grouse leks, increased substantially during the 10-year period after construction of the transmission line. However, researchers did not find a meaningful impact of the transmission line on greater sage-grouse nest survival (Collopy and Lammers 2005, Nonne et al. 2011).

Several studies have shown that mining and energy development can have a substantial impact on greater sage-grouse habitat use and breeding success, and because of their large footprints, can fragment habitat (Braun et al. 2002, Lyon and Anderson 2003, Hollaran and Anderson 2004, Braun 2006, Great Basin Bird Observatory 2011; also see review in USFWS 2008), although habitat loss and fragmentation can be reduced over time as developments are reclaimed.

Construction and operation of the Mount Hope Project would directly affect wildlife habitat through removal of vegetation, primarily in the big sagebrush vegetation community. Approximately 8,318 acres of wildlife habitat would be directly removed. Upon completion, approximately 7,656 acres would be reclaimed by revegetating disturbed areas with shrubs, forbs and grasses (USDOI BLM 2012c). The mine project would also cause death and injury to wildlife, disturb wildlife, and fragment wildlife habitat. Mule deer, greater sage-grouse, and other wildlife migrations and movements would be impacted by the mine project. Mule deer migrate along routes from Pine Valley south around the Roberts Mountains into Kobeh Valley and Diamond Valley and could be affected by the Mount Hope Project.

Core breeding, brood-rearing, and winter habitat for greater sage-grouse is within the mine project area. The mine project could impact the movement of greater sage-grouse between Kobeh Valley and Roberts Mountains. Other impacts to greater sage-grouse from the mine project include increased raptor or scavenger predation from elevated equipment and power poles; visual encroachment or interruptions created by elevated equipment, power poles, vehicular travel and dust; interruption of “bird foot traffic” created by above-ground pipes, extended elevated berms, or other linear features that may block passage; noise created by pumps, vehicles, and equipment; collision with fences and other structures; habitat fragmentation; and unreclaimed surface disturbance resulting in habitat loss (USDOI BLM 2012c).

The mine project waste rock stockpile would be constructed over burrows and areas where pygmy rabbits have been sighted. In addition, the mine project access road and growth media stockpiles may also cover burrows and areas where pygmy rabbits have been sighted. These impacts would be limited to selected burrows and a limited number of individuals may be extirpated; these impacts are not expected to result in a population-level effect that would affect the potential listing of the species under the Endangered Species Act. The BLM has calculated that approximately 475 acres of pygmy rabbit habitat would be disturbed by the mine project. Of those 475 acres, 211 acres are occupied by pygmy rabbits and 264 acres are considered potential pygmy rabbit habitat.

One commenter during public scoping asked about the potential for reintroduction of Rocky Mountain bighorn sheep into the 3 Bars Project area. The NDOW does have plans to reintroduce bighorn sheep into the Cortez Range, which is immediately northwest of the 3 Bars Project area. These plans have been met with some resistance from local ranching interests, and the plan is currently on hold. There are no plans to reintroduce bighorn sheep on Roberts Mountains, as permittees are authorized to graze sheep on the mountain. Should sheep permits be retired or changed to cattle permits in the future, it is possible that NDOW could reintroduce bighorn sheep on Roberts Mountains (Foree 2012b).

It is estimated that approximately 140,000 acres would be burned by wildfires over the next 20 years, and in some years wildfires may burn substantial acreage, based on acreage burned since 1985 in the CESA. About 75,000 acres

burned in the 3 Bars Project area, and nearly 56,000 within remaining areas of the CESA, in 1999. In addition to concerns about how wildland fires may result in establishment and spread of noxious weeds and other invasive non-native vegetation, such as cheatgrass, there is concern that as wildland fire intervals decrease, the likelihood of vegetation reaching late successional stages would be reduced, to the detriment of species that favor late successional habitat, such as sage thrasher and gray flycatcher (Great Basin Bird Observatory 2010).

In addition to treatments under the proposed action, the BLM also proposes to treat hazardous fuels on approximately 1,500 acres annually in high to very high fire risk areas on and near the 3 Bars Project area and within the CESA. These include treatments of pinyon-juniper and sagebrush using prescribed fire and manual and mechanical methods, to remove pinyon-juniper, enhance wildlife habitat, and create fuel breaks. In addition to improving wildlife habitat by creating a mosaic of habitats and opening up pinyon-juniper stands to promote development of shrubs, grasses, and forbs to the benefit of greater sage-grouse and other wildlife, these treatments would also reduce the risk of wildfire and loss of wildlife habitat.

Under Alternative A, adverse effects from treatments would generally be short term, while benefits would be long term and would accumulate with wildlife habitat effects that occur on other portions of the CESA. Proposed BLM restoration projects would have short-term adverse and long-term beneficial effects on about 142,000 acres of wildlife habitat within the CESA during the life of the project. About 17 percent of the 3 Bars Project Area and 8 percent of the CESA would be treated to reduce hazardous fuels and improve ecosystem health and resiliency. Habitat improvement and a reduction in wildfire risk on the CESA would benefit wildlife and help offset some of the adverse effects to wildlife from other reasonably foreseeable future actions in the CESA, and would be greatest under Alternative A.

3.15.3.4.2 Cumulative Effects under Alternative B (No Fire Use Alternative)

Under Alternative B, effects from non-3 Bars Project reasonably foreseeable future actions on wildlife resources would be similar to those described under Alternative A. The BLM anticipates treating about half as many acres (63,500) on the 3 Bars Project area under Alternative B than under Alternative A. The types and magnitude of adverse impacts to wildlife from prescribed fire treatments, including loss of life and injury, loss of habitat, and habitat fragmentation, would not occur within the 3 Bars Project area, but could occur on several hundred acres annually within other portions of the CESA under current and reasonably foreseeable future authorization. Long term benefits from prescribed fire and wildland fire for resource benefit, including improving pinyon-juniper health, stimulating aspen suckering, creating a mosaic of habitat, slowing pinyon-juniper encroachment, making vegetation more fire resilient, creating openings in pinyon-juniper and mountain big sagebrush habitat to promote shrub, forb, and grass development, and reducing the risk of catastrophic wildfire, would occur on only a few hundred acres annually under this alternative, under previous and reasonably foreseeable future authorizations, and would provide few benefits for wildlife.

Adverse and beneficial effects of 3 Bars Project treatments on wildlife resources would accumulate with those from other actions in the CESA. About 8 percent of the 3 Bars Project Area and 4 percent of the CESA would be treated to reduce hazardous fuels and improve ecosystem health and resiliency. The trend toward large-sized wildfires of moderate to high severity in sagebrush and large stand-replacing wildfires in pinyon-juniper should remain near current levels. Treatments to reduce this risk on the CESA would benefit wildlife and their habitats, but not to the extent as would occur under Alternative A.

3.14.3.4.3 Cumulative Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, effects from non-3 Bars Project reasonably foreseeable future actions on wildlife resources would be similar to those described under Alternative A. Because fire and mechanical treatments would not be used, the BLM would not be able to use these methods stimulate aspen suckering on about 450 acres. There is concern that unless the BLM protects aspen stands from livestock, wild horses, and ungulates, and is successful in stimulating aspen suckering using manual methods, that aspen stands could be lost on the 3 Bars Project area. The BLM would be less able to reduce the risk of pinyon-juniper encroachment into aspen stands, and thin and remove pinyon-juniper to create and enhance fire and fuel breaks to reduce the risk of wildfire destroying aspens.

There would be no risk of injury or death to wildlife, noise and other disturbances, fuel spills, and short-term habitat loss associated with use of mechanical equipment. The BLM would have less success in opening up pinyon-juniper and sagebrush to promote development of shrubs, grasses and forbs; reducing hazardous fuels; removing cheatgrass and other non-native species; creating a mosaic of habitats; creating fire and fuel breaks; restoring stream habitat; and reseeding and replanting vegetation to restore wildlife habitat compared to Alternatives A and B. The BLM would be able to use mechanical methods on several hundred acres annually for other projects in the CESA under Alternative C under current and reasonably foreseeable future authorizations, but the total amount of acreage treated using mechanical methods would be about 90 percent less than under Alternative A.

Under Alternative C, proposed restoration projects would have adverse and beneficial effects to about 47,000 acres of wildlife habitat within the CESA during the life of the project. Treatments would primarily restore pinyon-juniper and sagebrush habitat through thinnings and removal of pinyon-juniper. Wildfire risk to wildlife and their habitats would increase in the CESA. Wildlife species diversity and numbers, and habitat quality, would show little improvement under Alternative C, primarily because only about 2 percent of the CESA would be treated to improve wildlife habitat, and the BLM would be limited in the types of treatments it could conduct to reduce the risk of wildfire and improve wildlife habitat.

3.14.3.4.4 Cumulative Effects under Alternative D (No Action Alternative)

Under Alternative D, effects from non-3 Bars Project reasonably foreseeable future actions on wildlife resources would be similar to those described under Alternative A. There would be no cumulative effects on wildlife resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; slow the spread of noxious weeds and other invasive non-native vegetation using ground-based and aerial application methods of herbicides, especially cheatgrass; restore fire as an integral part of the ecosystem; and reduce the risk of a large-scale wildland fire under current and reasonably foreseeable future authorized actions, but on a very limited acreage.

Based on historic treatments in the 3 Bars Project area, only about 1,500 acres would be treated annually in the CESA to reduce hazardous fuel levels and improve ecosystem health. Hazardous fuel levels would likely increase, and only a limited number of miles of fuel and fire breaks would be constructed under this alternative compared to the action alternatives. The BLM would conduct stream bioengineering and riparian habitat enhancements only on a limited acreage and these projects would have to be authorized through separate decisions. Thus, stream channels and riparian habitat would remain degraded and contribute to water quality concerns. The trend toward large-sized wildfires of moderate to high severity in sagebrush and large stand-replacing wildfires in pinyon-juniper would likely increase.

3.15.3.5 Unavoidable Adverse Effects

The proposed vegetation treatments could kill or harm wildlife, and cause unavoidable short-term adverse impacts to wildlife habitat and wildlife habitat use. The extent of these disturbances would vary by the extent and type of treatment. In general, greatest risks would be associated with the use of prescribed fire and wildland fire for resource benefits. These effects would be of special concern when they impact BLM Special Status Species, including greater sage-grouse, pygmy rabbit, raptors, and bats.

3.15.3.6 Relationship between the Local Short-term Uses and Maintenance and Enhancement of Long term Productivity

All treatments would have short-term adverse impacts to wildlife and their habitats. Treatments that improve habitat would provide long-term benefits to wildlife. Treatments that remove hazardous fuels from public lands and reduce the risk of a large, catastrophic wildfire would reduce the potential for future death and injury of wildlife and lead to improved habitat. Treatments that slow pinyon-juniper encroachment and control populations of noxious weeds and other invasive non-native species on public lands would be expected to benefit most wildlife over the long term by aiding in the reestablishment of native vegetation and restoring wildlife habitat to near historical conditions.

3.15.3.7 Irreversible and Irretrievable Commitment of Resources

Wildlife habitat lost as a result of treatments would be irretrievable until native plant communities were reestablished, usually within several growing seasons. Treatments that improve rangeland and woodland ecosystem health, including removal of noxious weeds and other invasive non-native vegetation, slowing of pinyon-juniper encroachment, and enhancement of riparian, aspen, and sagebrush habitat, would translate into benefits for wildlife.

3.15.3.8 Significance of the Effects under the Alternatives

Under all alternatives, there would be a short-term (less than 10 years) loss of habitat due to proposed treatments, in particular pinyon-juniper, and cheatgrass and other noxious weeds and invasive non-native species. However, pinyon-juniper is common throughout Nevada and the western U.S., and cheatgrass is an invasive weed with few wildlife values. Treatments would improve habitat on much of the 3 Bars Project area and CESA. Thus, there would be no significant direct, indirect, or cumulative long-term impacts to the quantity or quality of habitat critical to the survival of local populations from 3 Bars Project treatments within the 3 Bars Project area or CESA.

Under all alternatives, there would be injury or mortality to common wildlife species, primarily from use of prescribed fire and wildland fire for resource benefits, and from mechanical treatments. Less mobile species, such as amphibians, reptiles, and small mammals, would be most susceptible. Injury or mortality to wildlife would be in proportion to acres treated (greatest risk under Alternative A) and treatment methods (least risk under Alternative C). BLM Special Status Species, whose populations would be at most risk of not recovering in 5 years, are either mobile, could retreat to burrows, or use aquatic habitats to avoid fire and most mechanical treatments. Thus, populations of species that could be impacted by treatments should recover within 5 years, or should not suffer losses that would affect population viability. Thus, there would be no significant direct, indirect, or cumulative long-term impacts to local wildlife populations from 3 Bars Project treatments within the 3 Bars Project area or CESA.

No wildlife are listed as threatened or endangered, or proposed for listing, under the Endangered Species Act on the CESA. Thus, proposed treatments on the 3 Bars Project area or CESA would not result in the "take" of a listed species, or species proposed for listing.

Under all alternatives, there could be a short-term reduction in the population, habitat, or viability of a species of concern or sensitive species. However, these losses would not result in a trend toward endangerment or the need for federal listing. Species of greatest concern are the greater sage-grouse, northern goshawk, pygmy rabbit, and several species of bats. Under all alternatives, the BLM would conduct treatments that would restore habitat for these species. The BLM would remove pinyon-juniper in Phase II and III stands, potentially to the detriment of bats that roost under the bark of these trees. However, pinyon-juniper is common in Nevada, the BLM would protect old-growth pinyon-juniper and conduct most treatments outside the period when bats would be using trees for roosts, and bats use other habitats for roosting and breeding in addition to pinyon-juniper. Thus bat populations should not be imperiled from treatments in the CESA. The BLM would avoid treatments near pygmy rabbit burrows, where feasible, on the 3 Bars Project area. In addition, most of the treatments on the 3 Bars Project area and CESA would benefit the sagebrush habitat used by greater sage-grouse, pygmy rabbit, and other wildlife. The BLM would also improve aspen habitat to benefit northern goshawk. Thus, there should be a long-term gain in habitat value to species of concern on the CESA.

Under all alternatives, there could be a loss of birds, eggs, or nesting habitat critical to birds protected under the Migratory Bird Treaty Act, and should this loss occur, it could be significant. As discussed in **Appendix C**, the BLM would conduct nest surveys prior to any surface-disturbing activities that would occur during the avian breeding season. If nests are found within the treatment area, or if other evidence of nesting is observed, treatment activities may be postponed until after the completion of nesting; a protective buffer will be delineated and the buffer area will be avoided to prevent destruction or disturbance to nests and birds until they are no longer active; or the area will be removed from project consideration. The BLM will also avoid raptor and greater sage-grouse nesting areas. However, there is no guarantee that all nests would be found, and it is possible that migratory birds or their nests or young could be impacted by resource and other development in the CESA. The BLM would work with the USFWS to minimize or mitigate these losses.

3.15.4 Mitigation

Wildlife resources would benefit from mitigation and monitoring measures identified in Section 3.17.4 (Livestock Grazing Mitigation). No mitigation or monitoring measures have been identified specifically for wildlife resources.

3.16 Wild Horses

3.16.1 Regulatory Framework

Management of wild horses on BLM-administrated lands is regulated under the Wild Free-Roaming Horses and Burros Act of 1971 and the multiple use objectives of the Federal Land Policy and Management Act. There are wild horses, but no wild burros, managed on the 3 Bars Project area. The Act requires that wild horse and burro populations be managed at levels that allow for the preservation and maintenance of a thriving natural ecological balance. Methods used to control wild horse and burro populations primarily involve gathers to remove excess animals, and fertility control through injections of immunocontraceptives to reduce population growth rates. The BLM is also guided by the Nevada Northeastern Great Basin Resource Advisory Council to promote healthy rangelands through implementation of standards and guidelines for maintaining healthy wild horse and burro herds on

HMAs (USDOI 2007b). These include managing wild horses in HMAs based on the capability of the HMA to provide suitable feed, water, cover, and living space; and control of population levels to ensure the long-term health of wild horse populations.

3.16.2 Affected Environment

3.16.2.1 Study Methods and Study Area

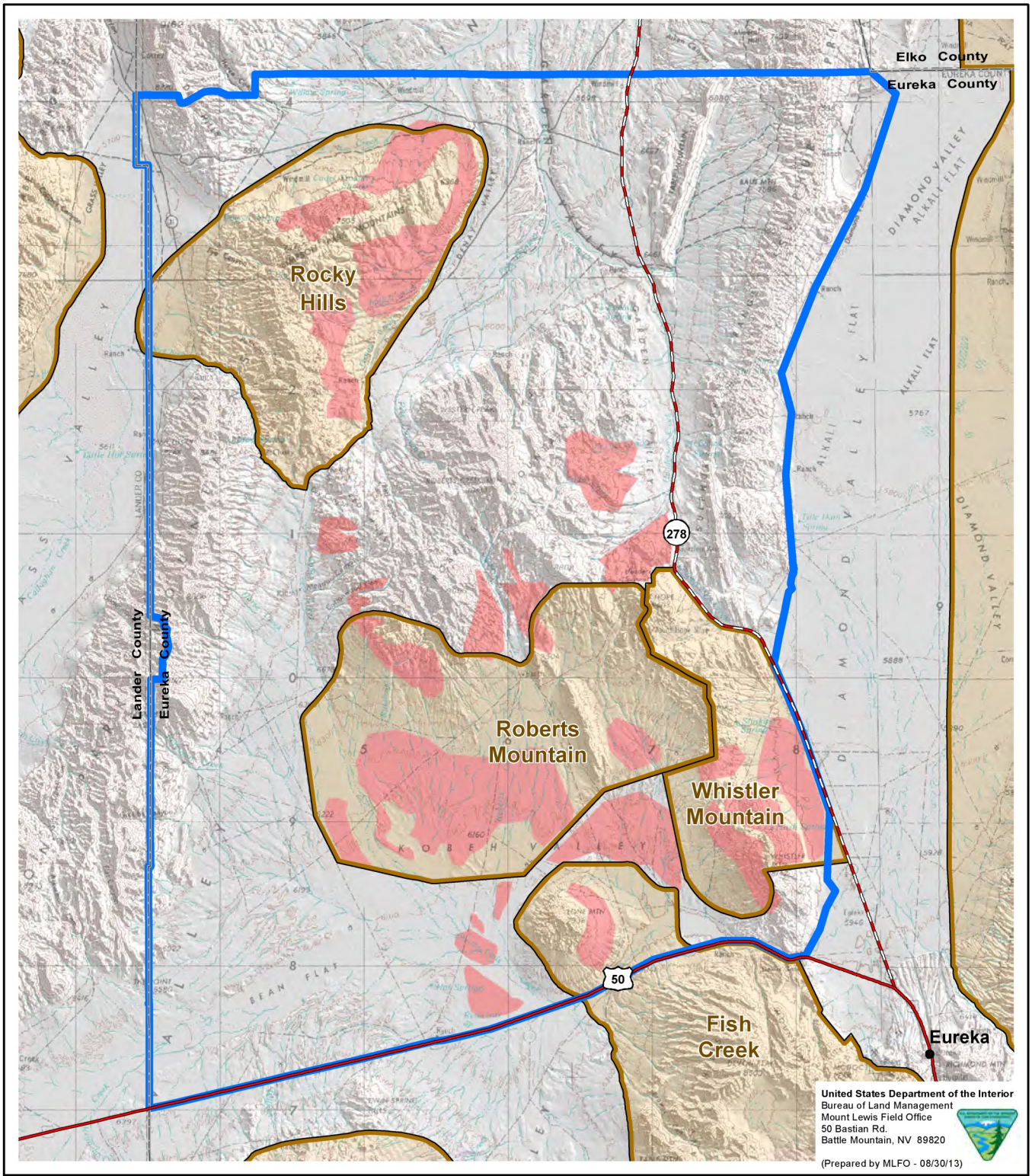
BLM wild horse gather reports, monitoring data, and inventories were used to assess conditions of wild horses and their associated HMAs, including overall herd health, population compared to Appropriate Management Level (AML), and available water sources. The *2007 Roberts Mountain Complex Wild Horse Gather Environmental Assessment*, the *Roberts Mountain Complex Final Gather and Removal Report of January 2008*, the *2008 Roberts Mountain HMA Genetic Report*, the *2008 Callaghan Complex Wild Horse Gather Environmental Assessment*, the *Callaghan Complex Gather Report of February 2009*, and the *Callaghan Complex Genetic Report of 2009* provided much of the information for this assessment (USDOI BLM 2007h, 2008k, l, 2009g, h). The *Wild Horses and Burros Management Handbook H-4700-1* (USDOI BLM 2010l) was also consulted for information on wild horse management.

The study area for assessment of direct and indirect impacts to wild horses includes the HMAs within the 3 Bars Project area as shown on **Figure 3-44**. Herd Management Areas are for long-term management of wild horses and are designated "Special Management Areas" on public lands. Establishment of HMAs must take into consideration the AML for the herd, the habitat requirements of the animals, and the relationships with other uses of public land. The objective of the management of wild horses is to limit the animals' distribution to the Herd Areas, which are areas of public lands identified as being habitat used by wild horses at the time of the passage of the Wild Free-Roaming Horses and Burros Act (43 CFR § 47000-5[d]). A herd is defined as one or more stallions and his mares and foals. The CESA area for assessment of cumulative effects includes all of the HMAs that are contained within or partially overlap the 3 Bars Project area boundary.

3.16.2.2 General Herd and Herd Management Area Characteristics

The 3 Bars Project area contains four HMAs—Fish Creek North[3], Rocky Hills, Roberts Mountain, and Whistler Mountain, totaling 246,536 acres. The HMAs are grouped into two different complexes. The Callaghan Complex consists of the Rocky Hills HMA and others not overlapped by the project area. The Roberts Mountain Complex contains the Roberts Mountain, Whistler Mountain, and Fish Creek North HMAs. Highway 50 divides Fish Creek North from Fish Creek South and precludes movement of the wild horses in the northern portion with the portion of the HMA south of U.S. Highway 50. As a result, the northern portion of the Fish Creek HMA is managed as a Complex with the Roberts Mountain and Whistler Mountain HMAs. Also included in this Complex is the Kobeh Valley Herd Area which is not currently designated as an HMA. The Kobeh Valley Herd Area surrounds the Fish Creek North HMA and wild horses pass through the Herd Area between the HMAs.

[3] The Fish Creek HMA exists on both the north and south sides of U.S. Highway 50, and is crossed by two rights-of-way fences. The portion of the HMA north of U. S. Highway 50 is referred to as Fish Creek North, though the HMA name has not yet been officially changed.



Legend

- Wild Horse Herd Management Area
- Areas Where Habitat Improvement is Needed
- 3 Bars Project Area

Source: BLM 2010m, 2012g.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-44

Wild Horse Herd Management Areas and Habitat Improvement Areas

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data.
Original data were compiled from various sources. This information may not meet National Map Accuracy Standards.
This product was developed through digital means and may be updated without notice.

Limited year-round water sources, coupled with wild horse overpopulation, have resulted in wild horse concentrations in portions of the Roberts Mountain and Rocky Hills HMAs. Herd populations frequently exceed the desired AML due to inadequate gather frequency. As a result of populations over the AML, and limited forage and water during drought years, wild horse body scores declined and emergency gathers were required in portions of the Roberts Mountain Complex in 2001 and 2008. Permanent and temporary fences throughout the Rocky Hills and Roberts Mountain HMA hinder free-roaming abilities of wild horses in these HMAs.

Sampling of both the Rocky Hills and the Roberts Mountain Complex for genetic health indicates that the genetic variability of wild horses in these herds is high due to the population sizes and mixing between herds. The history of these herds is traced back to the early settlers of the area and the saddle horses used for ranch work. Some of the horses within the Rocky Hills HMA share traits with those of curly horses introduced into Nevada in the mid-1800s.

The BLM is required to maintain an inventory of wild horses or burros on public lands. Inventories are typically conducted using aircraft, and mostly by helicopter. A systematic grid is flown of the HMA using experienced observers. A direct count is obtained along with other monitoring data such as wild horse distribution, animal health, resource condition, and availability. Inventories are conducted every 2 to 3 years. During years when an inventory is not conducted, the Mount Lewis Field Office uses an average rate of increase derived from historical herd growth across the District, which is 17.5 to 19 percent annually, although the herd growth can fluctuate from year to year and among HMAs.

3.16.2.3 Individual HMA Characteristics

Table 3-46 displays the HMAs that are within the project area, their approximate size, the established AML, and the estimated 2013 population following the spring 2013 foaling season. The most recent inventory for the Roberts Mountain Complex was completed in November 2012, with Rocky Hills completed in conjunction with the Callaghan Complex in August 2012[4].

