

CHAPTER 2

ALTERNATIVES

CHAPTER 2

ALTERNATIVES

2.1 Introduction

This chapter discusses the proposed and alternative actions that have been identified to promote a sustainable, healthy, and resilient landscape on the 3 Bars ecosystem. The proposed and alternative actions are those that could be taken to feasibly attain the BLM's objectives of improving the health of the 3 Bars ecosystem and reducing the risk factors that are contributing to its decline. Alternatives were developed to respond to the various issues and alternative proposals raised during public scoping, yet still meet the project's purpose and need as described in Chapter 1. Alternatives were also developed to ensure BLM compliance with federal, tribal, state, and local regulations, and the Shoshone-Eureka RMP.

As described in the Scoping Report (AECOM 2010), alternative treatment proposals were generated during public scoping and focused primarily on the types of restoration treatments that would be used by the BLM. The primary proposals centered on limiting treatment acres, limiting livestock grazing, limiting the use of herbicides and prescribed fire, using only passive treatment methods, and restoring land using only native vegetation.

To help the reader better understand the alternative proposals, this chapter describes the project components that are specific to the action alternatives, including the proposed treatment areas, projects, and methods. This is followed by a discussion of actions that are specific to each action alternative, a description of the No Action Alternative, and a description of alternatives considered but not evaluated in the EIS. Finally, the chapter provides a summary of environmental and socioeconomic impacts that would result from implementation of the alternatives.

Four alternatives are evaluated in this EIS—the All Treatment Methods Alternative (Alternative A; Preferred Alternative); the No Fire Use Alternative (Alternative B); the Minimal Land Disturbance Alternative (Alternative C); and the No Action Alternative (Alternative D; Continue Current Management). Alternative actions are those that could be taken to feasibly attain the BLM's objectives for improving the health of, and reducing risks to, the 3 Bars ecosystem. The alternatives differ primarily in the types of treatment methods allowed and the amount of acreage that can reasonably be treated over the life of the project.

2.2 Action Alternatives (Alternatives A, B, and C)

2.2.1 Activities Common to All Action Alternatives

2.2.1.1 Treatment Area Selection

An interdisciplinary team of BLM resource specialists met in August 2010, and in February, November, and December 2011, to identify priority treatment areas within the 3 Bars ecosystem, and to develop specific projects to improve ecosystem health, based on project purposes. Treatment areas were based on four priority vegetation management concerns identified by the interdisciplinary team—aspens, riparian, pinyon-juniper, and sagebrush. For each of these treatment areas, the BLM identified goals and objectives, methods, and SOPs that could apply to treatment areas.

2.2.1.2 Site-specific Project Selection

Once treatment areas and management concerns were identified, the BLM identified site-specific projects that could occur for each vegetation management concern. In addition to considering the current and desired health of the landscape, the team also considered several other factors when developing site-specific projects, including: 1) how the projects would comply with statutory guidance; 2) BLM program guidance, including the Healthy Lands Initiative and the Great Basin Restoration Initiative; 3) land use of the project area; 4) likelihood of success; 5) effectiveness and cost of the treatments; 6) proximity of the treatment area to sensitive areas, such as wetlands, streams, or habitat for plant or animal species of concern; 7) potential impacts to humans and fish and wildlife, including non-game species; and 8) need for subsequent revegetation and/or restoration.

Once the BLM refined site-specific projects, the Mount Lewis Field Office met with the tribes, NDOW, Eureka County, and non-government organizations to discuss the approach, identify project priorities, and to seek advice on the development of individual site-specific projects.

2.2.1.3 Treatment Methods

Manual, mechanical, and biological control methods, and prescribed fire and wildland fire for resource benefit, could be used by the BLM to restore the 3 Bars ecosystem. The methods available to the BLM would depend upon the alternative chosen by the decision-maker. The types of tools used with these methods and the benefits and adverse impacts from using these treatments are discussed in more detail in the 17-States PEIS and PER (USDOI BLM 2007b, c), BLM Handbook H-1740-2, *Integrated Vegetation Management* (USDOI BLM 2008b), and *Environmental Assessment Integrated Weed Management Plan Battle Mountain District Nevada Mt. Lewis Field Office and Tonopah Field Office* (USDOI BLM 2009b). In addition, the BLM has identified other treatment activities that would be done as part of projects, and could entail multiple treatment methods. These include seeding, fencing, firewood cutting, and activity fuels disposal. Some treatment methods would not be available for use depending upon the alternative that is selected. For example, fire treatment methods could not be used under Alternatives B and C.

2.2.1.3.1 Manual Treatments

Manual treatment involves the use of hand tools and hand-operated power tools (including chainsaws and weed whackers) to cut, clear, or prune herbaceous and woody species. Treatments include cutting undesired plants above the ground level; pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth; cutting at the ground level or removing competing plants around desired species; or placing mulch around desired vegetation to limit competitive growth (USDOI BLM 2007c).

Manual techniques can be used in many areas and usually with minimal environmental impacts. Although they have limited value for vegetation control over a large area, manual techniques can be highly selective. Manual treatments can be used in sensitive habitats such as riparian zones, areas where burning would not be appropriate, and in areas that are inaccessible to ground vehicles.

Selective cutting using chainsaws may occur in specific areas and may include a single tree to several acres of trees. Selective cutting may include dead, diseased, or healthy trees depending on site evaluation and treatment objectives. It may be necessary to cut healthy trees where there are no dead or diseased trees that can be removed to meet resource objectives. Cut trees may be removed, chipped, lopped and scattered, or piled and burned if prescribed fire is permitted, based on the site evaluation and restoration objectives.

Other manual treatments that may be used by the BLM in the 3 Bars ecosystem include hand cutting or removal of noxious weeds and other vegetation and hand planting of vegetation. In addition, the BLM could build wood and rock structures in streams to help trap sediments and construct fence enclosures around treatment areas by hand.

2.2.1.3.2 Mechanical Treatments

Mechanical treatment involves the use of vehicles such as wheeled tractors, crawler-type tractors, specially designed vehicles with attached implements designed to cut, uproot, or chop existing vegetation, and bulldozers, dump trucks, pickup trucks, and trailers for moving and hauling materials. The selection of a particular mechanical method is based on the characteristics of the vegetation, seedbed preparation and revegetation needs, topography and terrain, soil characteristics, climatic conditions, and an analysis of the improvement cost compared to the expected productivity (USDOI BLM 2007c:2-14).

Mechanical methods are effective for removing thick stands of vegetation. Some mechanical equipment can also mulch or lop and scatter vegetation debris, so debris disposal is taken care of while the vegetation is removed. Mechanical methods are appropriate where a high level of control over vegetation removal is needed, such as in sensitive wildlife habitats or near homesites, and are often used instead of prescribed fire or herbicide treatments for vegetation control in the wildland-urban interface.

Chaining

Chaining would be recommended in areas with a dense shrub or tree cover and a sparse herbaceous understory. Site evaluations would determine if the local seed source is sufficient to accomplish revegetation, or if seeding would be conducted in coordination with this treatment. Chaining treatments would be limited to slopes of 30 percent or less.