3.16.2.3.1 Rocky Hills HMA

The Rocky Hills HMA is 50 miles southwest from Carlin, Nevada, in Eureka County. It is approximately 15 miles east to west and 13 miles north to south. The elevation ranges from 5,500 to 8,100 feet amsl. In 1999, the Trail Canyon Fire burned approximately 50 percent of the Rocky Hills HMA and forced a gather that resulted in the removal of 98 percent of the wild horse population. Three years later, 74 horses were released into the HMA, most over 9 years of age. The most recent gather in this HMA occurred in 2011 as part of the Callaghan and New Pass/Ravenswood Complex gather (USDOI BLM 2010n). The Rocky Hills HMA (in conjunction with the Callaghan Complex) has been part of a program to reduce population growth through limited removals and the application of fertility control since 2008. The objective is to return to these areas every few years to gather wild horses, re-treat the females with fertility control and remove only a few animals (primarily young animals), and release most of the population back to the range. During the most recent inventory in August 2012, it was noted that the population

[4] Annual average rate of increase used to compute the 2013 estimated population for Roberts Mountain Complex is 19 percent. The annual rate of increase used for Rocky Hills for 2013 was 12 percent. Fertility control applications are being used on the Rocky Hills HMA to reduce foaling rates.

consisted of approximately 7 percent foals, which was markedly lower than untreated populations exhibiting composition of foals ranging from 16 to 20 percent.

The Rocky Hills HMA wild horses are large horses and display a variety of colorations including paint, buckskin, grulla, appaloosa, roan, and dun. Horses may reach 16 hands (a hand is 4 inches) or taller, and may reflect some draft horse traits such as heavy muscling and large bone structure. The wild horses in the Rocky Hills HMA are descendants of the saddle horses raised by the Demale Family at the JD Ranch prior to the passage of the Wild Free-Roaming Horses and Burros Act, and may include Morgan, Saddlebred, Quarterhorse, Thoroughbred, Appaloosa, and heavier draft breeds.

TABLE 3-46

Herd Management Areas

HMA	Acreage	Appropriate Management Levels	2013 Population (estimated)
Rocky Hills	83,997	86-143	109
Fish Creek North[1]	19,300	6-10	6
Roberts Mountain	99,992	150	363
Whistler Mountain	43,247	14-24	20

[1] The portion of the Fish Creek HMA north of U.S. Highway 50 is shown in the table. The entire HMA, which extends south of U.S. Highway 50, exceeds 252,000 acres.

Wild horses within the Rocky Hills HMA have generally exhibited good health and body condition, and no issues with disease or genetic defects are known. Sex ratios and age structures are expected to be within normal ranges for wild horse herds.

The southern portion of the HMA tends to be under-utilized, with horses congregating in the northeastern portion. This is likely due to areas of thick pinyon-juniper cover and fencing that precludes wild horse access to water sources and movement in the southern portion of the HMA. Perennial streams, which may not flow year-round within the HMA, provide variable amounts of water to wild horses. Other intermittent or ephemeral drainages may provide water during periods of spring run-off or during wet years. Many areas in the northern three-quarters of the HMA have been identified as lacking or having poor water availability and quality.

3.16.2.3.2 Fish Creek North HMA

The Fish Creek HMA is located west of Eureka, Nevada. Approximately 92 percent of the HMA is located south of U.S. Highway 50 and is cut off from the north portion by highway rights-of-way fences that preclude wild horse movement. The north portion of the Fish Creek HMA, referred to as Fish Creek North HMA, was once part of the Kobeh Herd Area of which portions were designated as a part of the Fish Creek HMA and the Whistler Mountain HMA. The Fish Creek North HMA is associated with the Roberts Mountain Complex. The portion south of U.S. Highway 50 is not associated with the 3-Bars project and is not discussed further. The Fish Creek North HMA is approximately 6 miles from east to west and 5 miles from north to south. The elevation ranges from approximately 6,030 to 7,900 feet amsl. The habitat consists of pinyon-juniper, black sagebrush, Wyoming big sagebrush, and sodic bottom vegetation types that are not highly productive. Horses from this HMA were last gathered with the Roberts Mountain Complex gather in 2008.

Wild horses make intermittent use of the Fish Creek North HMA, moving through Kobeh Valley and between the Roberts Mountain, Whistler Mountain, and Fish Creek North HMAs. Despite fences, wild horses have found places to cross into the Roberts Mountain HMA (USDOI BLM 2007h). It is suspected that the Whistler Mountain and Fish Creek North herds travel into the Roberts Mountain HMA for water and to seek higher elevations in the summer months, and Whistler Mountain and Fish Creek North HMAs during winter months when deeper snow covers higher elevations. Due to the proximity of the HMA to the Roberts Mountain and Whistler Mountain HMAs, and documented movement of these horses, wild horses most closely resemble the horses within the Roberts Mountain HMA.

3.16.2.3.3 Roberts Mountain HMA

The Roberts Mountain HMA is 30 miles northwest of Eureka, Nevada, and west of Highway 278. It is approximately 10 miles east to west and 17 miles north to south. The elevation ranges from 5,500 to 7,500 feet amsl. In January 2008, a gather was conducted and 308 wild horses were removed leaving 118 to 123 in the HMA. The 2013 estimate is 363 horses, or about 210 horses above the established AML.

Perennial streams, which may not flow year-round within the HMA, provide variable amounts of water to wild horses. Other intermittent or ephemeral drainages may provide water during periods of spring run-off or during wet years. Few water sources exist in the southern and southwestern portion of the HMA. Forage in the low elevations that provides important winter range is also limited and is in a degraded state. As a result, concentrations of wild horses have been documented in portions of the HMA near available water sources, especially when the population exceeds the established AML. Additionally, wild horses move into higher elevations and into areas outside of the HMA to access water and forage. Wild horses are generally familiar with the location of fences and gates and are able to move within and outside of the HMA through gates and around drift fences (USDOI BLM 2007h). A large portion of the population exists outside of the HMA where use by wild horses has not been allocated. During the most recent inventory in November 2012, 56 percent of the wild horses were observed outside of the HMA boundary.

Wild horses of the Roberts Mountain HMA are known to have desirable traits. Size of the horses is typically larger than other wild horses, averaging 15 hands. Conformation of the animals is very good, with well-muscled shoulders and hindquarters typical of working stock ancestry. The wild horses include desirable colors including palomino, buckskin, and roan in addition to traditional colors of bay, brown, sorrel, and black. Health and body condition scoring of the Roberts Mountain HMA wild horses is typically adequate; however during drought or periods of overpopulation, forage in the lower elevation winter range becomes limited in relation to that needed to support a healthy population. This has resulted in emergency conditions in the past, specifically during the 2008 winter gather.

3.16.2.3.4 Whistler Mountain HMA

The Whistler Mountain HMA is located 10 miles northwest of Eureka, Nevada, and west of Highway 278. It is approximately 7 miles from east to west and 16 miles from north to south. The elevation ranges from 5,900 to 8,225 feet amsl. This HMA was gathered with the Roberts Mountain Complex in 2008.

Intermittent and ephemeral channels provide negligible amounts of water, and areas in the central portion of the HMA lack or have poor water quality and availability. The western portion of the HMA has been under-utilized by wild horses in the past, partially due to lack of water sources. Wild horses commonly move from the Whistler Mountain HMA into the Roberts Mountain HMA or Kobeh Valley Herd Area. Lone Mountain Spring and Treasure Well in the

Kobeh Valley (outside of the Whistler Mountain HMA boundary), are frequently utilized by wild horses from the Whistler Mountain and Fish Creek North HMAs.

No fences separate the Fish Creek North and Whistler Mountain HMAs, and horses move freely between them. Despite allotment boundary fences, wild horses have found places to cross into the Roberts Mountain HMA. It is suspected that the Whistler Mountain and Fish Creek North herds travel into the Roberts Mountain HMA for water and to seek higher elevations in the summer months, and use the lower elevations of Whistler Mountain HMA and Kobeh Valley during the winter months (USDOI BLM 2007h).

3.16.2.4 Conflicts among Wild Horses, Livestock, and Wildlife

Herd Management Areas within the project area overlap with grazing allotments (**Table 3-47**). The allocation of forage vegetation has to be adequate to support livestock, wild horses, and wildlife in a sustainable manner, otherwise forage for livestock, wild horses, and wildlife becomes degraded, as has occurred over much of the project area (**Figure 3-29)**. Typically, horses are treated very similar to livestock in terms of calculating Animal Unit Months (AUMs), and dietary overlap between wild horses and cattle is very similar. Forage vegetation and water resources are also shared with wildlife.

3.16.2.5 Population Management and Control

Wild horses have relatively few natural predators, which allow their population rates to grow at an average rate of 18 to 25 percent per year (USGS 2012c). When unchecked, this rate of increase is greater than the rangeland can provide for and will begin to negatively affect the health of wild horses as well as wildlife. The Wild Free-Roaming Horses and Burros Act requires that wild horse and burro populations be managed at levels that allow for the preservation and maintenance of a thriving natural ecological balance. Methods used to control wild horse populations include gathers and removals, adoption, and an immunocontraceptive.

TABLE 3-47

Allotments within Herd Management Areas

Herd Management Area	Allotment	Acreages	Percent of HMA	Percent of Forage Allotted to Wild Horses (estimated)
Rocky Hills	Grass Valley	33,321	40	11
	JD	50,676	60	10-17
Fish Creek North	Lucky C	19,300	100	17
Roberts Mountain	Roberts Mountain	63,995	64	10
	Three Bars	35,997	36	
Whistler Mountain	Lucky C	12,109	28	17
	Romano	31,138	72	8

USDOI BLM (2007h, 2010m).

Several contraceptive methods have been explored since 1990, but most have proven to be ineffective. One method that has been effective is the injection of an immunocontraceptive known as Porcine Zona Pelludica (PZP), which is injected into mares during horse gathers. Porcine Zona Pelludica is a desirable method of fertility control for the following reasons (USGS 2012c):

- effects passively wear off and normal fertility can resume in 3 to 4 years;
- there is no harm if injected into mares that are already pregnant;
- research suggests that PZP does not affect ovarian function or hormonal health;
- life span seems to increase (5 to 10 years) with improved health of treated mares, apparently due to the absence of stresses from pregnancy and lactation; and
- PZP may be 90 percent effective in blocking fertility in mares for up to 3 years.

3.16.3 Environmental Consequences

3.16.3.1 Key Issues of Concern Considered during Evaluation of the Environmental Consequences

Based on information in the AECC and public scoping comments, the following concerns regarding wild horses were identified and are discussed in the effects analysis.

- Competition among wild horses, livestock, and wildlife for forage and water.
- Poor health scores recorded during horse gathers.
- Effects of project actions in and around foaling areas during foaling season.
- Appropriate development of water sources to help disperse wild horses.
- The effect wild horses would have on project reclamation areas and the ability to achieve the desired goals.
- Injury or death of wild horses due to project activities.

3.16.3.2 Significance Criteria

Impacts to wild horses would be considered significant if BLM actions resulted in:

- Loss of habitat, forage, or water that results in adverse effects to the overall health of wild horses for more than 3 years after treatments.
- Interference with the historical distribution and movement patterns of wild horses within the affected HMAs.

3.16.3.3 Direct and Indirect Effects

3.16.3.3.1 Direct and Indirect Effects Common to All Action Alternatives

Restoration activities could have short-term effects on wild horses by exposing them to treatments that could harm their health, interfere with their movements, cause changes in vegetation that could alter the carrying capacity of the HMAs, or limit their access to water, which could ultimately affect their genetic health. Long term, vegetation management activities would improve the amount and quality of forage, potentially increasing the carrying capacity of the HMAs. About half of the proposed treatments would occur within HMAs, but because wild horses range outside of their HMAs, all restoration treatments in the 3 Bars Project area have the potential to benefit wild horses. The lack of high quality forage and water on the 3 Bars Project area are concerns for wild horses, thus the reader is encouraged to also read the Water Resources, Wetlands, Floodplains, and Riparian Zones, and Native and Non-

invasive Vegetation sections (Sections 3.9 to 3.11) of this EIS for more information on the adverse and beneficial effects of proposed treatments on these resources.

Adverse Effects

Forage Vegetation

Most treatment methods could result in a temporary loss of forage for wild horses. Even when vegetation is not physically damaged or removed, treated areas would require a minimum of 2 growing seasons of rest before they would be available to grazing animals and electric or other temporary fencing may be used to exclude wild horses from treatment areas, if necessary. The 2 year closure would be for areas where seeding or planting occurs. During this period, horses would have to utilize other portions of the HMA, which could increase competition with livestock and wildlife for forage.

Movement Patterns

Under the proposed action, the BLM would use temporary (usually less than 3 years) exclosure fencing to protect treatments in riparian and aspen management units. Temporary fencing generally would not impact wild horses if there is reliable water outside of the exclosure or a water gap, and interference with the movement patterns of wild horses would be negligible due to the small size of the exclosures. Temporary electric fencing could be used to protect treatment areas in sagebrush and pinyon-juniper areas for us to 2 years following treatment. Electric fencing may be used during critical times of the year or year-round if necessary.

Beneficial Effects

With increased abundance of perennial, desirable forage species, the overall quality of wild horse habitat would increase. Forage resources would be more abundant throughout the year, including during the winter months. Healthy, perennial forage species are better able to withstand drought, and would provide more abundant forage during drought. It is anticipated that treatments would reduce the risk of wildfire and resultant loss of habitat for wild horses, and move riparian vegetation communities closer to their Proper Functioning Condition and Potential Natural Community. Improved habitat would result in improved health of wild horses through heavier body weights, larger and healthier foals, and increased ability to survive during harsh winters and drought.

Forage Vegetation

Treatments that improve the quality and abundance of native forbs and grasses and reduce the cover of noxious weeds and other invasive non-native vegetation would benefit wild horses by increasing the acreage available for grazing and the quantity and quality of forage. Treatments that reduce the risk of future catastrophic wildfire through fuels reduction and construction of fire and fuel breaks would also benefit wild horses, as wildfires would cause in the loss of forage and could lead to infestations of noxious weeds and other invasive non-native vegetation in burned areas.

Health

Treatments that improve habitat quantity and quality for wild horses should result in healthier horses, reduce the need for emergency removals, increase movement patterns, and maintain and improve genetic diversity, while preserving wild horse historic traits long term.

Water Resources

Riparian treatments of springs and streams should help several streams achieve Proper Functioning Condition in the long term and improve water flows and quality. Reduced stream velocities would improve riparian vegetation health, groundwater recharge, and water quality. Streams would be stabilized and more resilient. Removal of pinyon-juniper near streams could increase stream flows. Treatments to reduce hazardous fuels, remove noxious weeds and other non-native vegetation, and restore native, fire resilient vegetation would reduce the risk of wildfire and its adverse impacts on water quantity and quality and peak flows.

3.16.3.3.2 Direct and Indirect Effects under Alternative A (Preferred Alternative)

Under Alternative A, the BLM would make substantial gains in improving forage and water quantity and quality, which would help to distribute wild horses more evenly over the 3 Bars Project area, and would improve the health of these animals.

Riparian Treatments

About 286 acres of riparian treatments would occur within HMAs, with most treatments in the Rocky Hills HMA (**Table 3-48)**. The majority of the proposed projects occur outside of the HMAs (to the north of Roberts Mountain HMA), but these treatments would also benefit wild horses as wild horses are commonly seen outside of HMAs, including on Roberts Mountains.

TABLE 3-48

Surface Disturbance by Herd Management Area for Treatment Types

HMA Name	Management Type (acres)				Total
	Riparian	Aspen	Pinyon-juniper	Sagebrush	
Fish Creek North	0	0	1,359	1	1,360
Roberts Mountain	25	0	18,572	4,352	22,950
Rocky Hills	229	0	5,611	9,175	15,014
Whistler Mountain	32	0	18,879	1,421	20,332
Total	286	0	44,421	14,949	59,656

Adverse Effects

Manual and mechanical treatments could temporarily reduce the amount of forage on the treatment site, and wild horses could experience short-term disturbances associated with mechanical noise and the presence of humans. However, since animals could leave the area during treatments, effects would be minor (USDOI BLM 2007c:4-100). Noise and other disturbances may require wild horses to find other water sources to avoid treatment activities. This could cause an increased use of other water sources and increased competition between other wild horses, livestock, and wildlife.

Prescribed fire could be used for treatments associated with the Black Spring Unit group on the Roberts Mountain and Whistler Mountains HMAs. Direct effects to horses from fires would be unlikely, as they would move out of the treatment area due to human presence and activities. Any burned areas, whether intentional or unintentional, would

result in a temporary loss of forage. Additional risks associated with the use of fire include erosion and invasion of noxious weeds and other invasive non-native vegetation. If riparian burn areas experience erosion, this could compromise water quality in associated streams. This risks would be minor, however, as only a few acres would be burned annually, if at all.

Temporary fencing would be used to exclude wild horses from riparian treatment sites, although water gaps in the fencing would allow wild horses to access water within portions of the treatment area. The BLM would also use exclosure fencing at Denay Pond to prevent wild horses from entering most of this area and allow the site to restore naturally. A gap would be provided in the fencing to allow wild horses and livestock to access a small portion of the pond.

Beneficial Effects

By stabilizing channels, revegetating treatment sites, and creating appropriate access to water sources, the BLM would reduce erosion and return riparian systems to a Proper Functioning Condition for the benefit of wild horses. Through these treatments, water quality, quantity, and duration would be improved within HMAs, with water availability improved during times of drought, including at Cadet Spring, which is an important water source for wild horses.

In areas where pinyon-juniper is removed, stream flows could increase due to reduced water uptake by pinyon-juniper; this would be beneficial to wild horses, especially during drought conditions. Downed trees could be cut into logs and logs placed into streams, slowing water flow and creating pools for use by wild horses.

Aspen Treatments

Treatments are proposed in the Simpson Park Northeast Unit, which is part of the Rocky Hills HMA. Adverse and beneficial effects from manual, mechanical, and prescribed fire treatment methods, and from the use of fencing, would be similar to those discussed under Effects Common to All Alternatives, and under Riparian Treatments.

Pinyon-juniper Treatments

About half (44,421 acres) of the pinyon-juniper treatment acres would be within HMAs (**Table 3-48**). As with other management types, treatments outside the HMAs could also benefit wild horses, as wild horses range widely within the 3 Bars Project area.

Manual and mechanical methods and prescribed fire would be used to treat vegetation on all treatment areas within the Roberts Mountain, Rocky Hills, and Whistler Mountain HMAs; only manual and mechanical methods would be used within the Fish Creek North HMA. All HMAs would receive pinyon-juniper treatments, but majority of pinyon-juniper treatment projects would occur north of the Roberts Mountain and Whistler Mountain HMAs.

Adverse Effects

Manual and mechanical treatments could temporarily reduce the amount of forage on the treatment site, and wild horses could experience short-term disturbances associated with mechanical noise and the presence of humans.

Prescribed fire could reduce the ability of the treatment area to support wild horses by removing native forbs and grasses, leading to the spread of noxious weeds and other invasive non-native vegetation and loss of forage (USDOI BLM 2007c:4-100). Wild horses are accustomed to migrating in search of food and shelter in response to climatic

variation and natural disturbances that alter food supplies, however, and the amount of area treated annually would comprise only a small portion of the HMAs.

Treatments could result in increased sediment loads into streams, and flow reduction due to use of water for fire control. The effects of treatments on water quality, and possibly on wild horse use, would be short-term in duration, with water quality returning to pre-disturbance conditions within several days or weeks after treatment is completed.

Beneficial Effects

Wild horses would benefit from treatments that encourage growth of the native forbs and grasses. Treatments would also help to move the associated ecological sites toward their Potential Natural Community, since most of the acreage within the HMAs is early- to mid-seral status. If the forage amount was increased within a given HMA, horses would likely be better distributed within the HMA (USDOI BLM 2007c:4-101). Treatments could also improve winter forage and year-round access to water, and the ability of horses to move throughout the HMAs, which should result in improved genetic health.

The BLM proposes to remove pinyon-juniper in several drainages on Roberts Mountains that serve as travel corridors for greater sage-grouse. By removing pinyon-juniper in these drainages and encouraging the establishment of grasses and forbs, the BLM would also provide forage for wild horses in these areas, and may assist wild horse movements between valley and mountain use areas.

Treatments that remove hazardous fuels and create fire and fuel breaks would also benefit wild horses by opening up additional habitat and foraging areas, as well as protecting habitat from future loss by reducing the risk of a large-scale catastrophic wildfire.

Sagebrush Treatments

About half of sagebrush treatments would occur within HMAs (**Table 3-48**). Over 90 percent of sagebrush treatment projects within HMAs would occur on the Rocky Hills (Rocky Hills Unit) and Roberts Mountains (Coils Creek, Nichols, and Roberts Mountain Pasture units) HMAs.

Adverse Effects

The types of adverse effects from manual and mechanical treatment methods would be similar to those discussed under Effects Common to All Alternatives, and under Pinyon-juniper Treatments. These include short-term loss of forage and effects on wild horses from noise and disturbance. The sagebrush treatment area overlaps with 6 miles of perennial streams and 16 springs (**Figure 3-23**; **Table 3-15**). Treatments near these streams and springs could impact water quality and flows and the BLM may exclude wild horses from portions of streams using temporary fencing.

Prescribed fire could be used on a few acres of mountain big sagebrush within Three Corners Unit to help create a mosaic of habitat types. This area is outside the HMAs but is used by wild horses. Due to the small area treated, the treatment should not impact wild horses.

The BLM would plant sagebrush seedlings and reseed with native grasses and forbs to encourage the establishment of sagebrush and herbaceous vegetation that would provide forage for wild horses. The BLM would use native seeds and plants whenever possible, but could also use non-native grasses such as crested wheatgrass. Crested wheatgrass provides forage for livestock and wild horses, especially during winter (Ogle 2006). However, the BLM could remove

crested wheatgrass and forage kochia at the Rocky Hills Unit to enhance sagebrush cover, to the potential detriment of wild horses. While only up to 50 percent of the unit would be treated, crested wheatgrass provides more forage for wild horses than does native vegetation.

Beneficial Effects

The overabundance of sagebrush in some treatment areas is one of the dominant factors responsible for ecological sites failing to meet their Potential Natural Community state. Within these sites, key grass species are often limiting or missing from the understory resulting in low quantity of forage available to wild horses, especially during winter months. Encroachment of pinyon-juniper and spread of noxious weeds and other invasive non-native vegetation are also factors contributing to the degraded condition of sagebrush habitats. By thinning sagebrush and pinyon-juniper, removing noxious weeds and invasive non-native vegetation, and seeding and planting with native vegetation, perennial forbs and grasses would be able to achieve proper abundance, and distribution, and provide greater quantity and quality forage vegetation for wild horses. These improvements should help to facilitate wild horse movement and better distribute wild horses throughout the HMAs.

Sagebrush treatments would increase understory cover of grasses and forbs that would provide forage for wild horses. Manual and mechanical treatments could result in increased water runoff and erosion, to the possible detriment of water quality and aquatic habitat. Long term, treatments should improve water flows and water quality to the benefit of wild horses. Treatments that reduce the risk of future catastrophic wildfire through fuels reduction, including removal of noxious weeds and other invasive non-native vegetation, would benefit wild horses. Uncontrolled, high intensity wildfires can damage large tracts of rangeland, reducing its suitability for grazing Treatments that restore and maintain fire-adapted ecosystems, such as the appropriate use of mechanical thinning and fire, would decrease the effects from wildfire to rangeland plant communities and improve ecosystem resilience and sustainability.

3.16.3.3.3 Direct and Indirect Effects under Alternative B (No Fire Use Alternative)

The types and magnitude of effects for manual, mechanical, and biological control treatments would be similar between Alternatives A and B. Because the BLM would not use fire, however, there would be none of the adverse effects associated with prescribed fire and wildland fire for resource benefits. In particular, prescribed fire would not contribute to degradation of wild horse habitat that could result from soil erosion, loss of forage, and spread of noxious weeds and other invasive non-native vegetation in burned areas. However, with greater reliance on mechanical methods, there may be greater disturbance to wild horses from use of mechanical equipment than would occur under Alternative A.

Acres and types of wetland and riparian habitat treated would be similar to Alternative A, and the BLM would use temporary exclosure fencing to protect treatment areas. However, fewer acres would be treated to slow pinyon-juniper encroachment into sagebrush and riparian communities, and fewer acres of habitat where sagebrush should occur based on ecological site description reference, desired state, or management objective would be restored. Thus, there would be fewer gains in habitat improvement and forage production outside of riparian zones.

Because fire would not be available to reduce hazardous fuel loads, Alternative B may pose a greater long-term risk for catastrophic wildfire due to the accumulation of fuels. The BLM would be limited in promoting more fire resilient and diverse vegetation on the 3 Bars Project area. Prescribed fire would not be used to remove downed wood and other hazardous fuels associated with thinning and removal of pinyon-juniper, thus increasing the risk of wildfire in pinyon-juniper treatment areas. These effects would not be beneficial to wild horses.

3.16.3.3.4 Direct and Indirect Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, the BLM would use manual and classical biological control methods to treat vegetation, and would treat about one-fourth as many acres as would occur under Alternative A. The types and magnitude of effects for manual treatments would be similar to those for the other alternatives. The consequences of not using fire under Alternative C would be the same as those discussed under Alternative B.

The BLM has not identified areas where it would use classical biological control, but if nematodes, insects, or fungi are used on the 3 Bars Project area, treatments would generally be small in size and effects would be localized, or if used on cheatgrass, could cover large areas of habitat that are little used by wild horses. Thus, the effects on wild horses from biological control would be minor and primarily restricted to those species using vegetation treated by these methods. The BLM would not use livestock to remove cheatgrass on Table Mountain, West Simpson Park, and Whistler Sage under Alternative C or to reduce competition from crested wheatgrass and forage kochia in the Rocky Hills Unit.

Most of the treatments under this alternative would be to thin and remove pinyon-juniper using chainsaws where it is encroaching into riparian, aspen, and sagebrush habitats. Noise and other disturbance would be less with manual methods than the other methods. Manual and biological control methods result in less land disturbance than mechanical methods and as a result, short-term adverse effects to water quality from soil erosion, and loss of non-target vegetation, would be least under this alternative.

Without the use of mechanical equipment, the BLM would not conduct stream engineering and restoration, except on a limited basis on only a few stream miles. Fewer acres of noxious weeds and other invasive non-native vegetation would be controlled and fewer acres of pinyon-juniper and sagebrush thinning and removal would be conducted to promote understory development, except on very small areas where this vegetation can be hand pulled or controlled using hand tools. Reseeding and replanting of restoration sites would be limited to small areas where shrubs and other vegetation would be planted by hand; and fire and fuel breaks to reduce the risk of fire spread would only be created near existing roads or aspen stands, or along a few miles of stream. There would be little reduction in the risk of a catastrophic wildfire.

Under Alternative C, the BLM would not substantially improve the native vegetation community nor stop the loss of important ecosystem components. Wild horse movements and distribution, and availability and quality of forage and water, would be less under this alternative than the other action alternatives. These effects would be most noticeable during drought periods, harsh winters, or during periods of overpopulation. Thus, there would be negligible improvement in wild horse genetic diversity.

3.16.3.3.5 Direct and Indirect Effects under Alternative D (No Action Alternative)

There would be no direct effects to wild horses from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would not create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; thin and remove sagebrush to promote growth of forbs and grasses; or restore fire as an integral part of the ecosystem. Without treatments to reduce fuel loading or to control cheatgrass establishment and spread, the risk of catastrophic wildfires would continue to increase; such fires could potentially lead to a catastrophic loss of wild horse habitat and create additional opportunities for invasive species to invade newly burned areas. The BLM would not conduct stream engineering and riparian habitat enhancement, and thus would do little to improve

water availability and quality for wild horses. Thus, this alternative would do little to return the 3 Bars ecosystem to its Potential Natural Community and improve the genetic health of wild horses.

3.16.3.4 Cumulative Effects

The CESA for wild horses is approximately 320,579 acres and includes the area encompassed by all of the HMAs that are contained within and partially overlap the 3 Bars Project area boundary (**Figure 3-1**). Approximately 98 percent of the CESA is administered by the BLM and 2 percent is privately owned. Past and present actions that have influenced wild horses in the 3 Bars ecosystem are discussed in Section 3.2.2.3.3.

3.16.3.4.1 Cumulative Effects under Alternative A (Preferred Alternative)

Historic overgrazing and other natural- and human-caused factors have contributed to an increase in wildfire occurrence and intensity and to a decrease in native plant diversity, specifically in the understory of the sagebrush community. This has caused many sagebrush habitats to be far below their Potential Natural Community. These actions have led to the loss of native forage to the detriment of wild horses, livestock, and wildlife. In addition, livestock congregation and concentrated use by overpopulations of wild horses near streams, springs, and wetlands, have contributed to the loss of riparian habitat and forage, and degradation of stream channels and their ability to function properly and provide abundant and high quality water for wild horses.

The BLM would continue ongoing management reviews to determine if livestock grazing management is resulting in utilization levels that are moderate to severe and adversely impact wild horse forage, and if needed, would determine if changes in the current terms and conditions of the grazing permit would be required to maintain the long-term success of the proposed treatments. Long term, wild horse management activities would include wild horse gathers, AML reviews and adjustments, removal of excess animals, fertility control, adjusting HMA boundaries, fence removal, water developments improvements, and implementation of habitat restoration projects.

These management methods would help to reduce land disturbance and restore degraded habitats, and discourage establishment and expansion of noxious weeds and other invasive non-native vegetation, to the benefit of wild horses. The BLM also proposes to install fencing to limit livestock and wild horse access to treatment areas, although water gaps would be incorporated into fencing along streams to allow livestock, wild horses, and wildlife to access water. These actions should help to improve water quality in affected streams, restore streams to Proper Functioning Condition, and improve riparian habitat.

The BLM would continue to use ground-based herbicide applications to remove noxious weeds and other invasive non-native vegetation, and may use aerial-based herbicide applications to remove cheatgrass. The BLM would also use herbicides and other treatment methods to restore burned areas under the Burned Area Emergency Stabilization and Rehabilitation program, under existing authorizations. These treatments would occur on about 1,000 acres annually and would improve rangeland health and resiliency, improve forage and water for wild horses, move vegetation communities in areas that have been disturbed by past natural and human-caused action toward their Potential Natural Communities, and reduce the risk of catastrophic wildfire.

Five herbicides are typically used on the 3 Bars Project area—2,4-D, glyphosate, imazapyr, metsulfuron methyl, and picloram. For the 3 Bars Project, it is likely that the BLM would also use imazapic to treat cheatgrass. These herbicides, along with 13 other herbicides that could be used by the BLM, generally have negligible to low risks to

wild horses at typical and maximum application rates. A more detailed discussion of the effects of herbicides on wild horses is in the 17-States PEIS (USDOI BLM 2007b:4-143).

Land development, mineral development, and oil, gas, and hydrothermal exploration and development could affect about 15,000 acres in the CESA in the reasonably foreseeable future, including about 14,200 acres of disturbance associated with the Mount Hope Project, and acreage associated with potential land sales (although it is unlikely that all of this land would be developed), materials sites, roads, and rights-of-way for roads, pipelines, and power and telephone lines.

The Mount Hope Project would have a significant impact on wild horses in the CESA, as discussed in the Mount Hope Project EIS (USDOI BLM 2012c:4-438 to 4-443). A perimeter fence would be constructed around the mine site to minimize direct impacts to wild horses from mining activities, including collisions with equipment. This fence would directly remove approximately 14,200 acres of wild horse habitat. The fenced area includes approximately 13,998 acres of designated HMAs, including portions of the Roberts Mountain HMA and the Whistler Mountain HMA. Roberts Mountain HMA wild horses would be excluded from about 7,836 acres, while Whistler Mountain HMA wild horses would be excluded from about 6,162 acres, as a result of the construction of the boundary fence. Project-related surface disturbance could also result in limiting wild horse access to developed and natural water sources in the mining area, and direct impacts could occur as a result of vehicular collisions along mine access roads.

Mine-related activities would result in direct impacts to the movement patterns of wild horses. The perimeter fence would exclude wild horses during mine operation and reclamation for approximately 70 years. Construction of the fence would result in wild horses moving to other parts of the HMA and potentially increasing the use of forage and water resources that may be already limited.

Noise disturbance, human presence, and increased vehicular traffic would be continuous for approximately 44 years during the mine project. Sudden loud noises, such as blasts, could cause wild horses to disperse in directions away from the sound. This behavior could send wild horses into unfamiliar terrain. Some wild horses may avoid the area while others may tolerate the noise and continue foraging and breeding activities in the vicinity of the mine. Distribution changes could result in concentrations of wild horses using vegetation resources in certain areas and increased utilization levels. For example, increased human disturbance and unavailable land in the Whistler Mountain HMA and east portion of the Roberts Mountain HMA could result in the population shifting to the west portion of the Roberts Mountain HMA, resulting in larger numbers of wild horses using smaller land areas. As a result, upland forage species could be heavily utilized. Some impacts could occur to wild horses during the peak foaling season if widespread human activity disturbs the population. As a result, new foals could be orphaned or abandoned.

In addition to the loss of vegetation associated with the Mount Hope Project, of particular concern is the potential drawdown of groundwater near the proposed Mount Hope Project. The mine project could have a significant impact on groundwater resources and could result in diminished surface water flows on Roberts Mountains, to the detriment of wild horses (USDOI BLM 2012c:3-438 to 3-439). In addition, the mine's perimeter fence would prohibit wild horse access to natural watering sources and forage, and this is considered a significant impact to wild horses.

As part of mitigation for the mine project, staff with the Mount Hope Project worked with the BLM to identify alternative water sources. Six locations within the Whistler Mountain and Roberts Mountain HMAs have been identified for development as water sources for wild horses and could also be used by wildlife and livestock. These sites consist of existing stock wells that are not currently functioning or do not have pumps or troughs and two new

sources tapped from production wells associated with the Mount Hope Project. These sources would provide water where it has not been available previously or where availability has been limited (USDOI BLM 2012c:3-439). These measures would help to offset potential impacts to wild horse movement, distribution, and habitat loss by providing additional water sources and improving habitat that has been underused in the past.

Upon mine closure and reclamation, the perimeter fence would be removed. The reclaimed land should have more grass and forb forage and less mature shrub forage than presently occurs. However, there would be no other actions taken to provide alternative forage for wild horses during the 70 year development, operation, and reclamation period.

Catastrophic wildfire can burn extensive acreage, particularly during drought conditions when soil and vegetation are dry. An estimated 85,000 acres would burn in the CESA during the next 20 years. To reduce this risk, hazardous fuels reduction, habitat improvement, and noxious weeds and other invasive non-native vegetation control projects would occur on about 66,000 acres within the HMAs, or about 26 percent of HMAs within the CESA (about 3 percent of the CESA annually). Treatments include stream channel restoration, removal of encroaching pinyon-juniper, thinning and removal of pinyon-juniper and sagebrush to stimulate development of grasses and forbs and reduce tree and shrub density, and creation of fire and fuel breaks.

Although the cumulative effects of human disturbance, mining and other development, and wildfire in the CESA would impact wild horse forage and water quality and quantity, treatments to improve forage and water quantity and quality, livestock adjustments, wild horse gathers, and reduction of hazardous fuels would help offset the effects, and improve wild horse habitat quantity and quality. Treatments also would improve the physical and genetic health of wild horse populations long term, and lead to a better distribution of wild horses across the HMAs within the CESA. Long-term benefits from treatments would be greater under this alternative than the other alternatives.

3.16.3.4.2 Cumulative Effects under Alternative B (No Fire Use Alternative)

Under Alternative B, effects from non-3 Bars Project reasonably foreseeable future actions on wild horses would be similar to those described under Alternative A. Under Alternative B, the BLM anticipates treating about half as many acres as under Alternative A. Fewer acres would be treated to reduce wildfire risk and its impacts on wild horse forage and water quality, including use of prescribed fire and wildland fire for resource benefit to restore natural fire regimes.

Adverse effects to vegetation within the CESA would generally be the same as described for Alternative A. However, by not using fire on the 3 Bars Project area, there would be no risks to vegetation and wild horse forage from fire on several thousand acres annually within the CESA. However, long-term benefits that could be derived from prescribed fire and wildland fire for resource benefit would not occur under this alternative, including improving pinyon-juniper health, creating a mosaic of habitats, slowing pinyon-juniper encroachment, making vegetation more fire resilient, creating openings in pinyon-juniper and mountain big sagebrush habitat to promote shrub, forb, and grass development, and reducing the risk of catastrophic wildfire to benefit wild horse habitat.

Hazardous fuels reduction and habitat improvement projects and other land uses would occur on about 37,000 acres within HMAs, or about 18 percent of HMA acreage within the CESA (1 percent annually). Short-term adverse and long-term beneficial effects from 3 Bars Project treatments would accumulate with those outside the project area, but not to the same extent as would occur with Alternative A. Restoration treatments would benefit vegetation long term, and should help to offset affects from land-use actions that are detrimental to vegetation. Thus, there would be minor

short-term adverse effects, and long-term beneficial effects, from 3 Bars Project actions. Although 3 Bars Project treatments would improve the physical and genetic health of wild horses and help to better distribute wild horses across the 3 Bars Project area, these benefits would be less than for Alternative A, particularly in light of the cumulative impacts to wild horse habitat loss that could be realized from implementation of the Mount Hope Project.

3.16.3.4.3 Cumulative Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, effects from non-3 Bars Project reasonably foreseeable future actions on wild horses would be similar to those described under Alternative A. Under Alternative C, the BLM would only use manual and classical biological control methods to treat vegetation. As a result, the BLM anticipates treating about one-fourth as many acres under this alternative than under Alternative A.

Adverse, short-term effects to vegetation associated with the use of fire and mechanized equipment would not occur under Alternative C. The risk of wildfire and its impacts on the water and vegetation used by wild horses would likely increase on the 3 Bars Project area under this alternative. The BLM would not be able to use mechanical methods and fire to reduce hazardous fuels, create fire and fuel breaks, thin and remove pinyon-juniper and sagebrush to promote more fire resilient vegetation, and remove downed wood and slash.

Under current and future authorizations, fire and mechanized equipment would be used on about 7,500 acres within other portions of the HMAs in the CESA to improve habitat, remove hazardous fuels, and reduce the risk of wildfire. Thus, restoration treatments would impact about 22,000 acres within HMAs, or about 9 percent of the HMAs in the CESA; less than 1 percent of the acreage on the CESA would be affected annually. These treatments would help to restore plant communities back to their Potential Natural Community and would improve the physical and genetic health of wild horses, but not to the extent that would occur under Alternatives A and B.

3.16.3.4.4 Cumulative Effects under Alternative D (No Action Alternative)

Under Alternative D, effects from non-3 Bars Project reasonably foreseeable future actions on wild horses would be similar to those described under Alternative A. There would be no cumulative effects on wild horses from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; slow the spread of noxious weeds and other invasive non-native vegetation using ground-based and aerial application methods of herbicides, especially cheatgrass; restore fire as an integral part of the ecosystem; and reduce the risk of a large-scale wildfire under current and reasonably foreseeable future authorized actions, but on a very limited acreage.

Based on historic treatments in the 3 Bars Project area, only about 1,500 acres would be treated annually in the CESA to reduce hazardous fuel levels and improve ecosystem health, and only about a third of these treatments would occur in HMAs. Hazardous fuel levels would likely increase, and only a limited number of miles of fuel and fire breaks would be constructed under this alternative compared to the action alternatives. The BLM would restore little riparian habitat. Thus, water quality would remain degraded and water availability could be limiting, especially during droughts, for wild horses. The trend toward large-sized wildfires of moderate to high severity in sagebrush and large stand-replacing wildfires in pinyon-juniper would likely increase. There would be few benefits to wild horse habitat, and their physical and genetic health, and comprehensive improvement to habitat components or movement patterns would not occur in the long term.

3.16.3.5 Unavoidable Adverse Effects

The proposed restoration treatments would disturb wild horses and alter wild horse movements and habitat use, and cause the short-term loss of forage used by wild horses.

3.16.3.6 Relationship between the Local Short-term Uses and Maintenance and Enhancement of Long-term Productivity

The proposed treatments would affect the availability and quality of vegetation and water. These impacts would begin to disappear within one to two growing seasons after treatment. Because only a small percentage of HMAs would be treated annually, effects would be isolated, minor, and short term.

All treatments that successfully reduce the cover of noxious weeds and other invasive non-native vegetation, thin pinyon-juniper and sagebrush to encourage growth of understory vegetation, and restore native vegetation on grazed lands would benefit wild horses by increasing the number of acres available for foraging and the quality of forage and resilience of vegetation to drought and harsh winters. Horses would also benefit from riparian treatments to increase water flows and improve water quality.

Treatments that reduce the risk of future catastrophic wildfire through fuels reduction would also benefit wild horses. Uncontrolled, high intensity wildfires can remove forage from large tracts of rangeland, reducing its suitability for wild horses. Treatments that restore and maintain fire-adapted ecosystems through the appropriate use of mechanical thinning, fire, and other vegetation treatment methods would decrease the effects of wildfire on rangeland plant communities and improve ecosystem resilience and sustainability.

3.16.3.7 Irreversible and Irretrievable Commitment of Resources

3 Bars Project treatments are not expected to result in an irreversible or irretrievable commitment of resources for wild horses.

3.16.3.8 Significance of the Effects under the Alternatives

None of the treatments under all alternatives should result in a significant long-term (greater than 5 years) loss of critical habitat, forage, or water that results in adverse direct, indirect, or cumulative effects to the overall health of wild horses, or interference with the normal distribution and movement patterns of wild horses within the affected HMAs. As discussed above, BLM treatments could have short-term effects on resources needed by wild horses, but would occur on less than 3 percent of the CESA annually. Exclosure fencing associated with this and other projects would restrict wild horse access to portions of the CESA, but most of the area that is fenced would be the 14,000 acres of sagebrush and other habitat associated with the Mount Hope Project. Under all alternatives there would be long-term improvements in forage and water resources from BLM restoration treatments, the BLM would continue to provide wild horses access to water in or near riparian zones, and exclosure fencing would be removed as soon as treatment sites are satisfactorily restored.

3.16.4 Mitigation

Wildlife resources would benefit from mitigation and monitoring measures identified in Section 3.17.4 (Livestock Grazing Mitigation). No mitigation or monitoring measures have been identified specifically for wild horses.

3.17 Livestock Grazing

3.17.1 Regulatory Framework

The 3 Bars Project area is utilized by livestock on 12 grazing allotments administered by the BLM under the Taylor Grazing Act of 1934, as amended, the Federal Land Policy Management Act of 1976, as amended by the Public Rangelands Improvement Act of 1978 Grazing Regulations, and Public Land Orders. The BLM revised their grazing regulations in 1995 in order to ensure that livestock grazing practices are conducted in a manner that sustains or improves the ecological health of public rangelands. The revised regulations led to the development of the Northeastern Great Basin Area Standards and Guidelines (Standards and Guidelines), which established standards of rangeland health and livestock grazing. The intention of the Standards and Guidelines is to create a balance between sustainable development and multiple use while progressing towards desired rangeland conditions. The standards developed to achieve these conditions are as follows (USDOI 2007b):

Standard 1. Upland Sites: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and land form.

Standard 2. Riparian and Wetland Sites: Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

Standard 3. Habitat: Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet the life cycle requirements of threatened and endangered species.

Standard 4. Cultural Resources: Land use plans would recognize cultural resources within the context of multiple use.

Standard 5. Healthy Wild Horse and Burro Populations: Wild horses and burros exhibit characteristics of a healthy, productive, and diverse population. Age structure and sex ratios are appropriate to maintain the long-term viability of the population as a distinct group. Herd management areas are able to provide suitable feed, water, cover and living space for wild horses and burros and maintain historic patterns of habitat use.

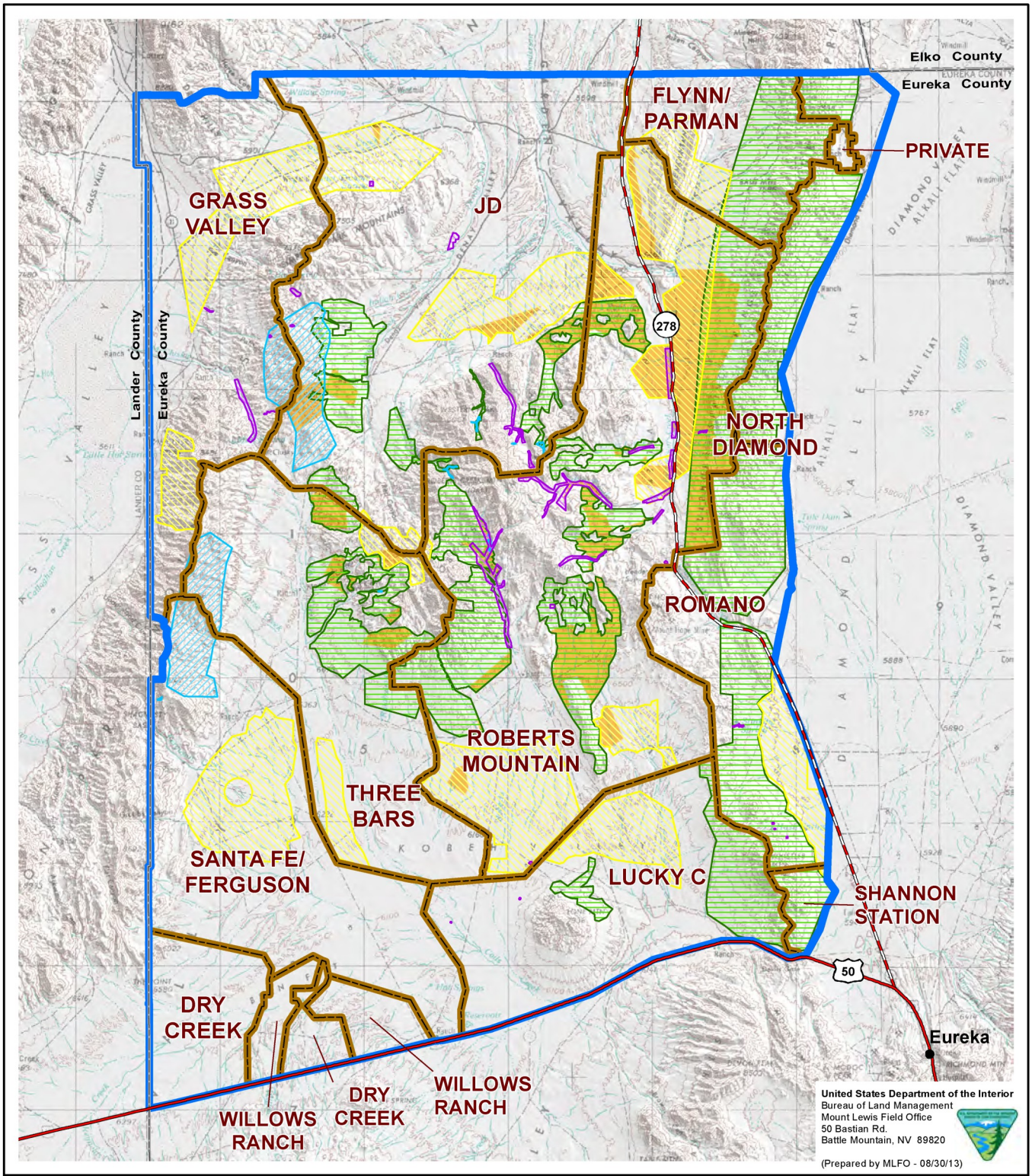
3.17.2 Affected Environment

3.17.2.1 Study Methods and Study Area

Allotment acreage, AUMs, and livestock information (number, type, and season of use), were from the BLM. The study area for assessment of direct and indirect impacts to livestock and rangeland conditions is the 3 Bars Project area. The CESA for assessment of cumulative effects includes any allotment or portion of an allotment that is within the 3 Bars Project area.

3.17.2.2 Grazing Allotments

The 3 Bars Project area is made up of 12 grazing allotments on BLM-administered land (**Figure 3-45**). **Table 3-49** lists the allotments, total acreage, active AUMs, average acres per AUM, type of livestock, and season of use on the 3 Bars Project area. One AUM is the amount of forage required by an animal unit (AU) for 1 month, or the tenure of



Legend

- Moderate to Severe Range Use
- Allotment Boundary
- 3 Bars Project Area
- Pinyon-juniper Treatment Area
- Sage Treatment Area
- Aspen Treatment Area
- Riparian Treatment Area

Source: BLM 2011g, 2013i.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-45

Range Use and Treatment Areas

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data.
Original data were compiled from various sources. This information may not meet National Map Accuracy Standards.
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one AU for a 1-month period. If one AU grazes on an area of rangeland for 6 months, that tenure is equal to 6 AUs for 1 month or 6 AUMs. In general, the number of animal units, multiplied by the number of months they are on the range, equals the number of AUMs used (Ruyle and Ogden 1993).