An Ely chain is an anchor chain with hard-surfaced railroad rail, welded crossways to every link, every other link, or every third link. Swivels are required on both ends. They are of approximately 200 feet in length, and would be pulled through the treatment area twice by two bulldozers. During the second pass, the chain would be pulled through 180 degrees from the first direction. This method, called “double chaining,” knocks trees over during the first pass and uproots them during the second pass. This increases the mortality of the treated trees and furrows the downed trees, reducing surface fuel loads. Seeding would occur before the second pass of the chain, so that the second pass would cover the seed. Treatment areas would be double-chained and treatments would be conducted in the fall and winter months (USDOI BLM 2012b:11).

A smooth chain has unmodified smooth links of various lengths and weights. Swivels are required on both ends. Smooth chains are preferred when the objective is to release and open up tree and shrub communities such as pinyon-juniper or big sagebrush. A smooth chain typically requires only a one time pass when attempting to reduce shrub cover or pull over trees burned by wildland fire. The one time pass can also be effective in covering seed broadcast in advance of the chaining (Stevens 1999).

Mowing

Mowing tools, such as rotary mowers or straight-edged cutter bar mowers, can be used to cut herbaceous and woody vegetation above the ground surface at varying heights. Mowing is often done along highway rights-of-way to reduce fire hazards, improve visibility, prevent snow buildup, or improve the appearance of the area. Mowing is also used in sagebrush habitats to create a mosaic of uneven aged stands to enhance wildlife habitat. Mowing is most effective on annual and biennial plants.

Mulching/Shredding

The BLM would mulch/shred trees on site. Sites with suitable understory vegetation and that require little or no seeding are appropriate for mulching/shredding. Mulching/shredding is a more selective approach to tree removal than chaining. The mulching/shredding equipment is mounted onto tracked or wheeled vehicles and may include such equipment as a bull hog, hydro axe, or any machine designed for the mulching/shredding of tree species. Wood chips and branch/leaf mulch would be dispersed on site, not to exceed 3 inches deep. Mulching/shredding also has slope limitations of 30 percent or less. Mulching/shredding efforts may be conducted in coordination with seeding operations, which would allow mulch and wood chips to cover the seed. Mulching/shredding causes less ground disturbance than chaining, but causes more ground disturbance than hand thinning methods.

Tilling

Tilling involves the use of angled disks (disk tilling) or pointed metal-toothed implements (chisel plowing) to uproot, chop, and mulch vegetation. This technique is best used in situations where complete removal of vegetation or thinning is desired, and in conjunction with seeding operations. Tilling leaves mulched vegetation near the soil surface, which encourages the growth of newly planted seeds. Tilling is usually done with a brushland plow, a single axle with an arrangement of angle disks that covers about 10-foot-wide swaths. An offset disk plow, which consists of multiple rows of disks set at different angles to each other, is pulled by a crawler-type tractor or a large rubber tire tractor. This method is often used for removal of sagebrush and similar shrubs or to reduce annual competition from invasive species such as cheatgrass and works best on areas with smooth terrain, and deep, rock-free soils. Chisel plowing can be used to break up soils such as hardpan.

Roller Chopping

Roller chopping tools are heavy bladed drums that cut and crush vegetation up to 5 inches in diameter with a rolling action. The drums are pulled by crawler-type tractors, farm tractors, or a special type of self-propelled vehicle designed for wooded areas or range improvement projects. The drums can be offset to vary the mortality of target species.

Feller-buncher

Feller-bunchers are machines that grab trees, cut them at the base, pick them up, and move them into a pile or onto the bed of a truck. Feller-bunchers are used in woodland thinning to remove potential hazardous fuels. Large chippers, or “tub-grinders,” are often used to chip the limbs, bark, and wood of trees to generate mulch or biomass, which can be used in power generation facilities.

Tree Shearer

A tree shearer is an implement that attaches to a tractor and can be used to cut down (clip) trees up to about 14 inches in diameter with a single pass. The units can cut trees on a vertical or horizontal plane, and can be used to hold and move cut trees.

2.2.1.3.3 Biological Control Treatments

Biological control involves the intentional use of domestic animals, insects, nematodes, mites, or pathogens that weaken or destroy vegetation (USDOI BLM 2007c). Biological control is used to reduce the targeted vegetation to an acceptable level by removing vegetation, stressing target plants, or reducing competition with desirable plant species.

The BLM is proposing to use targeted grazing to control cheatgrass and other invasive, non-native vegetation in sagebrush management units. The BLM does not currently use classical biological control, but could do so in the future if effective control agents are found to control cheatgrass and other noxious weeds and invasive non-native vegetation.

Targeted Grazing

Targeted grazing is the purposeful application of a specific kind of livestock at a determined season, duration, and intensity, to accomplish defined vegetation or landscape goals (American Sheep Industry 2006, Launchbaugh and Walker 2006). Targeted grazing would be conducted on the 3 Bars Project area to control annual and invasive herbaceous species, particularly cheatgrass. Targeted grazing would also be used to remove vegetation associated with the previous growing season's growth of annual or invasive species to increase the effectiveness of subsequent methods of treatment. The goal of targeted grazing is to give desired plant species a competitive advantage over the species targeted by the treatments. A successful grazing prescription should: 1) cause significant damage to the target species; 2) limit damage to the surrounding vegetation; and 3) be integrated with other control methods as part of an overall landscape management strategy.

Classical Biological Control

Classical biological control involves the intentional use of insects, nematodes, mites, or pathogens (agents such as bacteria or fungi that can cause diseases in plants) that weaken or destroy vegetation. Biological control is used to reduce the targeted weed population to an acceptable level by stressing target plants and reducing competition with desirable plant species.

Plant-eating insects, nematodes, mites, or pathogens affect plants directly, by destroying vital plant tissues and functions, and indirectly, by increasing stress on the plant, which may reduce their ability to compete with other plants. Often, several biological control agents are used together to reduce the density of undesired vegetation to an acceptable level.

Biological control agents used by the BLM have been tested by the USDA Agricultural Research Service and reviewed and permitted for release by the USDA Animal Plant Health Inspection Service to ensure that they are host-specific and will feed only on the target plant and not on crops, native flora, or endangered or threatened plant species (USDOI BLM 2007c:2-16).

2.2.1.3.4 Fire

Fire includes the use of prescribed fire and wildland fire for resource benefit. Prescribed fire and wildland fire for resource benefit supported by fire management plans may be used to control vegetation; enhance the growth, reproduction, or vigor of certain species; manage fuel loads; and maintain vegetation community types that meet multiple-use management objectives (USDOI BLM 2007c:2-13). To ensure treatment success, the BLM would follow guidance in the 2004 *Battle Mountain District Fire Management Plan* (USDOI BLM 2004a).

Prescribed Fire

Prescribed fire is the intentional application of fire to wildland fuels under specified conditions of fuels, weather, and other variables. The intent is for the fire to stay within a predetermined area to achieve site-specific resource management objectives. Prescribed fire treatments include broadcast burning and the burning of hand stacked piles. Broadcast burning treatments would occur in areas where slope is the limiting factor for mechanical treatments. Prescribed fire would reduce hazardous fuels loads on a project site and assist in preparation of the site for seeding.

Prescribed burning would generally be completed during the spring months (February through June) or fall (September through December). For spring burns, the start date would be as early as possible after snowmelt to burn trees with minimal impacts to the soil and understory herbaceous vegetation. Fall burns would be scheduled based on prescriptions outlined in the burn plans for each specific treatment area.

When used in combination with the manual and mechanical treatments, pile burning may be an appropriate action to remove fuels from the site. Piles would be constructed using the debris and dead material left on site after the implementation of a mechanical treatment. Piles would be burned based on environmental conditions and in coordination with a developed burn plan.

Management of Wildland Fire for Resource Benefit

In areas where there is no threat to human life or property, naturally ignited wildfires can be used to meet resource objectives to maintain ecosystems that are functioning within their normal fire regime or help return ecosystems to a more natural fire regime. These fires must meet specific environmental prescriptions, and be thoroughly evaluated for potential risk before being managed to benefit the resource. They are utilized only in pre-planned areas and when there are adequate fire management personnel and equipment available to achieve defined resource objectives.

Natural ignitions within the project areas could be managed to achieve desired resource objectives if the environmental conditions allow for attainment of those objectives. Each wildland fire is evaluated at the time of ignition through the use of the Wildland Fire Decision Support System to determine whether the fire should be allowed to burn, or if suppression activities are required to put out the fire.

2.2.1.3.5 Seeding and Planting

All treatments could involve seeding or hand planting. Seeding would occur on disturbed sites when it has been determined that native vegetation growth and on-site seed source are inadequate to ensure successful revegetation of the site. If areas of the 3 Bars ecosystem have been impacted by wildfire and the site has not revegetated with desirable vegetation, seeding may be needed. Seed mixes would primarily be composed of native species; however, non-native species may be used to meet restoration objectives in areas where interim measures associated with site stabilization are required (phased succession). Species selection would be based on site potential and objectives. A variety of seeding methods may be used. Depending on the terrain, soil type, soil moisture, and seed species, one or more of the following seeding methods may be used.

Hand Seeding

Hand seeding includes scattering seed by hand without the use of tools, or by using hand-held broadcast spreaders. Small areas may be planted with seedlings of key species such as sagebrush, cliffrose, or at higher elevations,

bitterbrush. Seedlings would be planted in the early spring while soil moisture is adequate to allow for seedling establishment.

Broadcast and Drag Seeding

Broadcast and drag seeding is the application of seed by aircraft, truck, or all-terrain vehicle, and is followed by dragging a heavy chain across the seeded area to enhance ground-to-seed contact. Ground-to-seed contact can be a critical factor in successful seeding.

Drill Seeding

Drill seeding is the application of seed by Rangeland or Truax seed drills pulled behind a tractor, truck, or other vehicle. Seed drills operate on the principle of inserting (or drilling) the seed into the soil, thereby ensuring proper seeding depth and ground-to-seed contact.

Often, drill seeding is conducted along with tilling. The seed drills, which consist of a series of furrow openers, seed metering devices, seed hoppers, and seed covering devices, are either towed by or mounted on a tractor. The seed drill opens a furrow in the seedbed, deposits a measured amount of seed into the furrow, and closes the furrow to cover the seed.

Harrow Seeding

Harrow seeding is the application of seed using a broadcast method, followed by pulling a series of spikes (usually attached in rows to a metal frame) along the ground to cover the seed and smooth the soil. This action improves the ground-to-seed contact.

Aerial Broadcast Seeding

Aerial broadcast seeding is the application of seed using airplanes or helicopters, with the seed falling through the air and landing randomly within the application area.

Planting

Plantings would be done by hand and would utilize container stock, bare root stock, or cuttings and would involve digging holes and burying root material.

2.2.1.3.6 Firewood Cutting

Many of the proposed treatment areas would be opened to green and dead fire woodcutting for commercial and non-commercial uses prior to treatments. The authorization of green and dead firewood cutting within the proposed treatment areas would allow the public to utilize the pinyon and juniper that are proposed for removal.

2.2.1.3.7 Streambank Stabilization and Channel Restoration

As discussed in Chapter 1, natural and man-caused factors on the 3 Bars ecosystem have led to streams and associated meadows that are being threatened by knickpoints and headcuts, channel incision, and streambank erosion. Key stream components, such as stream channel sinuosity, streambank stability, and occurrence of woody and rock debris in stream channels, help to dissipate flood energy and are lacking in many streams on the 3 Bars Project area.

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The BLM proposes to restore streams by removing, or reducing the effects of, causative factors that have led to stream degradation, and implementing bioengineering and other streambank stabilization methods to restore stream functionality. Several approaches would be used to restore streams.

Because a large number of the incised gully type channels in the project area need to erode further before they can form new floodplains, the BLM would use techniques to induce meandering (Zeedyk and Van Clothier 2009). These include the use of deflectors and vanes to create lateral erosion of a streambank in order to widen the channel and alter the meander geometry along the opposite bank while decreasing velocity along the adjacent bank. The result would be accelerated erosion on the opposite bank, with an increase in sedimentation along the adjacent bank, causing the formation of a point bar that becomes colonized by riparian vegetation that helps to reduce erosion.

A rock channel liner, which is a long, narrow, one-rock dam, and much longer than it is wide, could be built into a recently incised gully bottom and used to armor the bed and/or reconnect bankfull flow with the recently abandoned floodplain.

The BLM could improve stream functionality through channel fill (i.e., roughened channel bed) to raise the bed, and installation of large wood, boulder clusters, or other roughness elements that promote predictable patterns of scour, deposition, and local energy dissipation.

Weirs can be used to control the grade of a stream, while log and fabric step falls, step pools and rock rundowns, and Zuni bowls could be used to control and repair headcut advance, dissipate the energy of the falling water, and modify streamflow. Several of these structures may be needed to stabilize the headcut. The BLM may also stabilize channels by raising the elevation of an existing culvert to achieve streambed stabilization, and hardening road or animal crossings to reduce the impacts of vehicles and hooved animals on the stream channel.

Stream Restoration Terminology

Baffle is a deflector of various configuration and materials, used to create lateral erosion of a streambank in order to widen the channel and alter the meander geometry. A baffle functions by concentrating stream velocity along the opposite bank while decreasing velocity along the adjacent bank. The result is accelerated erosion of the opposite bank with a commensurate increase in sediment deposition along the adjacent bank, causing point bar formation. As the point bar becomes colonized by riparian vegetation, it becomes increasingly resistant to erosion and more effective at deflecting flow towards the opposite bank. In order to achieve the desired meander pattern, baffles must be properly sized and spaced.

Culvert retrofit is a method of stabilization which consists of raising the effective invert elevation of an existing culvert without replacing the existing installed pipe. Bed control can be achieved without the cost of a new culvert installation.