TABLE 3-49

Grazing Allotments within the 3 Bars Ecosystem

Allotment Name - Number	3 Bars Project[1]	All Public Lands[2]				
	Total Acres	Total Acres	Active AUMs	Average Acres/AUM	Livestock Type	Season of Use
Three Bars - 00064	76,893	76,893	5,840	13	Cattle and Sheep	3/1-2/28
Dry Creek -10036	24,402	94,580	5,702	26	Cattle and Horse	3/1-1/31
Flynn/Parman - 10039	28,841	28,841	1,357	22	Cattle	3/15-11/30
Grass Valley - 10006	70,118	268,149	17,700	16	Cattle and Horse	1/1-1/31, 3/1-11/30
JD - 10041	140,740	140,740	7,921	12	Cattle	5/1-1/31
Lucky C - 10043	62,082	113,844	3,051	28	Cattle	4/15-2/28
North Diamond - 10034	22,846	76,950	3,579	22	Cattle	5/1-1/31
Roberts Mountain - 10046	164,079	164,079	9,624	16	Cattle and Sheep	1/1-12/31
Romano - 10047	47,829	75,847	2,887	26	Cattle	5/1-12/31
Santa Fe/Ferguson - 10049	76,504	83,480	5,202	16	Cattle and Sheep	3/1-12/1
Shannon Station - 10051	4,173	31,518	2,520	10	Cattle	4/1-2/28
Willows Ranch - 00062	10,678	51,421	3,621	18	Cattle	5/1-1/14

[1] Data reflect only the portion of the allotments on public land and do not include private lands within the 3 Bars Project area.
[2] Includes public and private lands within the 3 Bars Project area, and lands outside the project area.

3.17.2.3 Grazing Management Systems

Grazing management systems determine how long livestock are allowed to graze in a given pasture or area. The lack of a management system can lead to the over use of areas that are more desirable to livestock (near water sources, riparian zones, preferred vegetation types, etc.) and ultimately degrade the area and its ability to produce quality forage. The use of various grazing rotation systems can achieve a more even use of rangelands and ensure a healthier rangeland with an increased ability to produce quality forage. Factors that are typically considered when developing a grazing rotation management system include grazing intensity, frequency, season of use, plant vigor and timing of growth, re-growth, seed production, and soil susceptibility to compaction. Fencing, salt and mineral supplements, and artificial water sources can all be used to encourage livestock to utilize different areas or pastures. **Table 3-50** presents the management system for each grazing allotment within the project area. A description of grazing management systems follows (Wyman et al. 2006).

Rotation System - Scheduled movement of grazing animals from one pasture to another.

Rest-rotation System - Any grazing system that provides for the rotation of rest among pastures. The period of rest can be for a full year or more, or a portion of the growing season. The time and length of rest generally changes each successive year.

Voluntary Rotation System - Movement of grazing animals in which the permittee volunteers to a more conservative grazing management approach that is given in the grazing management plan. This approach is developed in cooperation with the BLM to provide benefits to the permittee and to resources managed by the BLM.

TABLE 3-50

Allotment Grazing Management System and Category

Allotment	Management System	Number of Pastures	Management Category
3 Bars - 00064	Rest Rotation System	5	Improve
Dry Creek -10036	Rotation System	10	Improve
Flynn/Parman - 10039	Rest Rotation System	3	Improve
Grass Valley - 10006	Rotation System	24	Improve
JD - 10041	Rotation System	8	Maintain
Lucky C - 10043	Rotation System	4	Custodial
North Diamond - 10034	Rotation System	7	Custodial
Roberts Mountain - 10046	Rest Rotation System	19	Improve
Romano - 10047	Rotation System	10	Improve
Santa Fe/Ferguson - 10049	Voluntary Rotation System	1	Improve
Shannon Station - 10051	Rest Rotation System	8	Improve
Willow Ranch - 00062	Rest Rotation System	9	Maintain

3.17.2.4 Grazing Management Categories

In allotments where use areas have not been established, there is not a requirement for the cattle to move through the allotment according to specific dates. It is up to the permittee to voluntarily rotate his cattle through the allotment in order to maintain appropriate distribution and utilization rates. Criteria used to assign each of these management approaches are as follows:

Improve - Allotments generally have the potential for increasing resource production or conditions but are not producing at that potential. There may be conflicts or controversy involving resource conditions and uses, but there are realistic opportunities to improve resource conditions.

Maintain - Allotments are in satisfactory resource condition and are producing near their potential under existing management strategies. There are little or no known resource use conflicts or controversies.

Custodial - Allotments usually consist of relatively small acreages or parcels of public land. Acreages often intermingled with larger amounts of non-federal lands. There should be no known resource conflicts involving use or resource conditions. Typically, opportunities for positive economic returns from public investments are limited on these lands.

3.17.2.5 Range Improvements

The range improvements constructed within the project area include fencing, corrals, gates, cattle guards, and water improvement/supply projects. **Table 3-51** summarizes the improvements that occur in the affected allotments within the 3 Bars project area.

3.17.2.6 Allotment Evaluation Status

Rangeland health studies were conducted on six allotments between December 2010 and September 2011. As discussed in Section 3.11.2.3, Seventy Key Management Areas (KMAs) within these allotments were assessed for their ecological status. These areas were selected because they met the following criteria:

- representative of larger areas of interest;
- contained within a single ecological site and plant community;
- contain key species; and
- capable of responding to management action that would be indicative of a response on a larger scale.

TABLE 3-51

Rangeland Improvements by Allotment

Allotment	Cattle Guard	Fencing (miles)	Corral	Gate	Spring	Man-made Water Supply[1]
Dry Creek	1	25				4
Flynn/Parman		37				
Grass Valley	4	126	1	4	36	8
JD	6	143	4	4	4	4
Lucky C		29				
North Diamond		42				
Roberts Mountain	2	159				
Romano		14				
Santa Fe / Ferguson		50	2			3
Shannon Station		<1				
Three Bars	6	67			13	1
Willows Ranch		21				1

[1] Includes reservoir, stock tank, and troughs.

The results of these studies were released in the *Final 3 Bars Ecosystem and Landscape Restoration Project Rangeland Health Report* (Eastern Nevada Landscape Coalition and AECOM 2012) and are summarized below. The analysis focused on the assessment of individual KMAs within each allotment and the condition of the KMA was extrapolated to the area within an allotment for which it represents. Within these KMAs, three parameters were used to measure overall rangeland health—production, desired dominant species, and Potential Natural Community for grass, forb, and shrub species. This report provides an overview assessment of rangeland health in the 3 Bars ecosystem as well as a more detailed analysis of six allotments that span the project area from the northern to southern

extent. Current rangeland conditions are shown in **Figure 3-45**, and are in part based on this assessment and show that about 6 percent of the 3 Bars Project area has moderate to severe range use.

3.17.2.6.1 Flynn/Parman Allotment

The current grazing decision for the Flynn/Parman/Jiggs allotments was made on September 21, 1993. Approximately 28,860 acres of the allotment within the 3 Bars Project area are administered by the BLM. Six KMAs were studied within this allotment (**Table 3-32**). FP2 and FJ2 are within burn areas, the remaining four are not. Grass production and the desired dominant species were low or absent on five sites. Shrub production was low on five sites and the presence of desired dominant species was low or absent on five sites.

3.17.2.6.2 Roberts Mountain Allotment

The current grazing decision for the Roberts Mountain Allotment was made on October 20, 1994. Approximately 164,079 acres of the allotment are within the 3 Bars Project area and administered by the BLM. Sixteen KMAs were studied within this allotment (**Table 3-33**). RM9 and RM108 are within crested wheatgrass seeding areas and RM11 is within an herbicide treatment area. Grass production and/or Potential Natural Community were low in every KMA.

3.17.2.6.3 JD Allotment

The current grazing decision for the JD Allotment was made on September 24, 1994. A Transfer of Grazing Preference occurred on November 16, 2012. Approximately 140,749 acres of the allotment are within the 3 Bars Project area and administered by the BLM. Nineteen KMAs were studied within this allotment (**Table 3-34**). JD2, JD9, JD10, and JD15 are in burned areas. JD4 and JD5 are in the Willow Creek and Gabel Canyon seeding areas (1961 and 1964, respectively). The allotment has low grass production and lacks desired dominant grass species. Several areas lack desired dominant forb or shrub species.

3.17.2.6.4 Three Bars Allotment

The current grazing decision for the Three Bars Allotment was made on October 20, 1994. Approximately 76,900 acres of the allotment are within the 3 Bars Project area and administered by the BLM. Fifteen KMAs were studied within this allotment (**Table 3-35)**. Key Management Area TB19 is within the Trail Canyon Fire burn area. The allotment has low grass production and desired dominant species are low or absent. Some areas are below the Potential Natural Community for forbs and shrubs and lacks the desired dominant species.

3.17.2.6.5 Romano Allotment

The current grazing decision for the Romano Allotment was made on September 27, 2004. Approximately 50 percent of the allotment (47,828 acres) is within the 3 Bars Project area and administered by the BLM. Nine KMAs were studied (**Table 3-36)** within the project area. Within this area, four seeding efforts have occurred. KMA RO7 and RO4B are within seeding areas. The allotment has low grass production and desired dominant species are low or absent. Several areas lack the desired forb species.

3.17.2.6.6 Lucky C Allotment

The current grazing decision for the Lucky C Allotment was made on September 27, 2004. Approximately 55 percent (62,082 acres) of the allotment is within the 3 Bars Project area and administered by the BLM. Of that portion, 1,078 acres are private land. Five KMAs were studied (**Table 3-37**). All are on the portion of the allotment that is within the

3 Bars Project area and administered by the BLM. Overall, the allotment has low grass production and various KMAs were rated low to absent for forb or shrub species.

3.17.2.6.7 Dry Creek Allotment

The grazing permit renewal for the Dry Creek Allotment was made on October 10, 2007. Approximately 24,403 acres of the allotment are within the 3 Bars Project area and administered by the BLM. Upland vegetation field observations indicate that appropriate perennial grass understory is lacking at all elevations. In the lower elevations, the perennial grass understory is typically limited to Sandberg's bluegrass.

3.17.2.6.8 Grass Valley Allotment

The current grazing decision for the Grass Valley Allotment was made on June 21, 2002. Approximately 74,469 acres of the allotment is within the 3 Bars Project area and administered by the BLM. Field surveys conducted in 1998 indicated that overall production of perennial grasses was below the site potential. Shadscale production was below site potential on the majority of sites surveyed. Additionally, Wyoming big sagebrush was experiencing die-off and cheatgrass was present to varying degrees in the lower- and mid-elevation ranges. A portion of the Grass Valley Allotment burned in the 1999 Trail Canyon Fire and some burn areas are infested with cheatgrass.

3.17.2.6.9 North Diamond Allotment

The current grazing decision for the North Diamond Allotment was made on January 5, 2000. Approximately 22,846 acres of the allotment are within the 3 Bars Project area and administered by the BLM. Surveys conducted in 1998 found that over 80 percent of the desired dominant grass species were below the Potential Natural Communities for the site, however, they were present on three of the five sites surveyed. These species included Indian ricegrass, needle-and-thread, bluebunch wheatgrass, and basin wildrye. On one area, 100 percent of the antelope bitterbrush was mature or decadent and there was no recruitment. Additionally, cheatgrass was prevalent in the lower elevation understory.

3.17.2.6.10 Santa Fe/Ferguson Allotment

The current grazing decision for the Santa Fe/Ferguson Allotment was implemented by the Shoshone-Eureka RMP on November 6, 1987 and the Shoshone-Eureka Rangeland Program Summary in 1988. Approximately 76,514 acres of the allotment are within the 3 Bars Project area and administered by the BLM. This allotment has not been evaluated by the BLM.

3.17.2.6.11 Shannon Station Allotment

The current grazing decision for the Shannon Station and Spanish Gulch Allotment was made on January 5, 2000. Approximately 4,173 acres of the allotment are within the 3 Bars Project area and administered by the BLM. Surveys conducted in 1998 indicated that desired dominant grass species were present at six of nine sites surveyed. These species included Indian ricegrass, needle-and-thread, and bluebunch wheatgrass. Cheatgrass comprised approximately 25 percent of the understory community.

3.17.2.6.12 Willow Ranch Allotment

The current grazing decision for the Willow Ranch Allotment was made on May 18, 1994. Approximately 10,678 acres of the allotment are within the 3 Bars Project area and administered by the BLM. An allotment evaluation hasn't

been conducted for the Willow Ranch Allotment since 1994. At that time, it was determined that overgrazing was compromising the health of the allotment. The Final Multiple Use Decision that followed the evaluation reduced the permitted AUMs by 1,749 to 3,621.

3.17.3 Environmental Consequences

3.17.3.1 Key Issues of Concern Considered during Evaluation of the Environmental Consequences

Based on information in the AECC and public scoping comments, the following concerns regarding livestock grazing and rangeland conditions were identified and are discussed in this impact analysis:

- Impacts on ranching operations as a result of livestock exclusion areas.
- Effects of livestock on project reclamation areas and the ability to achieve desired goals.

3.17.3.2 Significance Criteria

Impacts to livestock would be considered significant if BLM actions resulted in:

- Long-term (greater than 10 years) change in forage availability that measurably affects livestock grazing.
- Long-term (greater than 5 years) change in access to water that measurably affects livestock grazing.

3.17.3.3 Direct and Indirect Effects

3.17.3.3.1 Direct and Indirect Effects Common to All Action Alternatives

Vegetation management activities could affect livestock by exposing them to treatments that could harm their health, interfere with their movements, cause changes in vegetation that could positively or negatively alter the carrying capacity of the allotments, or limit their access to water. Alternately, vegetation management activities could improve the amount and quality of forage, potentially increasing the carrying capacity of the allotments. Lack of high quality forage and water on the 3 Bars Project area are concerns for livestock, thus the reader is encouraged to also read the Water Resources, Wetlands, Floodplains, and Riparian Zones, and Vegetation sections (Section 3.9 to 3.11) of this EIS for more information on the adverse and beneficial effects of proposed treatments on these resources.

Adverse Effects

Forage Vegetation

Most treatment methods would result in a temporary loss of forage available to livestock. Even when vegetation is not physically damaged or removed, treatment areas would require a minimum of 2 growing seasons of rest if they are reseeded or replanted before they would be available to livestock (see Section 3.17.4 for mitigation measures related to livestock closures). This period could be extended if the project area experiences prolonged drought conditions. During this period ranch operators would have to utilize other portions of the affected allotments. This could have the potential to temporarily reduce the number of livestock that an allotment could carry or necessitate providing salt and mineral supplements.

Health

Livestock injury or death could occur as a result of project activities, most likely from a vehicle-livestock collision. It is also possible that exclusion fencing around treatment areas could cause injury to livestock if they run into the fence or try to breach the fence. Livestock could be excluded from treatment areas during the treatment to reduce risk of harm from prescribed fire and other treatments. Equipment operators would be required to travel at speeds less than 25 miles per hour while traveling to and from work sites on the 3 Bars Project area to reduce the risk of accidental collision with livestock.

Movement Patterns

Under the proposed action, the BLM could use temporary (less than 3 years) exclosure fencing to protect treatments in riparian and aspen management units. Temporary fencing generally does not harm livestock if there is reliable water outside of the exclosure or if gaps are created in the exclosure to allow livestock to access portions of the water source. Temporary exclosure fencing could interfere with livestock use of treatment areas and could interfere with the movement patterns of livestock. Other treatment areas could be closed to livestock for at least 2 growing seasons after treatment.

Water Resources

Treatments would result in short-term water quality degradation from soil erosion and sedimentation of streams. Exclosure fencing would be used to restrict livestock access to riparian treatment areas for at least 2 years to allow treatment areas to stabilize and to encourage growth of native vegetation. Efforts would be made to ensure that livestock have access to stream water by providing water gaps, or by providing livestock access to the stream downstream from the treatment area.

Beneficial Effects

Forage Vegetation

Treatments that successfully improve the quality and abundance of native forbs and grasses, and reduce the cover of noxious weeds and other invasive non-native vegetation on rangelands, would benefit livestock. In addition, some noxious weeds are poisonous to livestock. The success of noxious weeds and other invasive non-native vegetation removal would determine the level of benefit of the treatments over the long term. Treatments that reduce the risk of future catastrophic wildfire through fuels reduction and construction of fire and fuel breaks would also benefit livestock. Wildfires would result in the loss of forage and could lead to infestations of noxious weeds and other invasive non-native vegetation in burned areas.

Health and Movement Patterns

Treatments that improve woodland, rangeland, and riparian health, productivity, and functionality would benefit livestock. Risks to livestock health and movement from temporary fencing could be reduced by removing temporary fencing from treatment areas as soon as areas have stabilized and native vegetation has reestablished on the site.

Water Resources

The Grass Valley, JD, Lucky C, Roberts Mountain, and Romano allotments could all receive riparian treatments. Riparian treatments should help several streams achieve Proper Functioning Condition and improve water flows and

quality to the benefit of livestock. Removal of pinyon-juniper near streams could increase stream flows. Treatments to reduce hazardous fuels, remove noxious weeds and other invasive non-native vegetation, and restore native, fire resilient vegetation, would reduce the risk of wildfire and its adverse impacts on forage and water quality and quantity to the benefit of livestock.

3.17.3.3.2 Direct and Indirect Effects under Alternative A (Preferred Alternative)

Riparian Treatments

The BLM has identified about 3,885 acres of riparian zone treatments. Of these, about 2,731 acres of treatment would occur on the Roberts Mountain Allotment, 547 acres on the JD Allotment, and 319 acres on the Grass Valley Allotment (**Table 3-52)**. Adverse effects from manual treatments would be similar to those discussed under Effects Common to All Alternatives. Use of mechanical treatments could negatively affect plants by compacting soils, creating bare ground, and uprooting desirable species, and could temporarily reduce the amount of forage on the treatment site.

Prescribed fire could be used for treatments associated with the Black Spring Unit, Henderson above Vinini Confluence Unit, and Frazier Creek Unit groups, although it would be primarily used on units that are 100 acres or larger. Over the short term, prescribed fire would likely reduce the cover of grass and forb species available to livestock. Livestock would be relocated during the treatment, even though the disturbance associated with treatment actions would typically cause livestock to leave the area. If fuels are anticipated to be insufficient to carry a prescribed fire, livestock grazing would be deferred for the growing season prior to the treatment. In addition, livestock would need to be kept off of treated areas for at least 2 growing seasons after a prescribed fire, and seeding if needed, to give forage ample time to recover (USDOI BLM 2007c:4-96). Direct effects to animals from fires would be unlikely, as they would be relocated from the treatment area. Prescribed fire treatments present the risk of the burn spreading to unintended areas and potentially harming livestock. Additional risks associated with the use of fire include erosion and invasion of noxious weeds and other invasive non-native vegetation. If riparian burn areas experience issues with erosion, the treatment area would likely compromise water quality in associated streams. Invasion of noxious weeds and other invasive non-native vegetation would require additional treatment for eradication. These risks would be minor, however, as only a few acres of riparian habitat would be burned annually, if at all.

Fencing would be used to exclude livestock from riparian treatment sites for a minimum of 2 years to allow riparian conditions to stabilize. The BLM would provide water gaps within the fencing to allow livestock to access portions of the stream within the treatment area.

Beneficial Effects

Beneficial effects from manual treatments and fencing would be similar to those discussed under Effects Common to All Alternatives.

All treatments would help to improve riparian habitat and forage and drinking water for livestock. Treatments would also reduce the risk of future catastrophic wildfire through fuels reduction, removal of pinyon-juniper, and creation of fire and fuel breaks to the benefit of livestock. Because of these actions, it is anticipated that riparian vegetation communities would move closer to the Potential Natural Community.

TABLE 3-52

Acreage Affected by Treatment Types for each Allotment under Alternative A

Allotment Name	Treatment Type				Total
	Riparian	Aspen	Pinyon-juniper	Sagebrush	
	Acres	Acres	Acres	Acres	Acres
Three Bars	0	0	10,909	996	11,905
Dry Creek	0	0	0	0	0
Flynn/Parman	0	0	5,361	1,538	6,899
Grass Valley	319	0	0	7,435	7,754
JD	547	62	10,009	6,091	16,709
Lucky C	4	0	8,624	1,519	10,147
North Diamond	0	0	7,157	0	7,157
Roberts Mountain	2,731	77	30,153	9,699	42,660
Romano	32	0	16,394	1,341	17,767
Santa Fe/Ferguson	8	8	0	2,680	2,696
Shannon Station	0	0	2,880	16	2,896
Willow Ranch	0	0	0	0	0
Total	3,641	145	91,489	31,315	122,948

Manual and mechanical treatments would occur on areas where historic livestock use has damaged stream channels and adjacent meadows. Because of the loss of structural integrity in some stream channels, stream velocities have increased over historic levels, nutrient-rich sediment is not being delivered to riparian vegetation, and there is less groundwater recharge within the floodplains. By stabilizing channels and revegetating treatment sites, the BLM would reduce erosion, return riparian systems to a Proper Functioning Condition, and create appropriate access to water sources by providing water gaps within the fencing.

In areas where pinyon-juniper is removed, stream flows could increase due to reduced water uptake and capture of rainfall by pinyon-juniper. This would be beneficial to livestock, especially during drought conditions. Downed trees could be cut into logs and logs placed into streams, slowing water flow and creating pools for use by livestock. Stream channel restoration, removal of pinyon-juniper, and removal of noxious weeds and other invasive non-native vegetation would allow riparian zones to function as fire breaks, helping to reduce the risk of wildfire to riparian zones and loss of forage and degradation of water quality, all of which would benefit livestock.

Aspen Treatments

Adverse and beneficial effects from manual, mechanical, and prescribed fire treatment methods, and from the use of fencing, would be similar to those discussed under Effects Common to All Alternatives, and under Riparian Treatments. Treatments would occur in the JD, Roberts Mountain, and Santa-Fe Ferguson allotments.

Pinyon-juniper would be removed near aspen stands and nearby roads. These clearings would function as fire breaks, helping to reduce the risk of wildfire to aspens and nearby habitats and degradation of water quality and loss of forage to the benefit of livestock.

Pinyon-juniper Treatments

Treatments would occur on most allotments, with largest treatment acreages on the Roberts Mountain, Romano, JD, and Three Bars allotments (**Table 3-52**).

Adverse Effects

Effects from manual and mechanical treatments would be associated with loss of forage and disturbance. About 57 percent of treatments where the objective is to improve sagebrush habitat by thinning pinyon-juniper, and 37 percent of the treatments where the objective is to reduce hazardous fuels, would occur in Phase I stands. For the entire 3 Bars Project area, about 40 percent of treatments would be in Phase I stands. These treatments would have minimal impact on livestock as there would be little loss of forage that is of value to livestock, and disturbance would be localized.

The remainder of treatments would occur in Phase II and III stands. Livestock use pinyon-juniper for shelter and cover, but generally avoid Phase III stands because of the limited forage and dense cover of pinyon-juniper. Several thousand acres could be treated annually in Phase II and III stands, primarily by using prescribed fire. Prescribed fire could reduce the suitability of the treatment site to support livestock by removing native forbs and grasses. Fires could also lead to the spread of noxious weeds and other invasive non-native vegetation and loss of forage (USDOI BLM 2007c:4-100). Treatment areas would be closed to livestock for a minimum of 2 years. Based on past monitoring of prescribed fire treatment sites on the 3 Bars Project area, native vegetation should recover within a few years and establishment and spread of noxious weeds and other invasive non-native vegetation should be minimal (USDOI BLM 2011e, f).

Thirteen miles of perennial stream treatments are associated with pinyon-juniper management projects. Treatments could result in increased sediment loads into streams and flow reduction due to use of water for fire control. The effects of treatments on water quality, and possibly on livestock use, would be short-term in duration, with water quality returning to pre-disturbance conditions within several days or weeks after treatment is completed.

Beneficial Effects

Manual and mechanical treatments would improve forage availability and quality for livestock. In pinyon-juniper treatment areas, livestock would benefit from the thinning and burning of pinyon-juniper and thinning of sagebrush, as these treatments would encourage growth of the native forbs and grasses favored by livestock and help to move the associated ecological sites toward their Potential Natural Community. Most of the acreage within the allotments is early- (51 percent) or mid-seral (31 percent) status.

The BLM proposes to remove pinyon-juniper in several drainages on Roberts Mountains that serve as travel corridors for greater sage-grouse. By removing pinyon-juniper in these drainages and encouraging the establishment of grasses and forbs, the BLM would provide forage for livestock in areas once dominated by pinyon-juniper, and may facilitate livestock movements between valley and mountain use areas. Removal of pinyon-juniper near streams and springs could lead to increased flows and improved water supply for livestock.

In many cases, prescribed fire would benefit livestock by reducing the cover of shrub and tree species, such as sagebrush and pinyon-juniper, which can form dense stands that preclude the establishment of desirable forage species and create physical obstructions to forage. The effect of fire on forage would vary by site. Fires conducted during the dormant season, under moist conditions, would be likely to stimulate forage production (e.g., through

increasing soil temperature and nutrient availability) and favor perennial grasses with greater palatability (USDOI BLM 2007c:4-96).