Hardened rock crossing is a form of low water crossing which utilizes rock to reduce the impact of vehicle and animal traffic on a stream crossing.

Log and fabric step fall is a structure used to control headcuts advancing through wet soil areas such as wet meadows and spring seeps. The erosive action can be stopped if a healthy mat of wet soil vegetation can become established to hold the lip of the headwall in place.

Rock channel liner is a long, narrow one rock dam, much longer than it is wide, built in a recently incised gully bottom and used to armor the bed and/or reconnect bankfull flow with the recently abandoned floodplain.

Step pools and rock rundowns are a stabilization method that repairs a high energy headcut by laying back the headcut at a less steep gradient by building a series of step pools to gradually dissipate the energy of the falling water. Several structures of different types applied in sequence are often required to stabilize a headcut.

Vane is a type of deflector that utilizes an upstream-point-barb to divert high velocity flow away from a cutbank or the outboard side of a meander bend. A vane can also be used to direct flow into the opposite bank, initiating bank erosion and causing the channel to widen in that direction.

Vegetation manipulation is the selective planting or removal of protective streambank vegetation to increase or decrease the rate of erosion or deposition of material within a stream channel.

Weir is a structure of various material content, which spans the bankfull width of a channel and is used to control the slope, or grade, of a stream.

Zuni bowl is a headcut control structure which uses the principle of the natural cascade or step pool. Rather than spill water directly over a high falls, the cascade is used to build a series of smaller steps and pools thus keeping the velocity within a manageable range.

The BLM would also use bioengineering to restore stream functionality. Bioengineering integrates living woody and herbaceous materials with organic and inorganic materials to increase the strength and structure of the soil. In particular, this would be accomplished through the use of native plantings that would result in a dense matrix of roots to hold the soil together. The above-ground vegetation would increase the resistance to water flow and reduce flow velocities by dissipating energy. The biomass also acts as a buffer against the abrasive effect of water-transported materials and allows for sediment deposition due to low shear stress near the bank (Bentrup and Hoag 1998).

2.2.1.3.8 Activity Fuels Disposal

Manual and mechanical methods may result in fuels that need to be removed from the treatment site. Woody debris and dead material left on site after treatment (activity fuels) would be disposed of through various methods. All of the following methods would be available under Alternative A, however, under Alternatives B and C, available methods to dispose of activity fuels would depend on the specific authorizations allowed under each alternative. Pile and slash burning would be based on environmental conditions and guidance in a developed burn plan.

Biomass Utilization

Pinyon and juniper activity fuels larger than 3 inches in diameter could be made available for firewood, fence posts, biochar, pellets, etc. Coarse and large wood could be placed in-stream to reduce vertical incisement and shear stresses in riparian restoration projects. Additionally, activity fuel could be removed by commercial entities through contracts.

Pile Burning

Activity fuels would be selectively piled on site and burned under appropriate conditions. Piles should not exceed 10 feet long by 10 feet wide by 6 feet high. Burn piles would be piled with fine fuels and slash in the interior and larger fuels on the exterior. Burn piles may be covered with wax paper or other similar material (no plastic) to promote burning. Piles would generally be burned during the spring, fall, or winter.

Slash Burning

Activity fuels would be scattered on the treatment site to create a slash Fire Behavior Fuel Model. Slash units should not exceed 100 acres in size. Slash would be burned during the spring, fall, or winter.

Chipping

Activity fuels would be turned into wood chips with the use of a mechanized chipper. This activity could take place on-site or material could be transported off-site to a staging area for chipping.

Broadcast Burning

Activity fuels could be scattered within the treatment area and incinerated using the broadcast burning method. This would be done in areas where impacts to shrubby vegetation would be minimal.

Leave on Site

Material generated from treatment activities would be left on-site in small piles as wildlife habitat.

2.2.1.4 Standard Operating Procedures and other Resource Protections

Standard operating procedures would be followed by the BLM under all alternatives to ensure that risks to human health and the environment from treatment actions would be kept to a minimum. Standard operating procedures are the management controls and performance standards required for vegetation management treatments and streambank stabilization. These practices are intended to protect and enhance natural resources that could be affected by future treatments.

The BLM will comply with SOPs identified in the 17-States PEIS (USDOI BLM 2007b:2-22 to 2-38), and PER (USDOI BLM 2007c:2-31 to 2-44). These SOPs have been identified to reduce adverse effects to environmental and human resources from vegetation treatment activities based on guidance in BLM manuals and handbooks, regulations, and standard agency and industry practices. In addition to these SOPs, the Mount Lewis Field Office has identified additional SOPs that would apply to the 3 Bars Project. Standard Operating Procedures that will be used for the 3 Bars Project are provided in **Appendix C**.

2.2.1.5 Monitoring

Monitoring ensures that resource management is an adaptive process that builds upon past successes and learns from past mistakes. The regulations of 43 CFR § 1610.4-9 require that BLM land use plans establish intervals and standards for monitoring and evaluating land management actions. During preparation of implementation plans for a specific project, treatment objectives, standards, and guidelines are stated in measurable terms, where feasible, so that treatment outcomes can be measured, evaluated, and used to guide future treatment actions. This approach ensures that restoration treatment processes are effective, adaptive, and based on prior experience. It also helps to ensure that project objectives are met (USDOI BLM 2007b:2-35).

The diversity of plant communities on BLM lands calls for a diversity of monitoring approaches. Monitoring strategies may vary in time and space depending on the target species. Sampling designs and techniques vary depending on the type of vegetation. Guidance on monitoring methodologies can be found in such BLM documents as *Measuring and Monitoring Plant Populations* (BLM Technical Reference 1730-1; Elzinga et al. 1998), which was developed in cooperation with The Nature Conservancy. Other guidance documents include *Sampling Vegetation Attributes* (USDA and USDOI 1999), developed in cooperation with the Forest Service, the Natural Resources Conservation Service, and the Cooperative Extension Service; and the *Ecological Site Inventory* (BLM Inventory and Monitoring Technical Reference 1734-7; Habich 2001). These documents, as well as numerous other guidance documents for specific plant communities, can be found on the National Science and Technology Center website (<http://www.blm.gov/nstc>). These documents, plus any regionally specific documents developed to meet management objectives, allow the flexibility needed to monitor the variety of vegetation found on public lands.

Post-restoration monitoring of stream stabilizing treatments will be performed for at least 5 years to identify maintenance needs, evaluate performance of structures and channel response, provide a basis to modify treatments that are not performing as planned (if needed), measure effects on ecologic, hydrologic, and geomorphic processes, and meet reporting and Clean Water Act 404/401 permitting requirements. Photo monitoring will be used to document general changes that take place between retakes. Vegetation will be monitored to detect changes in plant species composition, cover, density, vigor, reproduction, age class distribution, decadence, and mortality. When a treatment objective is to improve wildlife or aquatic habitat, the BLM will conduct surveys to detect and measure change in ecological conditions favoring different classes or species of animals. Geomorphological monitoring would be used to detect and measure changes in dimension, plan, and profile of the project stream reach. This would consist

of transects or complete 3-dimensional modeling for entire stream reaches. Hydrologic monitoring, through the use of piezometers, would be utilized when the primary objective of treatments for the site is to increase base flows. Structural design, implementation and monitoring for stream restoration within the 3 Bars Project Area would follow guidelines provided by Zeedyk and Clothier (2009).

Two types of monitoring of vegetation treatments may be pursued by the BLM. One type is implementation monitoring, which answers the question, “Did we do what we said we would do?” The second type is effectiveness monitoring, which answers the question, “Were treatment and restoration projects effective?” Implementation monitoring is usually done at the land use planning level or through annual work plan accomplishment reporting. Effectiveness monitoring is usually done at the local project implementation level.

Implementation monitoring for vegetation treatments is accomplished through site visits during the growing season of the target species to determine whether treatments were implemented correctly and to identify the best time for follow-up treatments.

The BLM has prepared numerous guidance and strategy documents, as listed in the 17-States PEIS, to aid field personnel in developing and implementing monitoring plans and strategies. This list can be accessed at http://www.blm.gov/wo/st/en/prog/more/veg_eis.html. Numerous other technical references for inventory, monitoring, and assessment are found at: <http://www.blm.gov/nstc/library/techref.htm>.

The results of monitoring would be made available to interested parties upon request.

2.2.1.6 Coordination and Education

As demonstrated at public scoping meetings for the EIS, the public is deeply interested in BLM treatment activities. This is especially true of individuals who live in close proximity to public lands, who have commercial operations dependent on vegetation on or adjacent to public lands including grazing permittees, or who use public lands for recreation. The BLM strives to keep the public informed about its treatment activities through regular coordination and communication. The BLM also encourages the public to participate in the environmental review process during the development and analysis of local vegetation management programs.

Several laws and Executive Orders set forth public involvement requirements, including involving the public in the environmental analysis and land use planning to address local, regional, and national interests.

The NEPA process ensures that the public is allowed input into management actions on public lands. For treatment projects requiring an EIS or Environmental Assessment, the BLM must notify the public of the proposed project and give the public the opportunity to comment on the site-specific analysis done for the project. Treatment actions may be modified in response to comments posed by the public. The public may also be invited to observe treatment activities and participate in project monitoring.

The BLM is ultimately responsible for land use decisions, including decisions about vegetation management, on public lands. The BLM has found, however, that collaborative relationships with stakeholders, including individuals, communities, tribes, and governments, improves communication, provides a greater understanding of different perspectives, and helps to find solutions to issues and problems. Input from the public, tribal, and government agencies has been critical during development of this EIS.

3 Bars Project lands are commingled with private lands, and lands under the jurisdiction of tribal, state, or local governments or other federal agencies are nearby. Multijurisdictional planning assists land use planning efforts when there is a mix of land ownership and government authorities, and there are opportunities to develop complementary decisions across jurisdictional boundaries. Human-related activities allowed under the Federal Land Policy and Management Act, such as livestock grazing and off-highway vehicle use, would continue to be allowed on the 3 Bars ecosystem.

2.2.2 Activities Specific to Each Action Alternative

2.2.2.1 Alternative A — All Treatment Methods Alternative (Preferred Alternative)

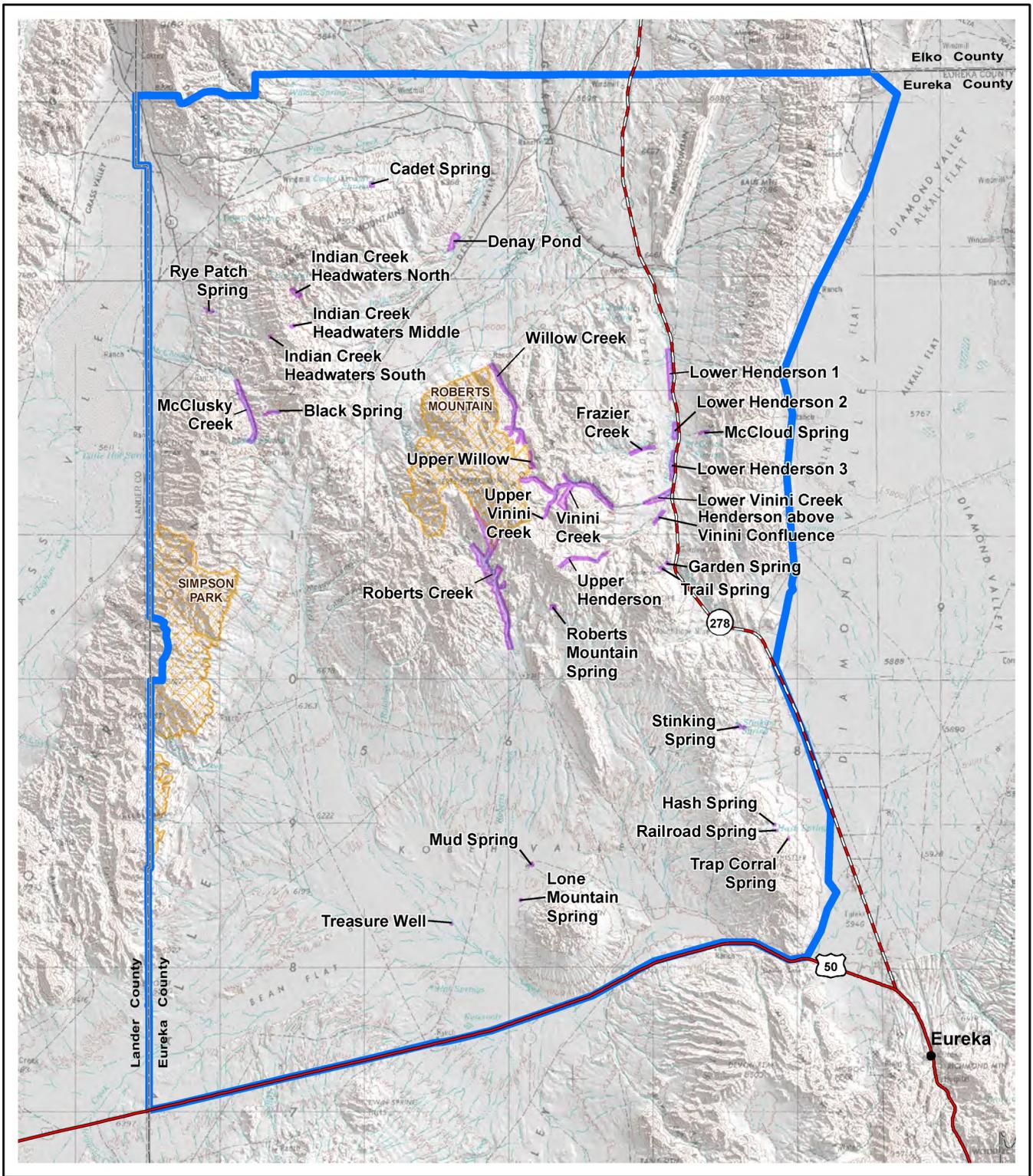
Alternative A is the BLM's Preferred Alternative. Under this alternative, the BLM would treat about 127,000 acres during the life of the project, or about 12,700 acres annually using manual and mechanical methods, fire (both prescribed and wildland fire for resource benefit), and biological controls (primarily to control noxious weeds and other invasive non-native vegetation using livestock and classic biological [use of nematodes, fungi, mites, and insects]). Treatments would focus on protecting landscapes and treatment projects would usually address multiple resource issues.