Treatments that reduce the risk of future catastrophic wildfire through fuels reduction would also benefit livestock. Uncontrolled, high intensity wildfires can damage large tracts of rangeland, reducing its suitability for livestock grazing. Wildfires typically occur during drought conditions, when burning rangeland magnifies the drought stress of forage species and hampers their recovery. Treatments that restore and maintain fire-adapted ecosystems, such as the appropriate use of mechanical thinning and fire, would decrease the effects of wildfire on rangeland plant communities and improve ecosystem resilience and sustainability (USDOI BLM 2007c:4-96). Manual and mechanical treatments would also be used to create many miles of fire and fuel breaks in all management types to help compartmentalize wildfire effects and limit the spread of wildfire.

Sagebrush Treatments

About two-thirds of treatments would occur in the Roberts Mountain, Grass Valley, and JD allotments (**Table 3-52**). Sagebrush communities over most of the area are not meeting their Potential Natural Community objectives primarily due to an inadequate perennial grass and forb understory.

On about a third of sagebrush management acres (Alpha group), the BLM would thin sagebrush to open up the canopy to promote the development of forbs and grasses in the understory using manual and mechanical methods. These treatments would be associated with the Roberts Mountain (3,976 acres), Santa Fe/Ferguson (2,680 acres), JD (2,189 acres), and Lucky C (1,519 acres) allotments. These treatments are also associated with areas where key species composition or production is below the Potential Natural Community. The Lucky C and Santa Fe/Ferguson allotments, in particular, are dominated (over 80 percent) by early seral state vegetation.

The BLM would thin pinyon-juniper in sagebrush communities at the Table Mountain 1 (Roberts Mountain Allotment), Three Corners (JD and Roberts Mountain allotments), and Whistler Sage (Romano Allotment) units. These treatments would remove encroaching pinyon-juniper and promote sagebrush development.

The remainder of treatments would be associated with treatments to remove non-native vegetation, including cheatgrass, crested wheatgrass, and forage kochia, using all treatment methods on the Rocky Hills, Table Mountain, West Simpson, and Whistler Sage units. Rocky Hills Unit treatments would be associated with the Grass Valley (5,477 acres) and JD (3,698 acres) allotments. Table Mountain treatments would be associated with the Roberts Mountain (5,682 acres) and Flynn/Parman allotments (1,538 acres). Whistler Sage treatments would mostly be associated with the Romano Allotment; a few acres would be associated with the Shannon Station Allotment. All but about 5 of the 1,958 acres of treatments associated with West Simpson Park would be on the Grass Valley Allotment. Because of the predominance of non-native vegetation over this acreage, early seral stage vegetation occurs on more than 80 percent of the Flynn/Parman Allotment; and more than 80 percent of the acreage is in early- and mid-seral state on the Grass Valley and JD allotments.

Adverse Effects

Effects from manual and mechanical treatments would be associated with loss of forage and disturbance. Prescribed fire could be used on a few acres of mountain big sagebrush within the Three Corners Unit to help create a mosaic of habitat types. This area is in the JD, Roberts Mountain, and 3 Bars allotments. Due to the small area treated, the loss of forage for livestock would be negligible. Prescribed fire could also be used to remove cheatgrass on the Table Mountain and West Simpson Park units. Livestock would be removed from these units prior to treatment, and would

be kept off of the site for 2 or more years following treatment. If not carefully monitored, it is possible that noxious weeds and other invasive non-native vegetation could reinvade sites, to the detriment of livestock. On the Rocky Hills Unit, the BLM would remove crested wheatgrass and re-seed or re-plant the area with sagebrush. This would result in the loss of forage for livestock, and would require that the BLM temporarily suspend AUMs during the treatment.

Beneficial Effects

The overabundance of sagebrush is one of the dominant factors responsible for ecological sites failing to meet their Potential Natural Community objectives. Encroachment of pinyon-juniper and spread of noxious weeds and other invasive non-native vegetation are also factors contributing to the early- to mid-seral state of sagebrush habitats. By thinning sagebrush and pinyon-juniper, and removing non-native vegetation and seeding and planting with native vegetation, perennial forbs and grasses would be able to achieve proper abundance, distribution, and diversity and ecological sites would begin moving towards their Potential Natural Community state. This would improve overall rangeland health and provide greater quantity and quality forage vegetation for livestock.

Approximately 5 miles of perennial stream are associated with riparian management projects that occur within the larger sagebrush management area (Lower Henderson 1 and 3 and Lower Vinini Creek units). These treatments would improve water availability and quality for livestock; treatments in riparian zones are discussed under Riparian Treatments. Another 1.3 miles of perennial stream habitat are associated exclusively with sagebrush management projects—Rocky Hills (Coils Creek), Table Mountain (Henderson and Vinini creeks), and West Simpson Park (unnamed) units. The primary treatment objectives for these units are to open up the sagebrush canopy to promote understory development, using manual and mechanical methods, and to remove non-native vegetation, using all treatment methods. Manual and mechanical treatments would help to improve water flows and water quality to the benefit of livestock.

Noxious weeds and other invasive non-native vegetation infestations can greatly reduce the land's carrying capacity for livestock, which tend to avoid noxious weeds and other invasive non-native vegetation that have low palatability as a result of defenses such as spines and/or distasteful compounds (e.g., thistles; Olson 1999). Grazing alone can help to manage invasive plants, but would have to be used in combination with other methods, such as disking and plowing, to control noxious weeds and invasive non-native vegetation and to return vegetation to a more desirable composition (USDOI BLM 2007c:4-101).

In treatment areas, the BLM would plant sagebrush seedlings and reseed with native grasses and forbs to encourage the establishment of sagebrush and herbaceous vegetation that would provide forage for livestock. The BLM would use native seeds and plants whenever possible, but could also use non-native grasses such as crested wheatgrass. Crested wheatgrass provides forage for livestock, especially during winter (Ogle 2006). Crested wheatgrass plantings would be limited to those areas where there is a cheatgrass monoculture, and where the site could be restored in the future with native vegetation. Table Mountain is the only site where crested wheatgrass is proposed for use.

Treatments that reduce the risk of future catastrophic wildfire through fuels reduction, including removal of noxious weeds and other invasive non-native vegetation, would benefit livestock. Uncontrolled, high intensity wildfires can damage large tracts of rangeland, reducing its suitability for grazing. Treatments that restore and maintain fire-adapted ecosystems, such as the appropriate use of mechanical thinning and fire, would decrease the effects of wildfire on rangeland plant communities and improve ecosystem resilience and sustainability. Manual and mechanical treatments would also be used to create many miles of fire and fuel breaks in all management types to help compartmentalize wildfire effects and limit the spread of wildfire.

3.17.3.3.3 Direct and Indirect Effects under Alternative B (No Fire Use Alternative)

Under Alternative B, the BLM would not be able to use prescribed fire or wildland fire for resource benefit. As a result, the BLM anticipates treating about half as many acres under Alternative B as under Alternative A. The types and magnitude of effects for manual, mechanical, and biological control treatments would be similar between Alternatives A and B. Because the BLM would not be able to use fire, however, there would be none of the adverse effects associated with fire. In particular, there would be no loss of forage, degradation of water quality from soil erosion, and spread of noxious weeds and other invasive non-native vegetation in burned areas. By not using fire, permittees would likely have more flexibility in managing their herds as treatment areas would generally be smaller. Many treatments would take longer to complete, such as those where pinyon-juniper, sagebrush, and noxious weeds and other invasive non-native species are controlled using mechanical or manual treatments instead of fire, or where stream channel and riparian habitat restoration are proposed.

The BLM would closely coordinate activities with permittees and permittees may have to adjust their livestock stocking levels or pasture use. Because some treatments may take longer to complete, such as those where invasive species are controlled using mechanical treatments, the time that permittees would have to adjust their grazing plans could be longer than under Alternative A.

Acres and types of wetland and riparian habitat treated would be similar to Alternative A, and the BLM could use temporary fencing to protect treatment areas. However, less effort would be spent by the BLM on slowing pinyon-juniper encroachment into sagebrush and riparian communities, reducing the amount of Phase II and III pinyon-juniper treated using stand-replacement fires, reducing the amount of habitat restored where sagebrush should occur based on ecological site description reference, desired state, or management objective, and reducing the acres of priority habitat treated to improve species diversity, especially through cheatgrass control. Thus, there would be fewer gains in forage production outside of riparian zones, and greater risk of habitat loss from catastrophic wildfire, under this alternative than under Alternative A.

Because of the remoteness and terrain associated with the Table Mountain and West Simpson Park units, the BLM may not be able to effectively control cheatgrass and other non-native vegetation on these units without fire used in conjunction with other treatment methods, such as disking and seeding. As a result, the likelihood of restoring sagebrush habitat and its associated forbs and grasses, and moving these areas toward their Potential Natural Community, would be less than under Alternative A.

Because fire would not be available to reduce hazardous fuel loads, Alternative B may pose a greater long-term risk for wildfire due to the accumulation of fuels. The BLM would not be able to promote more fire resilient and diverse habitat on the 3 Bars Project area. The BLM would also not be able to use prescribed fire to remove downed wood and other hazardous fuels associated with thinning and removal of pinyon-juniper, thus increasing the risk of wildfire in pinyon-juniper treatment areas. By not using fire, however, permittees would likely have more flexibility in management of their herds as treatment areas would generally be smaller under this alternative than under Alternative A.

Under Alternative B, the BLM would improve forage and water quantity and quality and the health and resiliency of vegetation. The BLM would also make substantial gains in improving forage and water quantity and quality in riparian zones. The BLM would only treat a limited acreage to control noxious weeds and other invasive non-native vegetation, and reduce the risk of catastrophic wildfire. Thus, overall benefits to livestock from treatment actions would be less under this alternative than under Alternative A.

3.17.3.3.4 Direct and Indirect Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, the BLM would only be able to use manual and classical biological control methods to treat vegetation. As a result, the BLM anticipates treating about fourth of the acreage that would be treated under Alternative A. The types and magnitude of effects for manual treatments would be similar to those for the other action alternatives. The consequences of not using fire under Alternative C would be the same as those discussed under Alternative B.

Under Alternative C, many treatments would take longer to complete, such as those where pinyon-juniper, sagebrush, and noxious weeds and other invasive non-native species are controlled using manual treatments instead of fire and mechanical methods, or where stream channel and riparian habitat restoration are proposed. Thus, the time that permittees would have to adjust their grazing plans could be longer than under Alternative A.

Although fewer acres would be treated, the BLM would still have to closely coordinate activities with permittees and permittees may have to adjust their livestock stocking levels or pasture use. The BLM has not identified areas where it would use classical biological control, but if nematodes, insects, or fungi are used on the 3 Bars Project area, treatments would generally be small in size and effects would be localized, or if used on cheatgrass, could cover large areas of habitat. The BLM would not be able to use livestock to remove cheatgrass on Table Mountain, West Simpson Park, and Whistler Sage under Alternative C.

Most of the treatments under this alternative would be to thin and remove pinyon-juniper using chainsaws where it is encroaching into riparian, aspen, and sagebrush habitats. Noise and other disturbance would be less with manual methods than the other methods. Because land disturbance would be greater using mechanical methods and fire than it would be with manual and classical biological control methods, adverse effects to livestock drinking water quality from soil erosion, and loss of non-target vegetation, would be loss under this alternative than under Alternatives A and B.

By not being able to use mechanical equipment, however, the BLM would also not be able to conduct stream engineering and restoration, except on a limited basis on only a few stream miles; control noxious weeds and other invasive non-native vegetation, except on very small areas where this vegetation can be hand pulled or controlled using hand tools; reseed and replant restoration sites, except for small areas where shrubs and other vegetation would be planted by hand; mow or chain vegetation to stimulate production of desirable forbs and grasses; or create fire and fuel breaks to reduce the risk of fire spread, except near existing roads or aspen stands, or along a few miles of stream. As a result, there would be less improvement in forage and water quantity and quality, and more risk of catastrophic wildfire than under the other action alternatives. Overall benefits to livestock from treatment actions would be less under this alternative than under Alternatives A and B. By not using fire and mechanical methods, however, permittees would likely have more flexibility in management of their herds as treatment areas would generally be smaller under this alternative than under Alternative A.

3.17.3.3.5 Direct and Indirect Effects under Alternative D (No Action Alternative)

There would be no direct effects to livestock from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would not create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; thin and remove pinyon-juniper and sagebrush to promote growth of forbs and grasses; or restore fire as an integral part of the ecosystem. Without treatments to reduce fuel loading or to control cheatgrass establishment and spread, the risk of catastrophic wildfires would continue to increase and such fires could potentially

lead to a catastrophic loss of livestock forage and create additional opportunities for noxious weeds and other invasive non-native species to invade newly burned areas. The BLM would not conduct stream engineering and riparian habitat enhancement, and thus would do little to improve water availability and quality for livestock. Thus, this alternative would do little to return the 3 Bars ecosystem to its Potential Natural Community and improve rangeland conditions for livestock.

3.17.3.4 Cumulative Effects

The CESA for livestock and rangeland management is approximately 1,312,942 acres and includes the area encompassed by all of the allotments that are contained within or partially overlap the 3 Bars Project area boundary (**Figure 3-1**)). Approximately 94 percent of the area is administered by the BLM and 6 percent is privately owned. Past and present actions that have influenced livestock in the 3 Bars ecosystem are discussed in Section 3.2.2.3.3.

3.17.3.4.1 Cumulative Effects under Alternative A (Preferred Alternative)

Rangeland health studies have shown that early- to mid-seral vegetation dominates each allotment, indicating a need to improve the quantity and quality of forage within allotments. According to utilization data, about 6 percent of the 3 Bars Project area is experiencing moderate to severe forage utilization (see Section 3.17.2.3). However, about 35 percent of proposed riparian zone treatment areas, 25 percent of pinyon-juniper treatment areas, and 48 percent of sagebrush treatment areas are experiencing moderate to severe forage utilization. In addition, about 1,600 acres within the Simpson Park Northeast Unit are experiencing moderate to severe forage utilization, although only about 150 acres would be treated within this unit. In addition, livestock often congregate near streams, springs, and wetlands, causing the loss of riparian habitat and forage, and degradation of stream channels and their ability to function properly and provide abundant and high quality water for livestock.

The BLM would continue ongoing management reviews to determine if livestock grazing management is resulting in utilization levels that are moderate to severe and adversely impacting forage and other rangeland resources. If so, the BLM would determine if changes in the current terms and conditions of the grazing permit would be required to maintain the long term success of the proposed treatments.

The BLM would also conduct wild horse gathers, conduct AML reviews and adjustments, remove excess animals and use fertility control, adjust HMA boundaries, remove fencing that hinders wild horse movement, and implement habitat projects that keep herd numbers near sustainable levels and help to distribute wild horses more evenly across the rangeland.

The BLM may install fencing to limit livestock and wild horse access to treatment areas, although water gaps would be incorporated into fencing along streams to allow livestock, wild horses, and wildlife to access water. These actions should help to improve water quality in affected streams, restore streams to Proper Functioning Condition, and improve riparian habitat.

Land development, mineral development, and oil, gas, and hydrothermal exploration and development could affect about 15,000 acres in the CESA in the reasonably foreseeable future, including the Mount Hope Project, and acreage associated with potential land sales (although it is unlikely that all of this land would be developed), materials sites, roads, and rights-of-way for roads, pipelines, and power and telephone lines. Disturbance associated with these activities could alter livestock behavior and habitat use, and loss of native plant communities in the affected areas

could reduce forage for livestock and facilitate the establishment and spread of noxious weeds and other invasive non-native vegetation.

A total of 32 AUMs in the Romano and Roberts Mountain allotments would be lost in perpetuity as a result of the 734-acre Mount Hope Project open pit. In addition, 490 AUMs in the Roberts Mountain Allotment, and 291 AUMs in the Romano Allotment, would be lost for approximately 70 years as a result of an exclusionary perimeter fence that would enclose 14,206 acres of the Mount Hope Project. The loss of AUMs represents 5 percent of the active grazing preference in the Roberts Mountain Allotment and 10 percent of the active grazing preference in the Romano Allotment.

As described in the Mount Hope Project EIS, when an area of BLM-administered land is devoted to a single public purpose, such as mineral production, AUMs are adjusted to reflect the area withdrawn from multiple uses. These AUMs are lost until such time that mining has ceased and reclamation has been successfully completed. At that time, the area would be evaluated to determine if the AUMs can be returned (USDOI BLM 2012c:3-421 to 3-422).

In addition to the loss of access to forage for the Mount Hope Project, mine project activities could result in direct impacts to the movement patterns of livestock. Noise disturbance, human presence, and increased vehicular traffic would be continuous for approximately 44 years during implementation and execution of the mine project. Sudden loud noises such as blasts could cause livestock to disperse in directions away from the sound.

Of particular concern is the potential drawdown of groundwater near the proposed Mount Hope Project and its effects on forage, particularly phreatophytes, and on water resources on Roberts Mountains and in the Kobeh Valley. The mine project could have a significant impact on groundwater resources and could result in diminished surface water flows on Roberts Mountains, to the detriment of livestock grazing (USDOI BLM 2012c:3-423 to 3-424).

As part of mitigation for the mine project, the mine proponent will work with the BLM to develop alternative water sources. Six locations have been identified in coordination with the BLM and would be developed as water sources for wild horses and could also be used by wildlife and livestock in areas historically used by wild horses. These sites consist of existing stock wells that are not currently functioning or do not have pumps or troughs and two new sources tapped from Mount Hope Project production wells. These sources would provide water where it has not been available previously or where availability has been limited (USDOI BLM 2012c:3-439). The mine proponent would reclaim disturbed areas during and after mining, and remove the fence after reclamation is completed. The reclaimed land would have more grass and forb forage and less shrub and pinyon-juniper cover than presently occurs. The BLM would also monitor vegetation conditions in areas that could be impacted by lower groundwater levels, and conduct seeding, with possible grazing closures, to minimize the loss of forage (USDOI BLM 2012c:3-424). The BLM felt that these actions would mitigate impacts from the mine project to less than significant. There would be no actions taken to provide alternative forage for livestock during the 70 year development, operation, and reclamation period.

Although herbicides are not proposed for use as part of the 3 Bars Project, the BLM could use herbicides applied aerially and using ground-based methods under existing authorizations. Thus, there could be risks to livestock in the CESA from being accidentally sprayed, or ingesting, herbicides that could adversely impact livestock health, although only a few hundred acres would be treated annually. Given the amount of acreage treated, noxious weeds and other invasive non-native vegetation would continue to spread to the detriment of livestock forage. Five herbicides are typically used on the 3 Bars Project area—2,4-D, glyphosate, imazapyr, metsulfuron methyl, and picloram. For the 3 Bars Project, it is likely that the BLM would also use imazapic to treat cheatgrass. These herbicides, along with 12 other herbicides that could be used by the BLM, generally have negligible to low risks to livestock at typical and

maximum application rates. A more detailed discussion of the effects of herbicides on livestock is in the 17-States PEIS (USDOI BLM 2007b:4-125).

Catastrophic wildfire can burn extensive vegetation, particularly during drought conditions when soil and vegetation are dry. Treatments should reduce the incidence and severity of wildfires. An estimated 84,000 would burn within the 3 Bars Project area within the next 20 years, and would result in loss of livestock forage and degradation of water quality.

The BLM would treat about 127,000 acres in the 3 Bars Project area, and an additional 15,000 acres under existing and reasonably foreseeable future authorizations, over the next 10 to 15 years within the CESA, or about 11 percent of the CESA. Short term, there would be disturbance to and loss of vegetation, particularly pinyon-juniper and non-native vegetation, and there could be an increase in noxious weeds and other invasive non-native vegetation, from treatments.

Long term, these treatments should result in vegetation that is healthier, more fire resilient, abundant, and diverse, and that is similar to the Potential Natural Community. The BLM would conduct stream bioengineering and plantings on about 31 miles of stream to slow stream flow and create pools and wet meadows, to improve wetland and riparian vegetation and water flows and quality. In addition, the BLM would thin and remove pinyon-juniper and noxious weed and other invasive non-native vegetation, and create fire and fuel breaks to reduce this risk of catastrophic wildfire and its spread. These beneficial effects would help to offset some of the adverse effects to livestock from other reasonably foreseeable future actions in the CESA.

3.17.3.4.2 Cumulative Effects under Alternative B (No Fire Use Alternative)

Under Alternative B, effects from non-3 Bars Project reasonably foreseeable future actions on livestock would be similar to those described under Alternative A. Under Alternative B, less effort would be spent by the BLM on treatments to reduce wildfire risk and its impacts on livestock forage and water quality, including use of fire to restore natural fire regimes, within the 3 Bars Project area. However, by not using fire on the 3 Bars Project area, there would be no risks to vegetation from fire on several thousand acres annually within the 3 Bars Project area. However, fire would be used on other portions of the CESA outside the 3 Bars Project treatment areas.

Under this alternative, the BLM would be limited to hand pulling, disking, plowing, seeding, and using livestock to control noxious weeds and invasive non-native vegetation on several hundred acres annually on the 3 Bars Project area. These methods could result in more soil disturbance and erosion than would fire, but would also give the BLM greater control on the types and amount of vegetation that are removed. The Table Mountain and West Simpson Park units are on rugged terrain, and use of mechanical equipment to control cheatgrass would be difficult; these areas are outside of HMAs.

Hazardous fuels reduction and habitat improvement projects could occur on about 63,000 acres within the 3 Bars Project area, and on an additional 15,000 acres within the CESA, or about 6 percent of the CESA. Overall, there would be a net beneficial accumulation of effects from BLM treatments long term that would help to offset adverse effects to livestock from other reasonably foreseeable future actions, but not to the same extent as would occur under Alternative A.

3.17.3.4.3 Cumulative Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, effects from non-3 Bars Project reasonably foreseeable future actions on livestock would be similar to those described under Alternative A. Under Alternative C, the BLM would only be able to use manual and classical biological control methods to treat vegetation, and would treat only a fourth of the acreage that could be treated under Alternative A, within the 3 Bars Project area. However, fire and mechanized equipment would be used in other portions of the CESA to improve habitat, remove hazardous fuels, and reduce the risk of wildfire.

By not being able to use mechanical methods, fire, and livestock to reduce hazardous fuels, create fire and fuel breaks, and remove downed wood and slash, however, the risk of wildfire and its impacts on vegetation and water used by livestock would likely increase on the 3 Bars Project area.

Hazardous fuels reduction and habitat improvement projects would occur on about 32,000 acres within the 3 Bars Project area, and on an additional 15,000 acres within the CESA, or about 4 percent of the acreage within the CESA. Overall, there would be a net beneficial accumulation of effects from BLM treatments long term that would help to offset adverse effects to livestock from other reasonably foreseeable future actions, but not to the extent as would occur under Alternatives A and B.

3.17.3.4.4 Cumulative Effects under Alternative D (No Action Alternative)

Under Alternative D, effects from non-3 Bars Project reasonably foreseeable future actions on livestock would be similar to those described under Alternative A. There would be no cumulative effects on livestock from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; slow the spread of noxious weeds and other invasive non-native vegetation using ground-based and aerial herbicide application methods; restore fire as an integral part of the ecosystem; and reduce the risk of a large-scale wildfire under current and reasonably foreseeable future authorized actions, but on a limited acreage through existing and subsequent separate decisions.

Based on historic treatments in the 3 Bars Project area, only about 1,500 acres would be treated annually in the CESA to reduce hazardous fuel levels and improve ecosystem health,. Hazardous fuel levels would likely increase, and only a limited number of miles of fuel and fire breaks would be constructed under this alternative compared to the action alternatives. The BLM would conduct stream bioengineering and riparian habitat enhancements on only a limited area. Thus, water quality would remain degraded and water availability could be limited, especially during droughts, for livestock. The trend toward large-sized wildfires of moderate to high severity in sagebrush and large stand-replacing wildfires in pinyon-juniper would likely increase. BLM treatments would help to offset some of the effects to livestock from non-3 Bars Project actions, but not to the extent as would occur under the action alternatives.

3.17.3.5 Unavoidable Adverse Effects

The proposed treatments could temporarily affect non-target vegetation that might provide forage, shelter, or other life requisites for livestock.

3.17.3.6 Relationship between the Local Short-term Uses and Maintenance and Enhancement of Long-term Productivity

The proposed vegetation treatments would affect the availability and palatability of vegetation over the short term. These impacts would begin to disappear within 1 to 2 growing seasons after treatment.