The BLM has identified site-specific treatment projects that it would like to implement under this alternative to improve the health of the 3 Bars ecosystem. Treatments would focus on four priority vegetation management concerns—riparian, aspen, pinyon-juniper, and sagebrush.

2.2.2.1.1 Riparian Treatments

The BLM has identified about 3,885 acres of riparian zone treatments (**Figure 2-1**). These areas were selected by the BLM because they exhibited riparian structural issues such as incised channels, headcuts, and knickpoints; did not meet Proper Functioning Condition standards (see Section 3.10 for a discussion of Proper Functioning Condition standards); or required treatment to improve habitat for Lahontan cutthroat trout. Treatments to address stream structural issues include headcut abatement, to address a headcut at a specific point in a stream; headcut incision abatement, to address stream segments where the channel is still actively downcutting and there is a headcut present; and incision abatement, where the stream segment has an incised channel but not a headcut. In addition, pinyon-juniper encroachment into some riparian zones is compromising riparian health. Treatments would be conducted using manual and mechanical methods and prescribed fire. **Table 2-1** provides information on treatment size, goals and objectives, features, methods, and equipment used for riparian treatment projects.

Of these acres, about 577 acres would be treated within the Grass Valley, JD, Lucky C, Roberts Mountains, and Romano allotments, which are within the Simpson Park Range and Kobeh and Denay Valleys. Treatments range in size from 292 acres at McClusky Creek to 1 acre at Treasure Well. These include 402 acres of treatments on several streams, ponds, wells, and springs—Black Spring, Cadet Spring, Indian Creek Headwaters North, Middle, and South, Mud Spring, McClusky Creek, and Rye Patch Spring (Black Spring Group). Treatment methods include manual and mechanical methods. Treatments would involve structural changes to stream channels to address headcuts and stream incisions. Treatments would also involve grade stabilization structures, streambank bioengineering, and vegetation plantings. Track-hoes, back-hoes, and dump trucks would be used for dirt work and to haul rock. A pickup truck and trailer would be used to haul protective fencing that would be used to prevent access to treated sites by livestock, wild



Legend

- Riparian Treatment Area
- Wilderness Study Area
- 3 Bars Project Area

Source: BLM 2011c.

**3 Bars Ecosystem and
Landscape Restoration Project**

**Figure 2-1
Riparian Treatment Areas**

0 1 2 3 4 5 10 Miles

0 1 2 3 4 5 10 Kilometers

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.

TABLE 2-1

Proposed 3 Bars Riparian Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Features	Acres to be treated under Alternative			Method/Equipment ¹
					A	B	C	
Black Spring	15	Address headcuts and stream incision and restore riparian functionality.	Achieve Proper Functioning Condition.	Grade stabilization structures, stream bank bioengineering, removal/reconstruction of water development, and vegetation plantings to initiate stream restoration. Protective fencing may be utilized to facilitate restoration.	15	15	15	<p>Manual: Chainsaws, axes, shovels, rakes, etc., and materials and activity fuel disposal (biomass utilization, chipping, and leave on site).</p> <p>Mechanical: Track-hoe or back-hoe and dump truck for hauling rock or dirt; pick-up and trailer for hauling fencing and/or planting materials; and activity fuel disposal (biomass utilization, chipping, and leave on site).</p> <p>Prescribed fire: Activity fuel disposal (pile burning).</p>
Cadet Spring	18	See Black Spring	See Black Spring	See Black Spring	18	18	18	See Black Spring
Indian Creek Headwaters North	50	See Black Spring	See Black Spring	See Black Spring	50	50	13	See Black Spring
Indian Creek Headwaters Middle	6	See Black Spring	See Black Spring	See Black Spring	6	6	6	See Black Spring
Indian Creek Headwaters South	4	See Black Spring	See Black Spring	See Black Spring	4	4	4	See Black Spring
McClusky Creek	292	See Black Spring	See Black Spring	See Black Spring	292	292	73	See Black Spring
Mud Spring	8	See Black Spring	See Black Spring	See Black Spring	8	8	8	See Black Spring
Rye Patch Spring	9	See Black Spring	See Black Spring	See Black Spring	9	9	9	See Black Spring

TABLE 2-1 (Cont.)

Proposed 3 Bars Riparian Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Features	Acres to be treated under Alternative			Method/Equipment
					A	B	C	
Garden Spring	7	See Black Spring	See Black Spring	See Black Spring; also includes removal of pinyon-juniper within riparian zone and associated shrub community.	7	7	7	See Black Spring; also removal of pinyon and juniper from riparian habitats with manual or mechanical methods, or prescribed fire.
Hash Spring	3	See Black Spring	See Black Spring	See Garden Spring	3	3	3	See Garden Spring
McCloud Spring	15	See Black Spring	See Black Spring	See Garden Spring	15	15	15	See Garden Spring
Railroad Spring	3	See Black Spring	See Black Spring	See Garden Spring	3	3	3	See Garden Spring
Roberts Mountains Spring	18	See Black Spring	See Black Spring	See Garden Spring	18	18	18	See Garden Spring
Stinking Spring	17	See Black Spring	See Black Spring	See Garden Spring	17	17	17	See Garden Spring
Trail Spring	12	See Black Spring	See Black Spring	See Garden Spring	12	12	12	See Garden Spring
Trap Corral Spring	3	See Black Spring	See Black Spring	See Garden Spring	3	3	3	See Garden Spring
Henderson above Vinini Confluence Unit	35	See Black Spring; also enhance stream habitats important for Lahontan cutthroat trout and/or game fish.	See Black Spring	See Black Spring	35	35	9	See Black Spring
Lower Henderson 1 Unit	289	See Henderson above Vinini Confluence Unit	See Black Spring	See Black Spring	289	289	72	See Black Spring

TABLE 2-1 (Cont.)

Proposed 3 Bars Riparian Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Features	Acres to be treated under Alternative			Method/Equipment ¹
					A	B	C	
Lower Henderson 2 Unit	79	See Henderson above Vinini Confluence Unit	See Black Spring	See Black Spring	79	79	20	See Black Spring
Lower Henderson 3 Unit	94	See Henderson above Vinini Confluence Unit	See Black Spring	See Black Spring	94	94	24	See Black Spring
Lower Vinini Creek Unit	151	See Henderson above Vinini Confluence Unit	See Black Spring	See Black Spring	151	151	38	See Black Spring
Upper Vinini Creek Unit	64	See Henderson above Vinini Confluence Unit	See Black Spring	See Black Spring	64	64	16	See Black Spring
Upper Willow Unit	46	See Henderson above Vinini Confluence Unit	See Black Spring	See Black Spring	46	46	12	See Black Spring
Frazier Creek Unit	59	See Henderson above Vinini Confluence Unit	See Black Spring	See Garden Spring	59	59	15	See Garden Spring
Roberts Creek Unit	1,390	See Henderson above Vinini Confluence Unit	See Black Spring	See Garden Spring	1,390	1,390	348	See Garden Spring
Upper Henderson Unit	129	See Henderson above Vinini Confluence Unit	See Black Spring	See Garden Spring	129	129	32	See Garden Spring
Vinini Creek Unit	644	See Henderson above Vinini Confluence Unit	See Black Spring	See Garden Spring	644	644	161	See Garden Spring
Willow Creek Unit	328	See Henderson above Vinini Confluence Unit	See Black Spring	See Garden Spring	328	328	82	See Garden Spring

TABLE 2-1 (Cont.)

Proposed 3 Bars Riparian Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Features	Acres to be treated under Alternative			Method/Equipment ¹
					A	B	C	
Denay Pond	93	Facilitate Restoration.	See Black Spring	Install protective fencing.	93	93	93	Pick-up and trailer for hauling fencing and/or planting materials.
Lone Spring	3	See Denay Pond	See Black Spring	See Denay Pond	3	3	3	See Denay Pond
Treasure Well	1	See Denay Pond	See Black Spring	See Denay Pond	1	1	1	See Denay Pond

¹ This list of methods/equipment is not all inclusive, but rather is intended to provide the reader with a general understanding of the various ways implementation may be carried out.

ALTERNATIVES

horses, and wild ungulates. Existing or temporary fencing may be used to exclude animals until seeded and planted areas become established. Jack fencing using portable steel fencing and posts, let-down fencing using barbed wire and posts that can be let-down easily to allow animals to pass, and electric wire fencing could be used to protect smaller areas, while barbed wire and post fencing or 2-rail steel pipe fencing would likely be used to protect larger areas from animal intrusion. Maintenance for fencing would be determined on a project-by-project basis and would be reflected in the individual cooperative agreements for each project.

The BLM would conduct treatments similar to those identified in the previous paragraph on about 78 acres at Hash Spring, Garden Spring, McCloud Spring, Railroad Spring, Roberts Mountains Spring, Stinking Spring, Tall Spring, and Trap Corral Spring (Garden Spring Group). Treatment methods include manual and mechanical methods and use of prescribed fire. Treatments would include the use of track-hoes, back-hoes, and dump trucks for dirt work and to haul rock, and grade stabilization structures, streambank bioengineering, and vegetation plantings. A pickup truck and trailer would be used to haul protective fencing. The BLM would also remove pinyon-juniper from riparian habitats using manual and mechanical methods and prescribed fire. Treatment units range in size from about 3 to 18 acres.

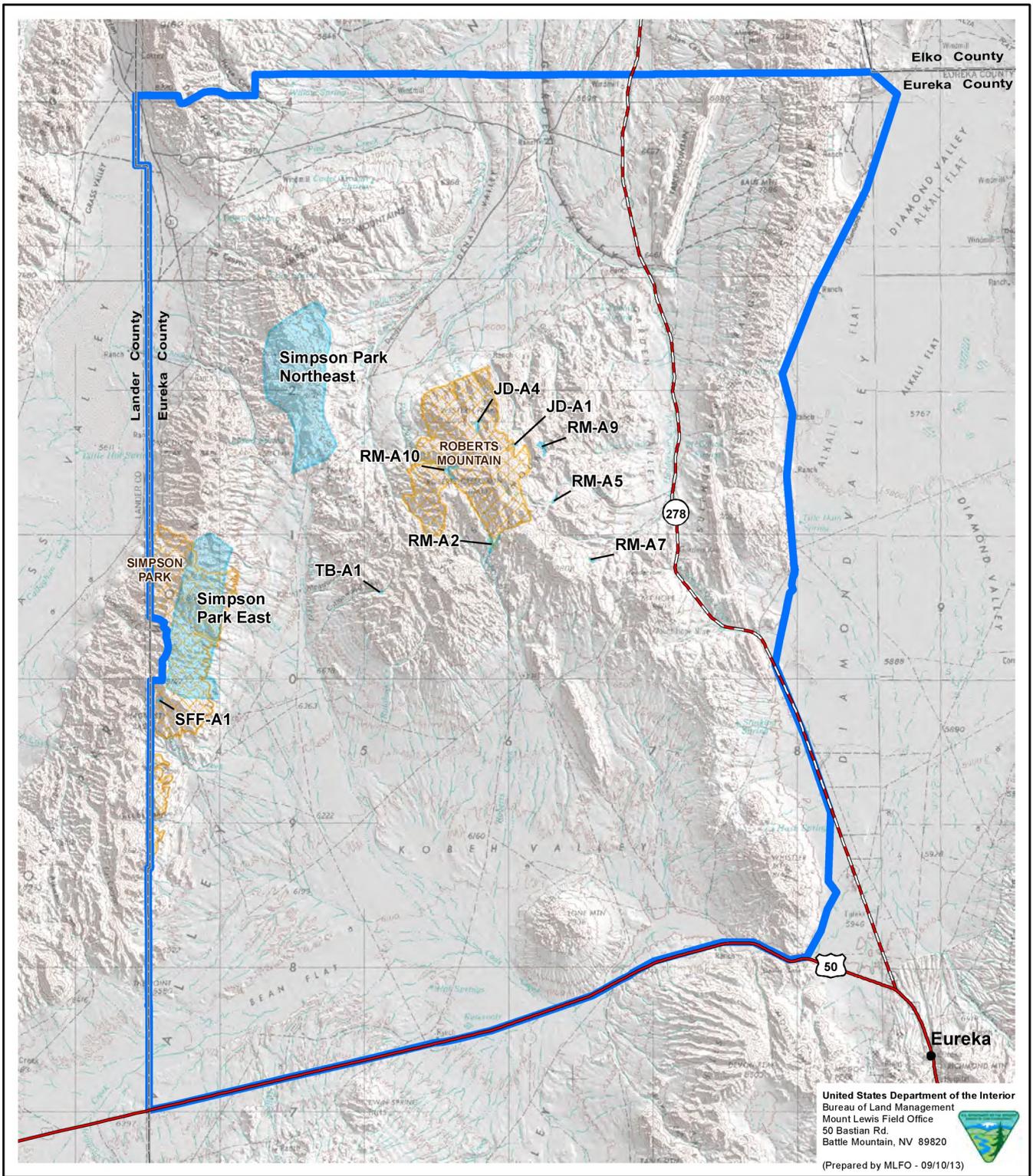
The BLM has also identified an additional 3,262 acres of riparian habitat enhancement treatments that would meet the objectives listed above, but would also enhance habitat for Lahontan cutthroat trout and game fish in streams used currently and historically by Lahontan cutthroat trout and game fish. Manual and mechanical methods, and prescribed fire would be used to treat vegetation. These projects would enhance key wildlife and fish habitats, improve the functionality and structure of Lahontan cutthroat trout and game fish streams, and facilitate reintroduction of Lahontan cutthroat trout into streams used historically by these trout. These treatments would help meet the goals and objectives of the *Recovery Plan for the Lahontan Cutthroat Trout* (Coffin and Cowan 1995). The BLM would use grade stabilization structures, streambank bioengineering, and vegetation plantings on Henderson above Vinini Confluence, Lower Henderson 1, Lower Henderson 2, Lower Henderson 3, Lower Vinini Creek, Upper Vinini Creek, and Upper Willow units (Henderson above Vinini Confluence Group). At the Frazier Creek, Roberts Creek, Upper Henderson, Vinini Creek, and Willow Creek units (Frazier Creek Group), the BLM would use grade stabilization structures, streambank bioengineering, and vegetation plantings, and would also remove pinyon-juniper from riparian habitats using manual and mechanical methods and prescribed fire. Treatment units range in size from about 35 to 1,390 acres.