All treatments that successfully reduce the cover of noxious weeds and other invasive non-native vegetation and restore native vegetation on grazed lands would benefit livestock by increasing the quality of forage. In addition, treatments would remove some noxious weeds (e.g., tansy ragwort, houndstongue, Russian knapweed, and common St. Johnswort) that are harmful to livestock. The success of noxious weeds and other invasive non-native vegetation removal, and restoration of native habitats, would determine the level of benefit of the treatments over the long term.

Treatments that reduce the risk of future catastrophic wildfire through fuels reduction would also benefit livestock. Uncontrolled, high intensity wildfires can remove forage from large tracts of rangeland, reducing its suitability for livestock in the short term. Treatments that restore and maintain fire-adapted ecosystems through the appropriate use of mechanical thinning, fire, and other vegetation treatment methods would decrease the effects of wildfire on rangeland plant communities and improve ecosystem resilience and sustainability (USDOI BLM 2007b:4-249).

3.17.3.7 Irreversible and Irretrievable Commitment of Resources

Short-term loss in vegetation function and quality from treatments would have a short-term impact on livestock productivity. Although some livestock could be displaced from public lands, forage could be found elsewhere, although possibly at a higher cost. As rangelands improved, their ability to support livestock use levels at or near current levels should also improve. Although this impact would represent an irreversible loss of the individual animal, the impacts to the livestock operation and industry would be reversible (USDOI BLM 2007b:4-252).

3.17.3.8 Significance of the Effects under the Alternatives

None of the 3 Bars Project alternatives should result in significant direct or indirect long-term loss of critical habitat, forage, or water, and these effects would not result in a significant cumulative effect. Treatments would have short-term effects on these forage and water resources needed by livestock. However, there would be long-term improvement in forage and water resources under all alternatives from the treatments.

3.17.4 Mitigation

According to utilization data, 33 percent of proposed treatment areas are experiencing moderate to severe forage utilization. Those areas are discussed in Section 3.17.3. Utilization data were collected on the Flynn Parman, Roberts Mountain, JD, Three Bars, Romano, and Lucky C allotments during October to December 2010 and May to July 2011, encompassing about 71 percent of the 3 Bars Project area. Data for other allotments, however, were collected during the 1990's and early 2000's, so current forage utilization may differ from past forage utilization, especially for areas that have not been surveyed for several decades. In addition, forage utilization accounts for both livestock and wild horse use.

In order to ensure treatment success, the following measures would be implemented. In addition, additional monitoring would be conducted to assess current use patterns prior to changes to grazing use permits. Since treatments may be conducted several years from now, the BLM would not only use rangeland health data collected to date, but would also evaluate rangeland conditions at the time of treatment before conducting treatments to ensure treatment success.

3.17.4.1 Riparian Treatments Monitoring and Mitigation Measures

1. Prior to implementation of a treatment, BLM will review the current livestock grazing management and resource conditions, such as the season of use and 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.

2. To ensure treatment success, the following may be added to the Terms and Conditions of the grazing permit.

    a. 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.

    b. 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 5 days to move livestock to the next pasture in the rotation or from the allotment entirely.

    c. Streambank alteration rates would be set to a level appropriate to the particular stream in accordance with Guidelines for Establishing Allowable Levels of Streambank Alteration (Cowley 2002). Based on the characteristics of the streams and the presence of Lahontan cutthroat trout, the streambank alteration rates would range from 10 to 20 percent. If designated streambank alteration rates are reached, the permittee will have 5 days to move livestock to the next pasture in the rotation or from the allotment entirely.

    d. Utilization rates will not exceed 35 percent for woody 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 (Wyman et al. 2006).

    e. Existing non-functioning water developments and fences may be required to be repaired prior to implementation of the treatment if contributing to unacceptable use patterns by livestock.

3. Season of use may be modified to exclude hot season grazing from July 1 to September 30 annually.

3.17.4.2 Aspen Treatments Monitoring and Mitigation Measures

1. Temporary fences will be used to exclude wildlife and livestock grazing with in the treatment area until the following criteria are met, and then they will be removed.

    a. A mean sucker height of 7 feet with a minimum of 10,000 stems per acre within the treatment area (Kay 2002).

2. Livestock grazing will not resume in aspen treatments 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 5 days to move livestock to the next pasture in the rotation or from the allotment entirely.

c. Existing non-functioning water developments and fences may be required to be repaired prior to implementation of the treatment if contributing to unacceptable use patterns by livestock.

3.17.4.3 Pinyon-juniper and Sagebrush Treatments Monitoring and Mitigation Measures

1. 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, utilization levels).

2. 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.

3. Sagebrush and pinyon-juniper treatments would not be conducted until grazing management is modified through subsequent grazing decisions to achieve proper utilization rates. To ensure treatment success, the following stipulations may be added to the Terms and Conditions of the grazing permit.

   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 5 days to move livestock to the next pasture in the rotation or from the allotment entirely as outlined in *Range Management, Principles and Practices* (Holechek et al. 1998).

   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 5 days to move livestock to the next pasture in the rotation or from the allotment entirely as outlined in 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 Holechek et al. (1998).

   e. Existing non-functioning water developments and fences may be required to be repaired prior to implementation of the treatment if contributing to unacceptable use patterns by livestock.

4. Season of grazing use may be modified to provide growing season deferment and dormant season grazing.

3.18 Visual Resources

3.18.1 Regulatory Framework

Scenic quality is the measure of the visual appeal of a unit of land. Section 102 (a) of the Federal Land Policy and Management Act (1976), states that "...the public lands are to be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values." Section 103(c) identifies "scenic values" as one of the resources for which public land should be managed. Section 201(a) states that "the Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including scenic values)..." Section 505(a) requires that "each ROW [rights-of-way] shall contain terms and conditions which will...minimize damage to the scenic and esthetic values..."

Section 101 (b) of the NEPA requires that measures be taken to ensure that aesthetically pleasing surroundings be retained for all Americans. Under the Federal Land Policy and Management Act, the BLM developed a standard visual assessment methodology, known as the Visual Resource Management (VRM) System, to inventory and manage scenic values on lands under its jurisdiction. Guidelines for applying the VRM system on BLM lands are described in the BLM Manual 8400, *Visual Resource Manual* (USDOI BLM 1984) and BLM Handbook H-8410-1 *Visual Resource Inventory* (USDOI BLM 1986b).

3.18.2 Affected Environment

Visual resources consist of land, water, vegetation, wildlife, and other natural or built features visible to recreation visitors, adjacent landowners, and travelers on public lands. In addition, roads, streams, and trails pass through a variety of characteristic landscapes where natural attractions can be seen and where cultural modifications are apparent. Of particular importance to visual resources in this region is the visual appeal (health and spatial diversity) of streams and ponds, and riparian, wetland, aspen, and sagebrush landscapes.

3.18.2.1 Study Methods and Study Area

The assessment of visual resources on the project area was based on a 2011 visual resource inventory (VRI) conducted for the Battle Mountain District, including the 3 Bars Project area (OTAK 2011). A follow-up site visit was made to the 3 Bars Project area to confirm their findings.

The analysis area for the assessment of direct and indirect effects to visual resources is the 3 Bars Project area, while the cumulative effects study area includes the 3 Bars Project area and the BLM visual resource management background distance zone (15 miles; **Figure 3-1**).

3.18.2.2 Visual Resource Inventory and Management

The characteristic landscape of the project area is contained within a variety of landforms in the central Great Basin of the Basin and Range physiographic province. Visual resources within the project area are influenced by topographic, vegetative, geologic, hydrologic, and land use characteristics. The topography ranges from relatively flat terrain and low rolling or flat-topped and cone-shaped hills to steep mountain ranges. Vegetation is comprised of grasses, greasewood, rabbitbrush, and sagebrush at lower elevations, and trees and shrubs including aspen, mountain mahogany, limber pine, and pinyon-juniper at higher elevations. Vegetation patterns affect color, form, line, and contrast, which shape the basis for the analysis of visual resources in the project area. Land use in the area is

predominantly grazing and recreation. There is little surface water in the area except for a few perennial and intermittent streams and a few small ponds. The excellent air quality in the region promotes expansive views. The success and appeal of recreational activities such as hiking, collecting, photography, wildlife viewing, and picnicking are dependent on the settings and scenic views.

The BLM identifies and evaluates visual resource values through the VRI system (USDOI BLM 1986b). Visual resource inventory classes are based on scenic quality, sensitivity level, and distance zone criteria and indicate the overall value of landscapes. A VRI was conducted to determine the visual values of the Battle Mountain District, including the 3 Bars Project area. The components of a VRI include: scenic quality evaluation, sensitivity level analysis, visibility, and distance zones.

For the scenic quality evaluation, lands are rated as Class A (19 points or more), Class B (12 to 18 points), or Class C (11 points or less). Lands are rated using seven key factors: landforms, vegetation, water, color, influence of adjacent scenery, scarcity and cultural modifications. Approximately 37 percent of the 3 Bars Project area is rated as Class A, and includes the mountainous areas of the project area, and 60 percent as Class B (**Table 3-53**). **Figure 3-46** illustrates the scenic quality classifications in the project area.

The sensitivity level analysis measures public concern for visual resources. Lands are assigned high, medium, or low sensitivity levels based on consideration of the following factors: types of users, amount of use, public interest, adjacent land uses, special areas, and other factors. Approximately 45 percent of the 3 Bars Project area is rated High, and includes much of the southern half of the project area, 30 percent is rated Moderate, and 22 percent is rated Low (**Table 3-53**). **Figure 3-47** illustrates the sensitivity levels for the sensitivity level rating units in the project area.

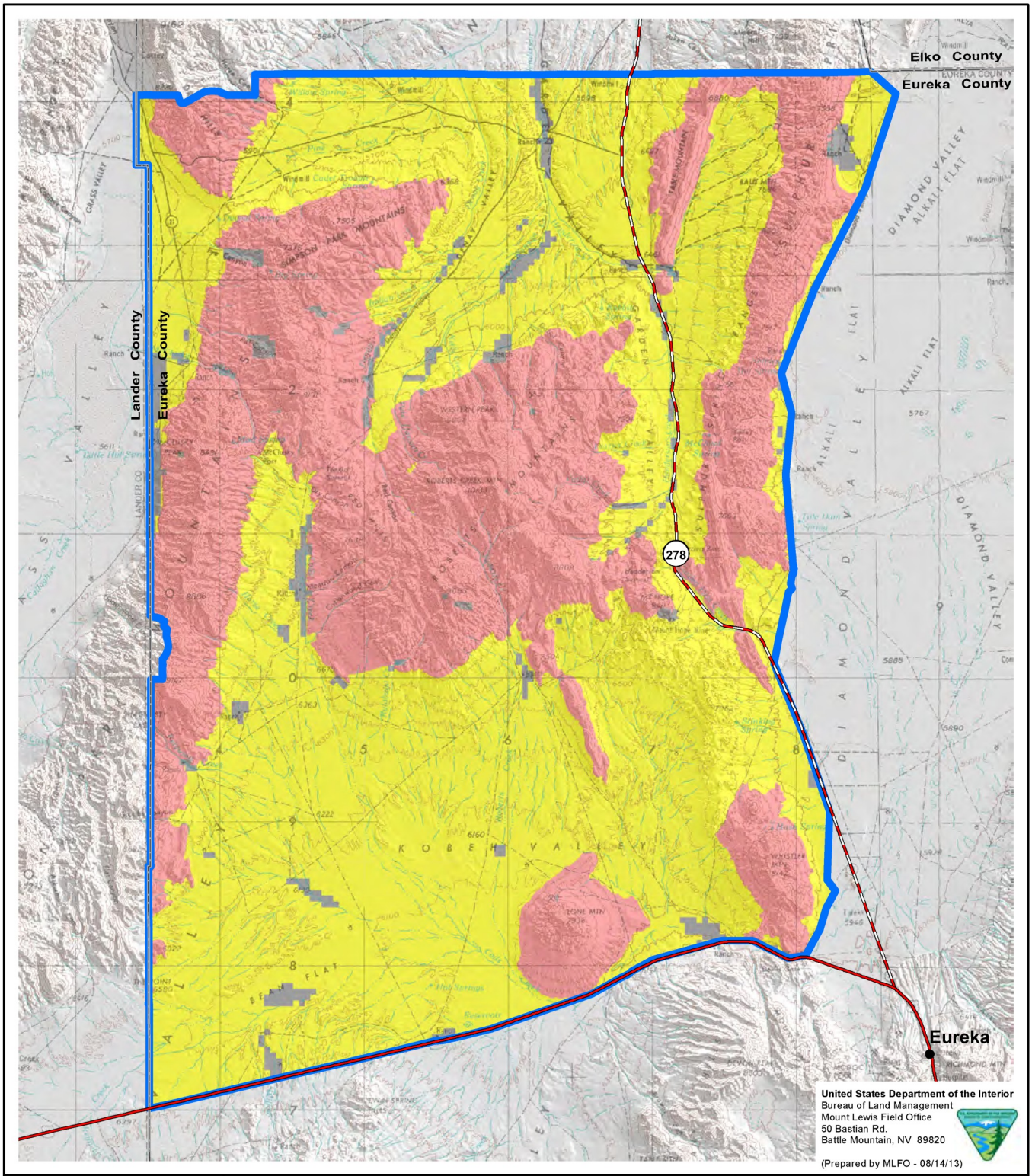
Distance zones are delineated to subdivide the landscape based on relative visibility from travel routes, use areas, or vantage points. The three distance zones include:

- Foreground-middleground Zone: this is the area visible within 3 to 5 miles of the viewing location.
- Background Zone: this is the visible area beyond the foreground-middleground zone but usually within 15 miles of the viewing location.
- Seldom Seen Zone: These are areas that are rarely visible within the foreground-middleground or background zones.

Approximately 88 percent of the 3 Bars Project area is visible in the foreground-middleground, and 9 percent is seldom seen (**Table 3-53**; **Figure 3-48**). Seldom seen areas include much of Roberts Mountains, and portions of West Simpson Park and Sulphur Spring Range.

The scenic quality evaluation, sensitivity level analysis, and delineation of distance zones are combined to develop VRI classes (**Figure 3-49**), which represent the relative value of the visual resources. Classes I and II are the most valued, Class III represents a moderate value, and Class IV represents the least value. Approximately 64 percent of the 3 Bars Project area is rated Class II and includes most mountainous areas, and the flatter portions of the southern half of the project area, 11 percent is rated Class III, and 23 percent is rated Class IV; there are no Class I areas on the project area (**Table 3-53**).

Visual resource inventory classes are informational in nature and provide the baseline data for considering visual values in the RMP process. Visual resource inventory classes do not establish management direction and are not used as a basis for constraining or encouraging surface-disturbing activities.



Legend

Visual Resource Inventory Scenic Quality Rating

- Class A
- Class B
- Not Inventoried
- 3 Bars Project Area

Source: OTAK 2011.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-46

Visual Resource Inventory Scenic Quality Rating

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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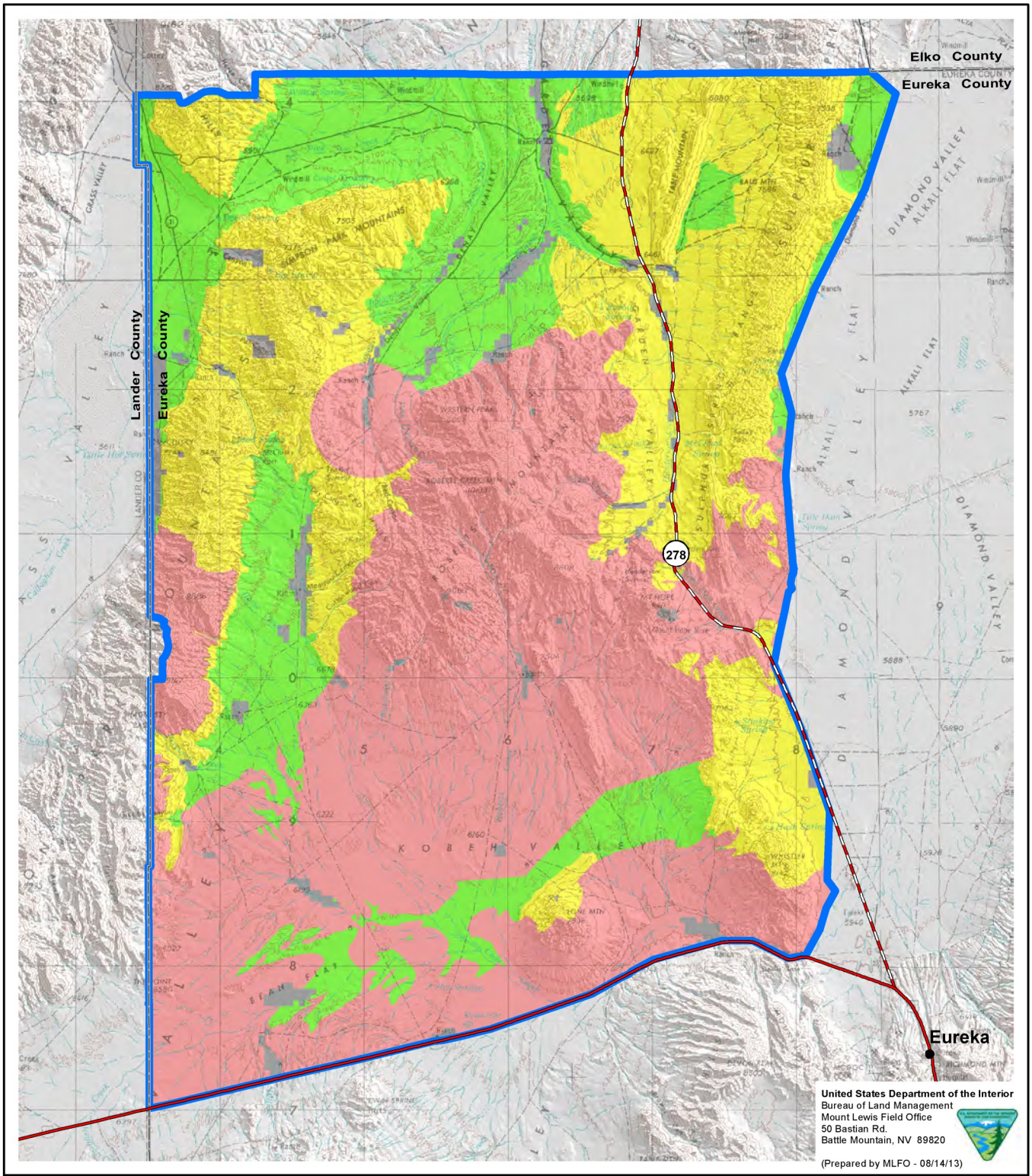

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Visual Resource Inventory Sensitivity Level Rating

- High
- Moderate
- Low
- Not Inventoried
- 3 Bars Project Area

Source: OTAK 2011.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-47

Visual Resource Inventory Sensitivity Level Rating

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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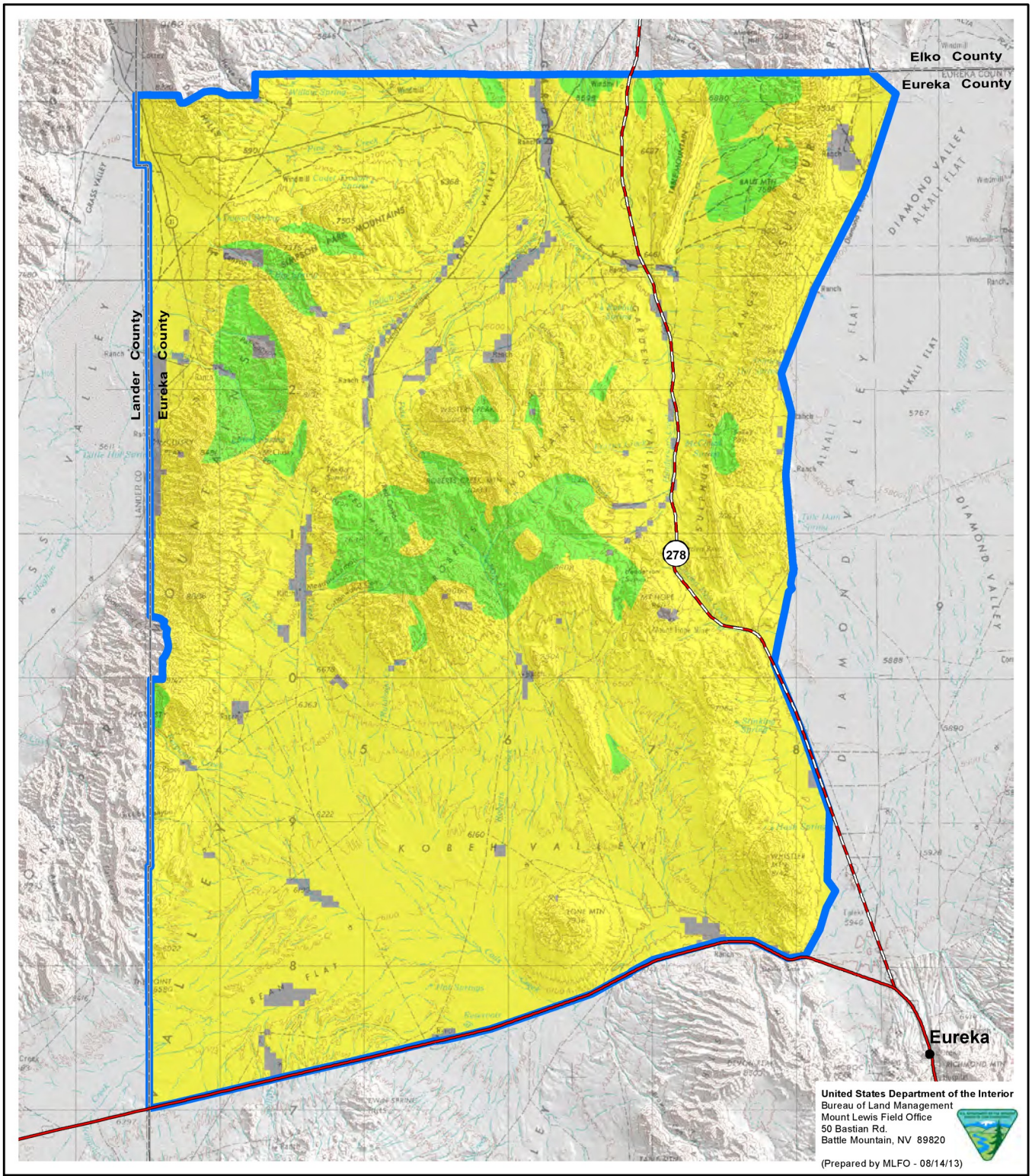

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Visual Resource Inventory Visual Distance Zones

- Foreground-Middleground
- Seldom Seen
- Not Inventoried
- 3 Bars Project Area

Source: OTAK 2011.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-48

Visual Resource Inventory Visual Distance Zones

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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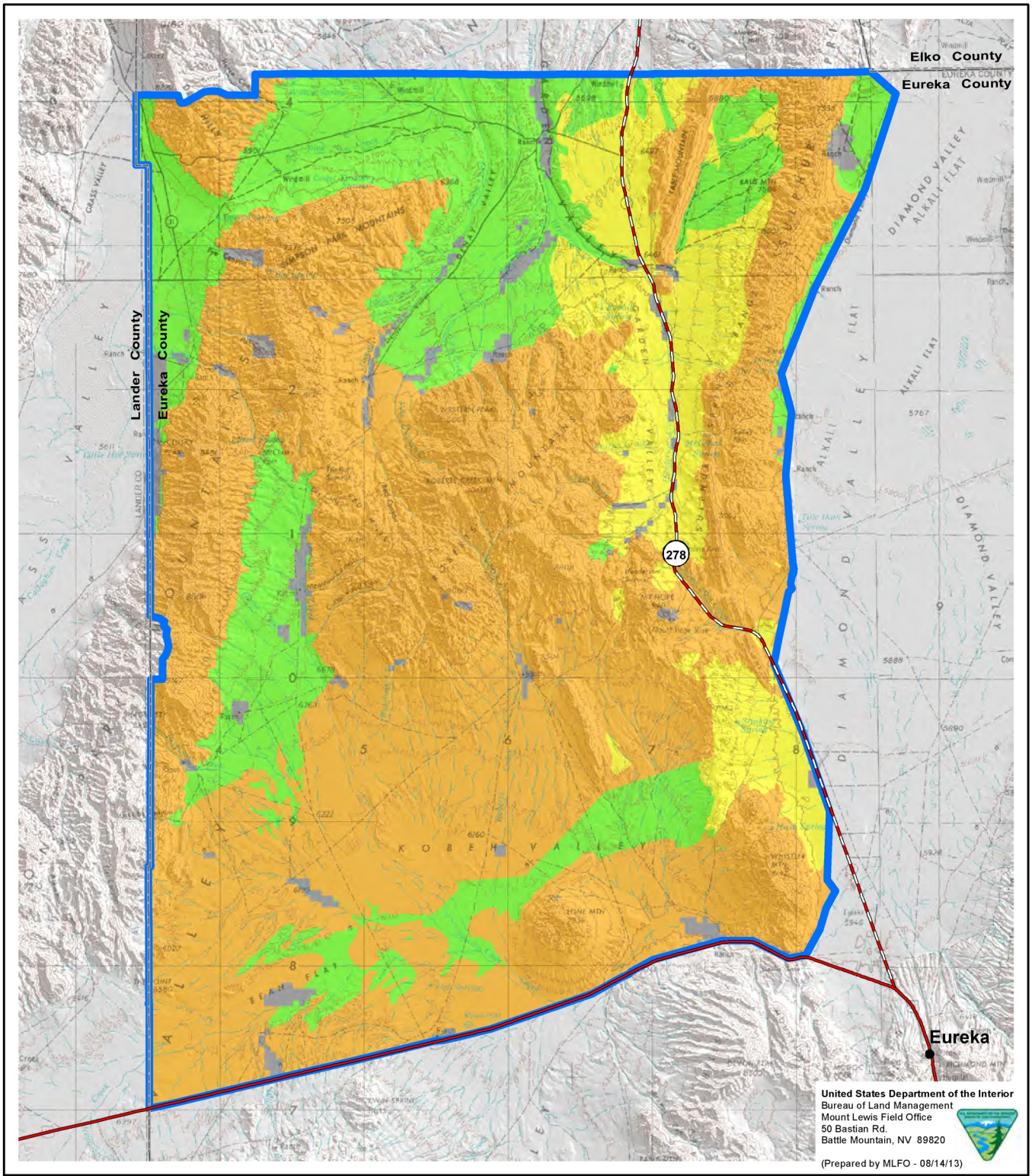

Legend

Visual Resource Inventory Classes

- Class II
- Class III
- Class IV
- Not Inventoried
- 3 Bars Project Area

Source: OTAK 2011.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-49

Visual Resource Inventory Classes

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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TABLE 3-53

Visual Resource Project Area Inventory and Visual Resource Management Classes Summary

Scenic Quality Evaluation					
BLM - Class A	**BLM - Class B**	**BLM - Class C**	**Not Inventoried**	**Total**	
279,601 37%[1]	449,395 60%	190 0%	20,624 3%	749,810	
Sensitivity Level Analysis					
High	**Medium**	**Low**	**Not Inventoried**	**Total**	
337,294 45%	227,753 30%	164,138 22%	20,624 3%	749,810	
Distance Zones					
Foreground-Middleground	**Background**	**Seldom Seen**	**Not Inventoried**	**Total**	
660,709 88%	0 0%	68,447 9%	20,624 3%	749,810	
Visual Resource Inventory Classes					
VRI Class I	**VRI Class II**	**VRI Class III**	**VRI Class IV**	**Not Inventoried**	**Total**
0 0%	478,105 64%	78,868 11%	172,213 23%	20,624 3%	749,810
Visual Resource Management Classes					
VRM Class I	**VRM Class II**	**VRM Class III**	**VRM Class IV**	**Not Inventoried**	**Total**
30,073 4%	24,331 3%	45,319 6%	650,086 87%	0 0%	749,810

[1] Percent of acres within 3 Bars Project area.

The Visual Resource Management (VRM) system is used by the BLM to manage visual resources on public land. Visual resource management objectives are established in resource management plans in conformity with land use allocations (USDOI BLM 1984). These area-specific objectives provide the standards for planning, designing, and evaluating future management activities. BLM policy requires that all BLM land be inventoried for scenic values and be assigned a VRM Class during the land use planning process. These VRM classes are part of the land use plan decisions for a particular office and set the management standards for visual resources that activity level plans must subsequently meet. The BLM uses the VRM System to systematically identify and evaluate visual resource values and to determine the appropriate level of scenery management. The VRM process involves 1) identifying scenic values, 2) establishing management objectives for those values through the land use planning process, and 3) designing and evaluating proposed activities to analyze effects and develop mitigation measures to meet the established VRM objectives. Based on this process, the BLM designates lands into one of four VRM classes with the following objectives:

- VRM Class I – The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

- VRM 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 (design) elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

- VRM 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.

- VRM Class IV – The objective of this class is to provide for management activities, which 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 (design) elements.

The assignment of VRM classes is based on the management decisions made in the RMP process, which must take into consideration the value of visual resources and management priorities for land uses (**Figure 3-50)**. Based on these decisions, approximately 4 percent of the 3 Bars Project area is rated VRM Class I, and includes portions of Roberts Mountains and Simpson Park Mountains, 3 percent is rated Class II, 6 percent is rated Class III, and 87 percent is rated Class IV. During the RMP process, inventory class boundaries can be adjusted as necessary to reflect resource allocation decisions made in the RMP.

Table 3-53 summarizes the acreages and percent of the project area categorized into each VRI component, the resulting VRI classes, and the VRM classes.

3.18.3 Environmental Consequences

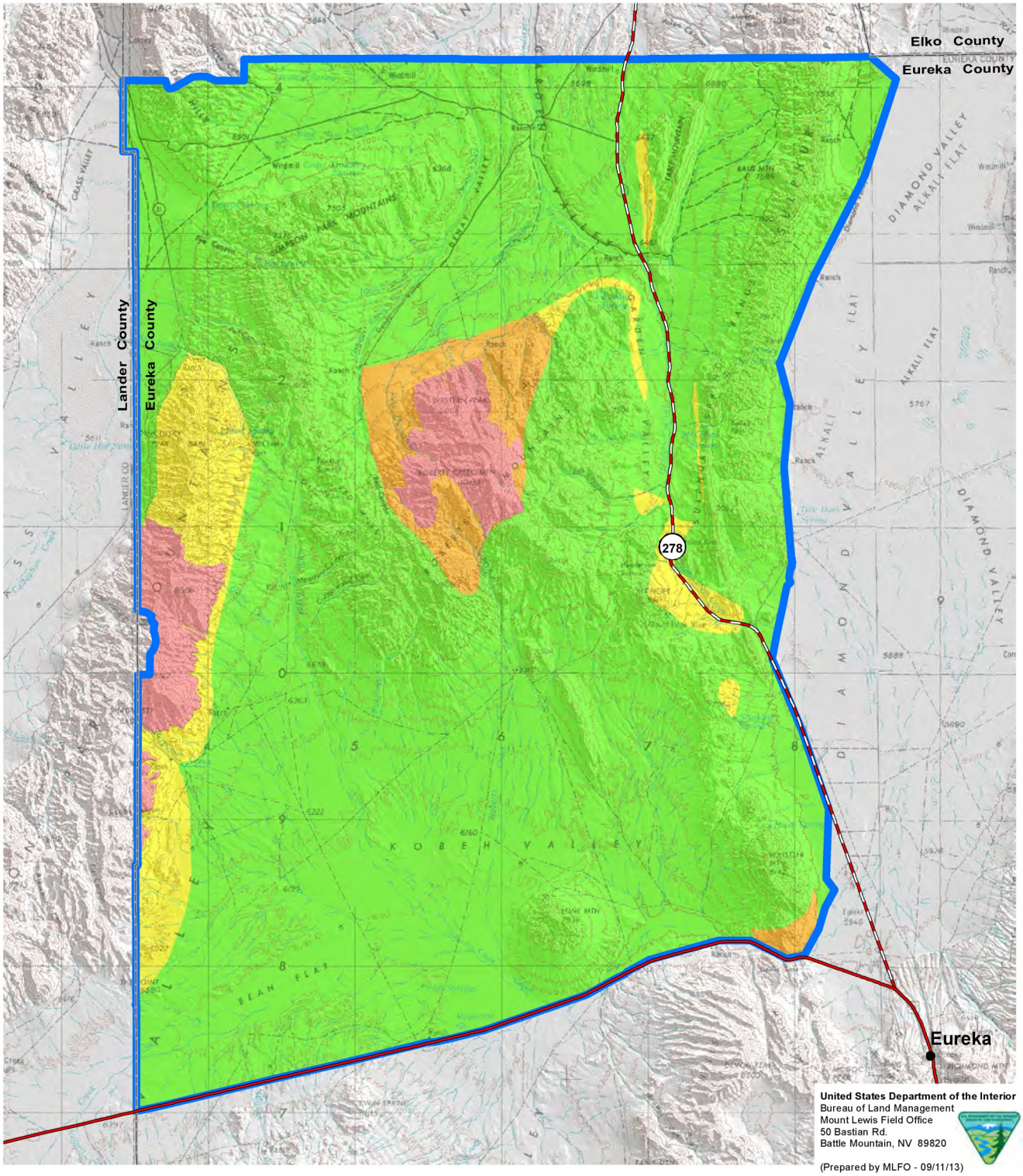
3.18.3.1 Key Issues of Concern Considered during Evaluation of the Environmental Consequences

The only visual resources scoping comment indicated concern that the current VRM classes in the Shoshone-Eureka (USDOI BLM 1986a) may be outdated. The RMP is being updated and this analysis for the 3 Bars Project area is based on the VRI conducted by OTAK (2011) for the updated Battle Mountain District RMP.

3.18.3.2 Significance Criteria

Impacts to visual resources would be considered significant if BLM actions resulted in the following:

- Strong visual contrast in the immediate foreground view from a designated recreation site, historic trail, or residence in the long term (greater than 10 years).
- Non-compliance with VRM objectives in the long term (greater than 3 years for VRM objectives Class I and II and greater than 10 years for Class III and IV).



Legend

Visual Resource Management Classes

- Class I
- Class II
- Class III
- Class IV
- 3 Bars Project Area

Source: BLM 2012l.

3 Bars Ecosystem and Landscape Restoration Project

Figure 3-50

Visual Resource Management Classes

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

N

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3.18.3.3 Direct and Indirect Effects

3.18.3.3.1 Direct and Indirect Effects Common to All Action Alternatives

Vegetation treatment activities have the potential to disturb the surface features of the landscape and impact scenic values in the short term (less than 3 years) and long term (greater than 10 years). The proposed vegetation treatments would affect visual resources if they changed the scenic quality of the landscape, diminished the experience of viewers with a high level of concern for scenery, or did not meet agency management objectives. In general, treatments would have short-term negative effects and long-term positive effects on visual resources.

Public sensitivity to changes in the landscape character of the area would vary relative to the level of visibility and distance from viewer activity, and viewer concern. Distance zones and impacts to viewers are listed in **Tables 3-54** to **3-56**, respectively. The BLM's VRM policy states that the extent of visual impact and compliance with management objectives must be evaluated at the project level using the visual contrast rating process (Handbook 8431-1). This process compares the amount of contrast to the form, line, color, and texture of the characteristic landscape of an area as a result of a surface-disturbing activity. The effects of vegetation treatments on the visual quality of the landscape would be most notable to travelers, sightseers, and residents situated in the immediate foreground (0.0 to 2 miles) for the first year to approximately 3 years following treatment. Visual impacts over the short and long term from vegetative treatments would occur from projects that 1) reduce the scenic quality rating of the treatment site, 2) result in degradation of high-sensitivity visual resources, or 3) are not in compliance with BLM management objectives.

A Contrast Rating System, as described in BLM Manual Handbook H- 8431-1, *Visual Resource Contrast Rating* (USDOI BLM 1986c), provides a systematic means to evaluate the approved VRM objectives, and to identify mitigation measures to minimize adverse visual impacts. The Contrast Rating System is designed to compare the respective features of the existing characteristic landscape with a proposed project and to identify those parts that are not in conformance. These features include the basic design elements of form, line, color, and texture that characterize the landscape. Modifications to a landscape that repeat the natural landscape's basic elements are said to be in harmony with their surroundings, while those that differ may be visually displeasing. The information generated is used to determine the amount of visual contrast created and whether the VRM objective for the area would be met, and to develop additional mitigation measures necessary to meet the VRM objective.

Adverse Effects

In the short term, removal of vegetation would affect the visual qualities of treatment sites by creating hard-edged openings and other vegetation-free areas that provide a noticeable visual contrast to the surrounding areas. In the short term, treatments could create visually distinct areas of discolored vegetation (i.e., areas where treatments have killed vegetation), which could contrast markedly from surrounding areas of healthy vegetation. The degree of these effects would depend on the amount of area treated, the appearance of the surrounding vegetation and the vegetation being removed, the type of treatment method used, and the season of treatment. The greater the area and nearness to viewers of the vegetation treatment, the greater the visual impacts are likely to be. The effects of treatments that occur over a large portion of the landscape are more likely to be observed by people than the effects of small-scale treatments (USDOI BLM 2007c:4-112).

Color contrasts caused by vegetation removal would be most apparent in areas dominated by homogenous patterns of vegetation and by large plants, such as conifer trees. The visual impacts would be heightened if the treatment also prevented the manifestation of seasonal changes in vegetation, such as spring flowers or fall color. The contrast

between a cleared area and the surrounding vegetation would be less in sagebrush, where low-growing shrubs, and browns, grays, and earth tones dominate the landscape than in areas with pinyon-juniper. In addition, the brown colors associated with vegetation treatments would be least noticeable during the late fall and the winter, when they would blend more naturally with surrounding colors, than in the spring and summer, when the green colors of new growth are more likely to be present (USDOI BLM 2007c:4-112).

There would be negligible to weak short-term visual contrasts to the landscape as a result of manual treatments. Treatment limited to small areas (exclosure fencing, removal of small groups of trees) would be much less noticeable than the alterations caused by other treatment methods. In other cases, such as the removal of vegetation with chainsaws over many acres, the visual effects would be negative, though minor, and would last until downed trees were removed by wood gatherers, pile burned, or concealed through revegetation.

TABLE 3-54

Landscape Scenery Impacts

Scenic Quality	Project Visual Contrast		
	Strong	**Moderate**	**Weak**
Class A	High	High	Moderate
Class B	High	Moderate	Low
Class C	Moderate	Low	Low

TABLE 3-55

Distance Zones and Project Visibility

Distances	Project
Immediate Foreground	0 – 2 Miles
Foreground-Middleground	2 – 5 Miles
Background	5 – 15 Miles
Seldom Seen	Greater Than 15 Miles

TABLE 3-56

Impacts to Viewers

Project Visibility	Project Visual Impacts		
	High Sensitivity	**Moderate Sensitivity**	**Low Sensitivity**
0 – 2 Miles	High	Moderate	Low
2 –5 Miles	Moderate	Moderate	Low
5 – 15 Miles	Moderate	Low	Low
Greater Than 15 Miles or Seldom Seen	Low	Low	Low

Beneficial Effects

Effects to visual resources would begin to disappear within 1 to 2 growing seasons after treatment. The regrowth of vegetation on the site would eliminate much of the stark appearance of a cleared area, and the area would develop a more natural appearance.

Impacts would last for the longest amount of time in pinyon-juniper stands where large trees and shrubs are removed. Treatments that aim to rehabilitate degraded ecosystems, if successful, would result in plant communities that are dominated by native species. Native-dominated communities tend to be more diverse, and thus, more visually appealing than plant communities that have been overtaken by the surrounding monoculture (such as pinyon-juniper encroaching on riparian zones). Treatments that reduce the risk of wildfire should reduce the visual impacts associated with large expanses of burned vegetation. Additionally BLM would work to mitigate the edge effect of treatments by "feathering" treatments in to adjacent vegetation communities and designing treatments in a mosaic pattern.

3.18.3.3.2 Direct and Indirect Effects under Alternative A (Preferred Alternative)

Riparian Treatments

The majority of riparian zone treatment areas are rated Class A for their scenic qualities, have High sensitivity to the public, and are in the foreground-middleground zone. Approximately 75 percent of treatment areas are VRM Class III or IV, where moderate to substantial modification of the landscape is acceptable. The remaining 25 percent of the proposed treatment areas includes 9 acres of Roberts Creek, which are VRM Class I, where the objective is to preserve the existing character of the site, and 444 acres of VRM Class II at Roberts Creek, Vinini Creek, and Willow Creek, where a low level of change in the landscape character is acceptable. The three Class I/II areas are part of the Roberts Creek Unit group.

Adverse Effects

Riparian zone treatments along Roberts, Vinini, and Willow Creeks would result in a low level of change, and portions of these streams that are rated VRM Class I or II may not be treated. For example, the Roberts Creek Unit is 1,390 acres, but only 9 acres are VRM Class I; 486 acres are Class II, where a low level of change is acceptable. Nearly all of the Willow and Upper Willow Creek units are VRM Class II. Stream channel restoration would be limited to about 250 acres and a mile or two of stream annually. Use of manual and mechanical treatments to reconstruct streams and clear vegetation would be likely to remove large quantities of vegetation from a treatment site, leaving dead plant material on the ground to turn brown, and expose much soil.

Prescribed fire could also be used on a few acres annually to control encroaching pinyon-juniper and reduce hazardous fuels. During fire treatments, there would be some effects to visual resources, with localized deterioration of air quality and reduced visibility caused by smoke. These effects would only persist as long as the fire itself. Following a fire, the blackened appearance of the treated areas would create a color contrast, affecting visual resources. Darkened stumps and snags would be visible for many years following treatments. Although vegetation would begin to reappear in the growing season after the fire, softening the visual contrasts, there would be lasting evidence of the burn (USDOI BLM 2007c:4-112).

Although treatment activities could be seen, they would probably not attract the attention of the casual observer as they are in somewhat secluded drainages, and would be conducted to retain or restore the natural character of the landscape.

Beneficial Effects

Riparian management treatments would focus on restoring streams that have been degraded by livestock and wild horses and on slowing pinyon-juniper encroachment into riparian zones. Mechanical methods would result in strong short-term visual contrasts of form, line, color, and texture until the treatment site is revegetated. For all treatment methods, effects to visual resources would begin to disappear within 1 to 2 growing seasons after treatment. The regrowth of vegetation on the site would eliminate much of the stark appearance of a cleared area, and the area would develop a more natural appearance. Non-fire treatments can be used to avoid the visual effects associated with smoke and to integrate treated and untreated areas into a more visually appealing mosaic of vegetation types. Effects would last for the longest amount of time in woodlands and other areas where large trees and shrubs were removed.

Over the long term, vegetation treatments would likely improve visual resources on public lands. Treatments that aim to rehabilitate degraded ecosystems, if successful, would result in plant communities that are dominated by native species. Native-dominated communities tend to be more visually appealing than areas that have been overtaken by noxious weeds and other invasive non-native vegetation, or that have been invaded by pinyon-juniper. These treatment benefits could be more noticeable in the riparian zone, as many of the treatment streams have been substantially degraded and are not meeting Proper Functioning Condition.

Fire use and other treatment methods that restore native fire regimes, vegetation, and ecosystem processes would reduce the spread of noxious weeds and other invasive non-native vegetation that is less visually appealing than native vegetation. Noxious weeds and other invasive non-native vegetation removal, stream channel restoration, and the removal of encroaching pinyon-juniper would help to limit the spread of wildfire by enabling riparian zones to function as fuel breaks.

Aspen Treatments

The scenic quality evaluation showed that all aspen treatment units were rated Class A. The visual effects to resources from treatments would be High on all treatment units. However, only about one-third of the treatment units would be visible in the foreground-middleground (JD-A1, JD-A4, RM-A7, and RM-A9); the remaining areas would seldom be seen. Based on these assessments, all riparian management units are rated Class II.

About 40 percent of treatment acreage is rated VRM Class I, and includes the JD-A4, RM-A2, RM-A10, and SFF-A1 units. About 20 percent of acres are rated VRM Class II (JD-A1 and RM-A2), while the remaining acres are VRM Class IV, including 2 acres of RM-A2. At the JD-A4, RM-A2, and RM-A10 units, manual and mechanical methods, and possibly prescribed fire, would be used to remove pinyon-juniper trees encroaching into aspen habitats. For JD-A1, treatments would focus on treating aspen to stimulate stand suckering using mechanical and manual methods and prescribed fire, while at SFF-A1 the BLM would erect protective fencing around an aspen stand to promote sucker survival. Exclosure fencing could also be used at other sites to protect treated aspen stands from livestock grazing.

Only about 5 acres of treatments would be visible to the public annually, thus effects of aspen treatments on the visual resources of the 3 Bars Project area would be negligible.

Pinyon-juniper Treatments

The scenic quality evaluation found that about 65 percent of treatment areas were rated Class A, and 35 percent as Class B. Treatment units where over 90 percent of the area was Class A included Birch Creek, Cottonwood/Meadow Canyon, Dry Canyon, Lone Mountain, Upper Pete Hanson, Tonkin North, and Tonkin South units.

Public concern for adverse visual effects to resources would be Low on about 6 percent of treatment areas, but about 47 percent each for Moderate and High. Treatment units where most acreage (over 75 percent) was rated High are the Atlas, Birch Creek, Upper Pete Hanson, Three Bars Ranch, Tonkin South, and Upper Roberts Creek units.

Nearly 90 percent of treatment areas would be visible in the foreground-middleground, while the remaining areas would be seldom seen. Only the Upper Pete Hanson and Upper Roberts Creek units would be relatively difficult to see by the public.

Despite the relatively high resource ratings given above, over 90 percent of the pinyon-juniper management area was rated as VRM Class IV, where substantial modification of the landscape is appropriate, while 2 percent of treatment acres were rated Class III, and 7 percent as Class II. Units with more than 100 acres rated as Class II were the Atlas, Gable Corridor, Lower Pete Hanson, Upper Pete Hanson, Upper Roberts Creek, and Whistler units, although these acres were only a small portion of the overall treatment acres except for Lower Pete Hanson and Upper Roberts, where VRM Class II lands comprised over 75 percent of the treatment unit. Only 346 acres were rated VRM Class I, and these were at the Birch Creek, Upper Pete Hanson, and a small portion (20 acres) of Upper Roberts Creek units.

Adverse Effects

Most visual resource concerns would be focused on the Birch Creek, Upper Pete Hanson, and Upper Roberts Creek units, since most of their acreage is rated VRM Class I or II. Treatments on the Upper Pete Hanson and Upper Roberts Creek units, however, would be relatively difficult for the public to see. The BLM proposes to improve sagebrush habitat by thinning pinyon-juniper to promote sagebrush growth, and also create fuel breaks to reduce the damage from a wildfire. Manual and mechanical methods and prescribed fire would be used on Upper Roberts Creek, while only chainsaws and prescribed fire would be used on the Birch Creek and Upper Pete Hanson units because treatment areas are in the Roberts Mountains WSA. The effects of manual treatments are discussed under Effects Common to All Alternatives.

Most of the pinyon-juniper on the Upper Roberts Creek unit would be removed from Phase I stands. Because these trees have encroached into sagebrush habitat, and are widely-spaced throughout the area, removal of these trees would restore the visual character associated with sagebrush habitat and would have a minor visual effect. Limited management is allowed in VRM Class I areas, and management activities should not attract the attention of the casual observer in VRM Class II areas. The Birch Creek and Upper Pete Hanson units are small (< 300 acres each) and manual and fire treatments would be used to remove pinyon-juniper in all phases. If trees are removed from dense stands, there could be more visual contrast with remaining areas, but this effect would be minor because only about 20 acres would be treated annually in each unit and the BLM would manage pinyon-juniper stands to create a mosaic of habitat for wildlife.

Prescribed fire could be used on all three units. Only a few acres would be treated on the Birch Creek and Upper Pete Hanson units annually, if at all, due to their small size. More acres could be treated on the Upper Roberts Creek unit. Although smoke would be visible to the public on the Upper Roberts Creek unit, charred vegetation from burning would be difficult for the public to see as this unit is relatively isolated and not visible from the foreground-middleground.

The objective of VRM Classes I and II is to retain the existing character of the landscape. Although treatments for these three units would be limited in scope and extent, they would alter the existing characters of the landscape.

However, treatments would help remove encroaching pinyon-juniper and return the sites to their more historic condition.

Beneficial Effects

Beneficial treatment effects on visual resources would be similar to those discussed under Effects Common to All Alternatives, and under Riparian Treatments. Treatments in VRM Class I and II areas would help to slow pinyon-juniper encroachment into sagebrush habitat and restore more natural conditions to these areas. Treatments on Birch Creek and Upper Peter Hanson would help to retain the visual characteristics associated with the Roberts Mountains WSA.

Treatments on other pinyon-juniper management units would also benefit visual resources on the 3 Bars Project area. Treatments that restore degraded ecosystems would result in plant communities that are dominated by native species and are more visually appealing. Prescribed fire would help to remove dead and diseased pinyon-juniper that is unattractive, reduce hazardous fuels and the risk of catastrophic wildfire, and restore native fire regimes, vegetation, and ecosystem processes. The use of prescribed fire would allow the BLM to limit the size and duration of fires in areas of high public use to minimize visual contrasts between burned and unburned vegetation and effects of smoke, and to conduct fires during the cooler times of the year when visitation by the public would be less. By using all treatment methods to reduce hazardous fuels, create fire and fuel breaks, remove noxious weeds and other invasive non-native vegetation, and promote more resilient vegetation, the BLM would reduce the risk of wildfire and its inherent impacts on the scenery.

Sagebrush Treatments

Mechanical methods such as tilling, mowing, and chaining have the potential to scarify the landscape and leave bare soil and dead vegetation that contrast with the surrounding colors. Mowing can also create an uneven, ragged appearance along roadsides and rights-of -way, but in other areas can result in a well-manicured, pleasing look. The effects of mechanical treatments on visual resources would be temporary, and would only last until the re-establishment of vegetation on the treatment site, typically 1 or 2 growing seasons (USDOI BLM 2007c:4-113).

The scenic quality evaluation found that about 15 percent of treatment areas were rated as Class A, while the remainder were rated Class B. On the Three Corners and West Simpson Park units, over 95 percent of the acreage is rated Class A.

Public concern for adverse visual effects to resources would be High on about 20 percent of the sagebrush management area, Moderate on 35 percent of the area, and Low on 45 percent of the area. On the Coils Creek, Nichols, Roberts Mountain Pasture, and Three Corners units, more than 80 percent of the treatment acres were rated High.

Based on the visibility of sites, all but about 1,000 acres would be visible in the foreground-middleground. Only the Three Corners Unit would be seldom seen by the public. None of the sagebrush treatment acreage was rated VRM Class I, and less than 1 percent was rated VRM Class II. Over 90 percent of the acreage is VRM Class 4, while 8 percent is Class III. Class II acreage is found at the Alpha and Three Corners units.

Adverse Effects

Concerns regarding effects from sagebrush management would be greatest for the Alpha, Coils Creek, Nichols, Roberts Mountain Pasture, Three Corners, and West Simpson Park units. The Alpha, Coils Creek, Nichols, and Roberts Mountain Pasture units are part of the Alpha Unit treatment group. The effects of manual and mechanical treatments on relatively flat terrain, such as for these sagebrush communities, would have less effect on visual resources than treatments on steeper terrain, such as pinyon-juniper woodlands, which would be more visible on the landscape. The effects of manual and mechanical treatments on visual resources would be temporary, and would only last until the reestablishment of vegetation on the treatment site, typically 1 or 2 growing seasons.

On the Three Corners Unit the BLM would thin sagebrush and Phase I and II pinyon-juniper to increase the percent composition of native grasses, forbs, and shrubs to 50 to 75 percent of the Potential Natural Community. In addition to using mechanical and manual methods, the BLM could also use prescribed fire on this unit. Fire would be limited to only a few acres during the life of the project, so effects on the visual characteristics of this unit from these treatments would be minor. In addition, the Three Corners unit is found in an area that is seldom seen by the public.

The BLM would treat cheatgrass on south-facing slopes to promote the establishment of sagebrush on the West Simpson Park Unit. Portions of this unit have been burned by wildfire in recent years. The BLM would use all methods to control cheatgrass, including pre-treatments using prescribed fire, livestock, and disking. About 1,963 acres, or half of the unit, could be treated over the life of the project. The greater the area of vegetation treatment, the greater the visual effect is likely to be. Large treatments alter a larger portion of the landscape than small treatments, and the effects are more likely to be observed by people. However, the West Simpson Park Units consists of degraded lands of low to moderate scenic quality, resulting in a smaller visual effect from treatment and likely an improvement in the scenic quality of the land over the long term.

Beneficial Effects

Beneficial effects from manual, mechanical, and fire treatments are discussed under Effects Common to All Alternatives and Pinyon-juniper Treatments.

In general, treatments on the Table Mountain, West Simpson Park, and Whistler Sage units would have long-term positive effects on visual resources. Areas dominated by non-native vegetation have been impacted by past wildfires and are some of the more degraded areas on the 3 Bars Project area. They are also vulnerable to future wildfires. Thus, efforts to restore native, fire resilient vegetation would make these areas more visually appealing, and would reduce the risk of future wildfires.

The controlled use of domestic animals to contain undesirable vegetation may create a short-term visual impact associated with trampling and consumption of vegetation. These impacts would be dealt with on a case-by-case basis and mitigated as appropriate at the project level. The visual effects caused by the containment of domestic animals would be short term in nature and would create a positive visual effect with the regrowth of desirable vegetation in a healthy, productive condition.

3.18.3.3.3 Direct and Indirect Effects under Alternative B (No Fire Use Alternative)

The types and magnitude of effects for manual, mechanical, and biological control treatments would be similar between Alternatives A and B. Treatments conducted under Alternative B would have short-term adverse and long-term beneficial impacts on the scenic qualities of the landscape on about 2,500 to 3,500 acres annually of lands with a

Scenic Quality rating of A and Sensitivity Level Rating of High. Of the estimated 6,350 acres treated annually under Alternative B, about 5,500 acres could occur where treatments occur would be visible to the public. The BLM may have to modify management objectives on about 20 acres of VRM Class I, and 35 acres in VRM Class II treatment units annually, as these areas could be visible to the casual observer.

Without the use of fire, there would be no localized deterioration of air quality and reduced visibility caused by smoke, no blackened appearance of treated areas and blackened stumps and snags that would create a color contrast, and no spread of noxious weeds and other invasive non-native vegetation in burned areas. However, long-term improvements in pinyon-juniper stand health, replacement of pinyon-juniper stands with sagebrush, forbs, and grasses, and removal of encroaching pinyon-juniper using prescribed fire and wildland fire for resource benefits, and the resultant improvement if the visual qualities of the landscape, would not occur over several thousand acres annually.

Without the use of fire to reduce hazardous fuel loads, Alternative B could pose a greater long-term risk for wildfire due to the accumulation of fuels. The BLM would not be able to promote more fire resilient and diverse habitat on the 3 Bars Project area. The BLM would also not be able to use prescribed fire to remove downed wood and other hazardous fuels associated with thinning and removal of pinyon-juniper, thus increasing the risk of wildfire in pinyon-juniper treatment areas. An increase in wildfire risk compared to Alternative A could lead to a long-term reduction in the visual qualities of the landscape.

The BLM could use classical biological control, such as the use of nematodes, insects, and fungi to control non-native vegetation, but would more likely use cattle and goats. The use of domestic animals to contain undesirable vegetation would cause minimal effects to visual resources. The sight of domestic animals should not cause any adverse effects, as livestock are found over most of the 3 Bars Project area.

Under Alternative B, the BLM would be able to slow, but probably not reverse habitat degradation on the 3 Bars Project area. Treatments would occur across the landscape, and most projects would benefit multiple resources, but large-scale fire and herbicide treatments would not occur under this alternative. Although short-term impacts to visual resources would be less under this alternative than Alternative A, there would be less long-term improvement in the scenic quality of the 3 Bars Project area under Alternative B compared to Alternative A.

3.18.3.3.4 Direct and Indirect Effects under Alternative C (Minimal Land Disturbance Alternative)

Treatments conducted under Alternative C would have short-term adverse and long-term beneficial impacts on the scenic qualities of the landscape on about 1,500 to 2,000 acres annually of lands with a Scenic Quality Rating of A and Sensitivity Level Rating of High. Of the estimated 3,250 treated annually under Alternative C, about 3,000 acres would be visible to the public. The BLM may have to modify management objectives on about 10 acres of VRM Class I and 15 acres in VRM Class II treatment lands annually, as these areas could be visible to the casual observer.

By not being able to use mechanical equipment, there would be no adverse visual effects associated with stream channel restoration disturbance; creating openings in pinyon-juniper stands and sagebrush from removal of vegetation; creating long linear features for fire and fuel breaks; or causing surface disturbance from disking/tilling/harrowing to restore areas invaded by cheatgrass. The BLM would also leave less dead plant material on the ground to turn brown.

The BLM has not identified areas where it would use classical biological control, but if nematodes, insects, or fungi are used on the 3 Bars Project area, they would cause some visual alterations to the landscape. Plants attacked by

these agents often show visual symptoms of disease or parasitism, which are often regarded as visually unappealing. However, these changes would only be noticeable upon close examination of the site. The overall appearance of the treatment area would likely remain relatively unchanged. Because these agents kill target species gradually, the effects would be less visibly distinct than treatments that kill a large area of vegetation all at once (USDOI BLM 2007c:4-113).

Under Alternative C, the BLM would not be able to conduct stream engineering and restoration to improve native riparian habitat, except on a limited basis on only a few stream miles; control noxious weeds and other invasive non-native vegetation, except on very small areas where this vegetation can be hand pulled or controlled using hand tools; reseed and replant restoration sites, except for small areas where shrubs and other vegetation would be planted by hand; or create fire and fuel breaks to reduce the risk of wildfire spread, except near existing roads or aspen stands, or along a few miles of stream. The BLM would only be able conduct hazardous fuels treatments and remove downed woody material from treatments on a limited acreage using manual and classical biological control treatments. Thus, the risk of catastrophic wildfire, and its effects on the visual landscape, would be greater under Alternative C than the other action alternatives.

Under Alternative C, the BLM would not substantially improve the native vegetation community nor stop the loss of important ecosystem components. As a result, there would be less improvement in the visual quality of the 3 Bars Project area under this alternative than under Alternatives A and B.

3.18.3.3.5 Direct and Indirect Effects under Alternative D (No Action Alternative)

There would be no direct effects to visual resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would not create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; thin and remove sagebrush to promote growth of forbs and grasses; use fencing to protect treatment areas; or restore fire as an integral part of the ecosystem. Without treatments to reduce fuel loading or to control cheatgrass establishment and spread, the risk of catastrophic wildfires would continue to increase. The BLM would not conduct stream engineering and riparian habitat enhancement, and thus would do little to improve visual qualities within riparian zones. This alternative would also do little to return the 3 Bars ecosystem to its Potential Natural Community and restore Proper Functioning Condition to wetlands and riparian zones, to the benefit of visual resources on the project area.

3.18.3.4 Cumulative Effects

The CESA for visual resources is approximately 2,599,851 acres and includes the 3 Bars Project area and the BLM visual resource management background distance zone (15 miles; **Figure 3-1**). Approximately 94 percent of the area is administered by the BLM and 6 percent is privately owned. Past and present actions that have influenced visual resources in the 3 Bars ecosystem are discussed in Section 3.2.2.3.3.

Table 3-57 summarizes the acreages and percent of the cumulative effects analysis area categorized into each VRI component, the resulting VRI classes, and the VRM classes.

3.18.3.4.1 Cumulative Effects under Alternative A (Preferred Alternative)

As demonstrated by rangeland health studies conducted for the 3 Bars Project, historic livestock grazing and other natural and human-caused factors have resulted in rangelands dominated by early- to mid-seral vegetation, indicating a need to improve the health and resiliency of native vegetation and move rangelands closer to their Potential Natural

TABLE 3-57

Visual Resource Project Area Inventory and Visual Resource Management Classes Summary for Cumulative Effects Study Area

Scenic Quality Evaluation					
BLM - Class A	**BLM - Class B**	**BLM - Class C**	**Not Inventoried**	**Total**	
836,562[1] 32%[2]	1,107,651 43%	443,199 17%	212,438 8%	2,599,851	
Sensitivity Level Analysis					
High	**Medium**	**Low**	**Not Inventoried**	**Total**	
867,129 33%	681,443 26%	838,841 32%	212,438 8%	2,599,851	
Distance Zones					
Foreground-Middleground	**Background**	**Seldom Seen**	**Not Inventoried**	**Total**	
1,766,368 68%	71,917 3%	549,127 21%	212,438 8%	2,599,851	
Visual Resource Inventory Classes					
VRI Class I	**VRI Class II**	**VRI Class III**	**VRI Class IV**	**Not Inventoried**	**Total**
0	1,254,385 48%	167,253 6%	965,775 37%	212,438 8%	2,599,851
Visual Resource Management Classes					
VRM Class I	**VRM Class II**	**VRM Class III**	**VRM Class IV**	**Not Inventoried**	**Total**
64,545 2%	40,426 2%	334,999 13%	2,058,732 79%	101,150 4%	2,599,851

[1] Acres.
[2] Percent of acres within CESA.

Community. In addition, livestock and wild horses often congregate near streams, springs, and wetlands, causing the loss of riparian habitat and forage, and degradation of stream channels and their ability to function properly and provide abundant and high quality water for livestock, wild horses, and fish and wildlife.

To improve forage and water resources for livestock, the BLM would continue ongoing management reviews to determine if livestock grazing management is resulting in utilization levels that are moderate to severe and adversely impact to forage and other rangeland resources. If so, the BLM would determine if changes in the current terms and conditions of the grazing permit would be required to maintain the long term success of the proposed treatments through subsequent decisions apart from the 3 Bars Project process.

The BLM would conduct wild horse gathers, conduct AML reviews and adjustments, remove excess animals and use fertility control, adjust HMA boundaries, remove fencing that hinders wild horse movement, improve water developments, and implement habitat projects that help to distribute wild horses more evenly across the rangeland. These management actions would help to improve visual resources on the 3 Bars Project area.

The BLM would continue to use ground-based herbicide applications to remove noxious weeds and other invasive non-native vegetation, and aerial-based herbicide applications to remove cheatgrass, and would also use herbicides to restore burned areas under the Burned Area Emergency Stabilization and Rehabilitation program, under existing authorizations on about 1,000 acres annually. The BLM could use aerial applications to control cheatgrass on several hundred acres annually on the Table Mountain and West Simpson Park units. Portions of these units have been burned by wildfire in recent years. About half of the units could be treated over the life of the project. In general, herbicide treatments would have short-term negative effects and long-term positive effects on visual resources. The greater the area of vegetation treatment, the greater the visual effect is likely to be. Large treatments alter a larger portion of the landscape than small treatments, and the effects are more likely to be observed by people. However, the units consists of degraded lands of low to moderate scenic quality, resulting in a smaller visual effect from treatment and likely an improvement in the scenic quality of the land over the long term.

Land development, mineral development, and oil, gas, and hydrothermal exploration and development could affect about 10,000 acres in the CESA in the reasonably foreseeable future, including the Mount Hope Project and acreage associated with potential land sales (although it is unlikely that all of this land would be developed), materials sites and other mineral development, roads, and rights-of-ways for roads, pipelines, and power and telephone lines.

The Mount Hope Project would disturb about 8,300 acres. There would be a moderate to strong contrast in form, line, and color between the existing landscape and the post-mining landscape associated with the Mount Hope Project. Most of the area encompassed by the mine project is VRM Class IV and the changes in the landscape would conform to VRM objectives. Visual contrast would be reduced by reclamation practices, which would consist of recontouring and revegetating the waste rock and tailings storage facilities; recontouring and revegetating exploration roads; removing all buildings, structures, and equipment brought to the site; and recontouring and revegetating all building sites. Following successful reclamation, the visual contrast from the Mount Hope Project would be slightly reduced. Over the long term, the vegetation used to restore the mine site would begin to blend with the color and texture of the existing natural landscape. However, the mine pit would still be visible to the public after mine reclamation and its visual impact on the landscape would be significant (USDOI BLM 2012c:3-327 to 3-328).

Catastrophic wildfire can burn extensive areas of vegetation. Based on acreage burned by wildfires since 1985, an estimate 140,000 acres would be burned by wildfires in the CESA during the next 20 years, and would result in a blackened landscape.

Proposed hazardous fuels reduction and habitat improvement treatments would occur on about 127,000 for the 3 Bars Project, and on about 15,000 acres in other portions of the CESA under current and reasonably foreseeable future authorizations, or collectively about 5 percent of the CESA. Proposed treatments would move vegetation communities in areas that have been disturbed by past natural and human-caused action in the CESA toward their Potential Natural Communities. As discussed under direct and indirect effects, proposed vegetation treatments would have a short-term affect on visual resources by changing the scenic quality of the landscape. Long term, 3 Bars Project should result in vegetation that is more fire resilient, more diverse, and more similar to the Potential Natural Community. Hazardous fuels treatments would remove vegetation that contributes to short return-interval fires and loss of native vegetation. These treatments would help to reduce the risk of wildfire within the CESA. In addition, the BLM would conduct stream bioengineering and plantings on about 31 miles of stream to slow stream flow and create pools and wet meadows to improve wetland and riparian vegetation. These activities would help to make the landscape more visually appealing. In the long term, benefits to visual resources from treatments would help to offset

some of the adverse effects to visual resources from other reasonably foreseeable future projects in the CESA, and to a greater extent than would occur under the other alternatives.

3.18.3.4.2 Cumulative Effects under Alternative B (No Fire Use Alternative)

Under Alternative B, effects from non-3 Bars Project reasonably foreseeable future actions on visual resources would be similar to those described under Alternative A. Under Alternative B, less effort would be spent by the BLM on treatments to reduce wildfire risk and its impacts on visual resources. By not using fire on the 3 Bars Project area, there would be no visual effects associated with fire on several thousand acres annually within the 3 Bars Project area. This includes the effects of smoke, dead and dying vegetation, and a charred landscape. However, the use of fire and could occur on a few hundred acres annually outside the 3 Bars Project treatment areas.

The BLM would be limited to hand pulling, disking, plowing, seeding, and using livestock to control noxious weeds and invasive non-native vegetation on several hundred acres annually on the 3 Bars Project area. These methods could result in more soil disturbance and erosion than would occur from the use of fire, but would also give the BLM greater control on the types and amount of vegetation that is removed and types of visual impacts from treatments. The Table Mountain and West Simpson Park units are on rugged terrain, and use of mechanical equipment to control cheatgrass would be difficult. These areas are predominantly Scenic Quality Class A, and visible to the public.

Hazardous fuels reduction and habitat improvement projects could occur on about 63,000 acres within the 3 Bars Project area, and on an additional 15,000 acres within the CESA, or about 3 percent of the acreage within the CESA. BLM treatments would help to offset some of the adverse effects to visual resources from other reasonably foreseeable future actions, but not to the extent as would occur under Alternative A.

3.18.3.4.3 Cumulative Effects under Alternative C (Minimal Land Disturbance Alternative)

Under Alternative C, effects from non-3 Bars Project reasonably foreseeable future actions on visual resources would be similar to those described under Alternative A. Adverse, short-term effects to scenic resources, primarily vegetation, associated with the use of fire and mechanized equipment would not occur under Alternative C; fire and mechanized equipment could be used in other portions of the CESA to improve habitat, remove hazardous fuels, and reduce the risk of wildfire under current and reasonably foreseeable future authorizations.

By not being able to use mechanical methods, less pinyon-juniper and sagebrush removal, disking, plowing, chaining, shredding, and mulching would occur that would cause a visual contrast with untreated area. The BLM, however, would be less able to create fire and fuel breaks, remove diseased and dying pinyon-juniper, thin decadent sagebrush, restore areas dominated by cheatgrass and other noxious weeds and invasive non-native vegetation, or restore degraded stream channels and riparian zones under this alternative than under Alternative A and B, to the detriment of the scenery on the 3 Bars Project area. The BLM would also be less able to reduce hazardous fuels and construct fire and fuel breaks, and reduce the risk of catastrophic wildfire and its effects on the scenery.

Hazardous fuels reduction and habitat improvement projects could occur on about 32,000 acres within the 3 Bars Project area, and on an additional 15,000 acres within the CESA, or only about 2 percent of the acreage within the CESA. There would be a long term net benefit from BLM treatments that would help to offset some of the adverse effects to visual resources from other reasonably foreseeable future actions, but not to the extent as would occur under Alternatives A and B.

3.18.3.4.4 Cumulative Effects under Alternative D (No Action Alternative)

Under Alternative D, effects from non-3 Bars Project reasonably foreseeable future actions on visual resources would be similar to those described under Alternative A. There would be no cumulative effects on visual resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could create fire and fuel breaks; thin and remove pinyon-juniper to promote healthy, diverse stands; slow the spread of noxious weeds and other invasive non-native vegetation using ground-based and aerial application methods of herbicides, especially cheatgrass; restore fire as an integral part of the ecosystem; and reduce the risk of a large-scale wildfire under current and reasonably foreseeable future authorized actions, but on a very limited acreage.

Based on historic treatments in the 3 Bars Project area, only about 1,500 acres would be treated annually in the CESA to reduce hazardous fuel levels and improve ecosystem health. Hazardous fuel levels would likely increase, and only a limited number of miles of fuel and fire breaks would be constructed under this alternative compared to the action alternatives. The BLM would conduct stream bioengineering and riparian habitat enhancements on only a few miles of streams. Thus, the BLM would do little to move rangelands toward their Potential Natural Community or restore Proper Functioning Condition in wetlands and riparian zones. The trend toward large-sized fires of moderate to high severity in sagebrush and large stand-replacing fires in pinyon-juniper would likely increase. As a result, visual resource conditions would likely continue to deteriorate within the CESA.

3.18.3.5 Unavoidable Adverse Effects

Over the short term, vegetation treatments would kill or harm vegetation in the treated area, resulting in a more open, browned or blackened landscape until new plants grow. While these effects are unavoidable, they are considered short-term impacts, as the vegetation would recover and lead to improved natural conditions. Treatment areas would vary in terms of their visual appeal prior to treatment and their distance from human activity, as well as in terms of the resulting public sensitivity to the pre- and post-treatment visual character of the area. The effects of vegetation treatments on the visual quality of the landscape would be most noticeable to travelers, sightseers, and residents for the first one to several years following treatment, particularly near major roads or residential areas (USDOI BLM 2007c:4-245). The proposed vegetation treatments would not cause unavoidable adverse effects to visual resources over the long term.

3.18.3.6 Relationship between the Local Short-term Uses and Maintenance and Enhancement of Long-term Productivity

The proposed vegetation treatments would affect visual resources by changing the scenic quality of the landscape. Over the short term, impacts to visual resources from all treatment methods would begin to disappear within 1 to 2 growing seasons. The regrowth of vegetation on the site would eliminate much of the stark appearance of cleared areas, and the site would develop a more natural appearance. Impacts would last for the longest amount of time in woodlands and other areas where large trees and shrubs were removed.

Over the long term, vegetation treatments would likely improve visual resources on public lands. Treatments that aim to rehabilitate degraded ecosystems, if successful, would result in plant communities dominated by native species. Native-dominated communities tend to be more visually appealing and productive than areas that have been overtaken by noxious weeds and other invasive non-native vegetation (e.g., areas supporting a cheatgrass monoculture), or that have been invaded by woody species (e.g., sagebrush experiencing encroachment by pinyon-juniper; USDOI BLM 2007c:4-250).

3.18.3.7 Irreversible and Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitment of visual resources. Although there would be short-term impacts to visual resources from vegetation treatments, loss of visual resources would not be irretrievable and could be reversed if restoration treatments were successful (USDOI BLM 2007b:4-253).

3.18.3.8 Significance of the Effects under the Alternatives

3 Bars Project treatments could contribute to scenic degradation in the short term, but this would be negligible in the context of other adverse impacts to visual resources in the CESA and would be in conformance with VRM objectives. By themselves, none of the 3 Bars Project treatments under all alternatives should result in a significant change in Class A scenery from Class A to Class B or to Class C in the long term (greater than 10 years), strong visual contrast in the immediate foreground view from a designated recreation site, historic trail, or residence in the long term (greater than 10 years), or non-compliance with VRM objectives in the long term (greater than 10 years) within the 3 Bars Project area and CESA.

3.18.4 Mitigation

No mitigation measures are proposed for visual resources.

3.19 Land Use and Access

3.19.1 Regulatory Framework

Federal and local planning documents were reviewed to gain an understanding of the regulatory guidelines in effect within the 3 Bars Project area. The Shoshone-Eureka RMP provides a regulatory framework that applies to land use and authorizations within the 3 Bars Project area. The Eureka County Master Plan, although not a regulatory document, also provides policy recommendations for land within the 3 Bars Project area.

The Federal Land Policy and Management Act of 1976 was implemented to establish public land policy and guidelines for its administration; to provide for the management, protection, development, and enhancement of the public lands; and for other purposes (USDOI BLM 1976). Several sections within the Act deal with land use actions, including sections devoted to land use planning, land acquisition, and land disposition; authorizations to grant rights-of-ways; and other administrative actions.

The BLM *Land Use Planning Handbook* (H-1601-1) provides guidance to employees for implementing the BLM land use planning requirements established by Sections 201 and 202 of the Federal Land Policy and Management Act of 1976 (USDOI BLM 2005c). Land use plans and planning decisions are the basis for every on-the-ground action the BLM undertakes. Land use plans include both RMPs and management framework plans.

Land use plans ensure that the public lands are managed in accordance with the intent of Congress as stated in the Federal Land Policy and Management Act, under the principles of multiple use and sustained yield. As required by the Federal Land Policy and Management Act and BLM policy, the public lands must be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; that will provide for