At Denay Pond, Lone Spring, and Treasure Well, the BLM would use protective fencing, but no other treatments, to restore riparian habitats. These areas total about 97 acres and mechanical and manual methods would be used for treatments.

Felled trees from pinyon-juniper removal would be disposed of by using trees for posts, using trees as mulch, placing logs and larger wood in streams to slow water flow, selling trees for public or commercial use, burning piled or slashed trees, or leaving downed trees on-site for wildlife habitat.

2.2.2.1.2 Aspen Treatments

The BLM has identified about 151 acres of aspen habitat that would be treated within the Roberts Mountains (RM-A2, A5, A7, A9 and A10 sites), JD (JD-A1 and A4 sites), 3 Bars (TB-A1 site), and Santa Fe/Ferguson (SFF-A1 site) allotments (**Figure 2-2**). **Table 2-2** provides information on unit size, project goals, objectives, features, methods, and equipment used for aspen treatment projects.



United States Department of the Interior
 Bureau of Land Management
 Mount Lewis Field Office
 50 Bastian Rd.
 Battle Mountain, NV 89820
 (Prepared by MLFO - 09/10/13)



Legend

- Aspen Treatment Area
- Wilderness Study Area
- 3 Bars Project Area

Source: BLM 2011c.

3 Bars Ecosystem and Landscape Restoration Project

Figure 2-2

Aspen Treatment Areas

0 1 2 3 4 5 10 Miles
 0 1 2 3 4 5 Kilometers

North arrow pointing up.

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.

TABLE 2-2

Proposed 3 Bars Aspen Treatment Projects

Unit Name	Size (acres)	Goals	Objectives ¹	Acres to be treated under Alternative:			Method/Equipment ²
				A	B	C	
Simpson Park East	8,055	Conduct inventories of aspen stands to establish current stand health. Improve aspen stand health.	Obtain 1,500 aspen stems minimum per acre. Achieve 500 aspen stems minimum per acre for saplings 5 to 15 feet tall. Establish minimum of three distinct age classes within stands. Remove 100 percent of pinyon-juniper within and adjacent to stand. Stimulate stand suckering through selective removal of aspen trees. Provide stand protection with temporary or permanent fencing.	150	150	150	Manual: Chainsaws, hand saws, pruners, and activity fuel disposal (biomass utilization and chipping [off-site]). Mechanical: Tractor ripping, feller-buncher, tree shearer and activity fuel disposal (biomass utilization and chipping [on-site]). No mechanical treatments within Wilderness Study Area boundaries. Prescribed fire: Broadcast burning and activity fuel disposal (slash burning and pile burning).
Simpson Park Northeast	8,991	See Simpson Park East	See Simpson Park East	150	150	150	See Simpson Park East

TABLE 2-2 (Cont.)

Proposed 3 Bars Aspen Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
JD-A4	23	Improve aspen stand health.	Obtain 1,500 aspen stems minimum per acre. 500 aspen stems minimum per acre for saplings 5 to 15 feet tall. Establish minimum of three distinct age classes within stands. Remove 100 percent of pinyon-juniper within and adjacent to stand.	23	23	23	See Simpson Park East
RM-A2	39	See JD-A4	Obtain 1,500 aspen stems minimum per acre. 500 aspen stems minimum per acre for saplings 5 to 15 feet tall. Establish minimum of three distinct age classes within stands. Remove 100 percent of pinyon-juniper within and adjacent to stand. Provide stand protection with temporary or permanent fencing.	39	39	39	See Simpson Park East
RM-A7	6	See JD-A4	See RM-A2	6	6	6	See Simpson Park East

TABLE 2-2 (Cont.)
Proposed 3 Bars Aspen Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
RM-A9	36	See JD-A4	See RM-A2	36	36	36	See Simpson Park East
RM-A10	28	See JD-A4	See RM-A2	28	28	28	See Simpson Park East
JD-A1	3	See JD-A4	See Simpson Park East	3	3	3	See Simpson Park East
TB-A1	4	See JD-A4	Obtain 1,500 aspen stems minimum per acre. 500 aspen stems minimum per acre for saplings 5 to 15 feet tall. Establish minimum of three distinct age classes within stands. Provide stand protection with temporary or permanent fencing.	4	4	4	See Simpson Park East and erect fencing using manual labor and mechanical equipment.
RM-A5	4	See JD-A4	See JD-A1	4	4	4	See Simpson Park East
SFF-A1	8	See JD-A4	See TB-A1	8	8	8	See TB-A1

¹ Stem density objectives based on Kay (2003).

² This list of methods/equipment is not all inclusive, but rather is intended to provide the reader with a general understanding of the various ways implementation may be carried out.

The BLM has determined that an insufficient number of aspen suckers are surviving to maturity in these areas. Known treatment sites range in size from 3 to 39 acres. Treatments would be conducted using manual and mechanical methods (tractor-mounted ripping tool and chainsaw) and prescribed fire to selectively remove trees. Exclosures and/or changes in livestock permit conditions may be used to protect restoration areas from livestock, wild horses, and wild ungulates, and would be similar to those described under riparian treatments. Treatments would improve the health of aspen stands by stimulating aspen stand suckering and sucker survival. In addition to the areas identified above, the BLM has also identified the Simpson Park East (8,055 acres) and Simpson Park Northeast (8,991 acres) units as areas where aspen treatments could occur in the future. Treatments would not occur until after site-specific aspen inventories are completed and funding for treatments becomes available. Projects would meet the needs of one resource, such as stimulating aspen suckering, or to benefit multiple resources, such as constructing fire breaks. Treatment methods and objectives for the Simpson Park East treatments would be similar to those for RM-A5 treatment unit—promote aspen suckering and install temporary jack fencing. Simpson Park Northeast treatments would be similar to those for JD-A4 and RM-A2 treatment units—remove pinyon-juniper, promote aspen suckering, and fence treatment sites. An estimated 150 acres of aspen would be treated within each unit.

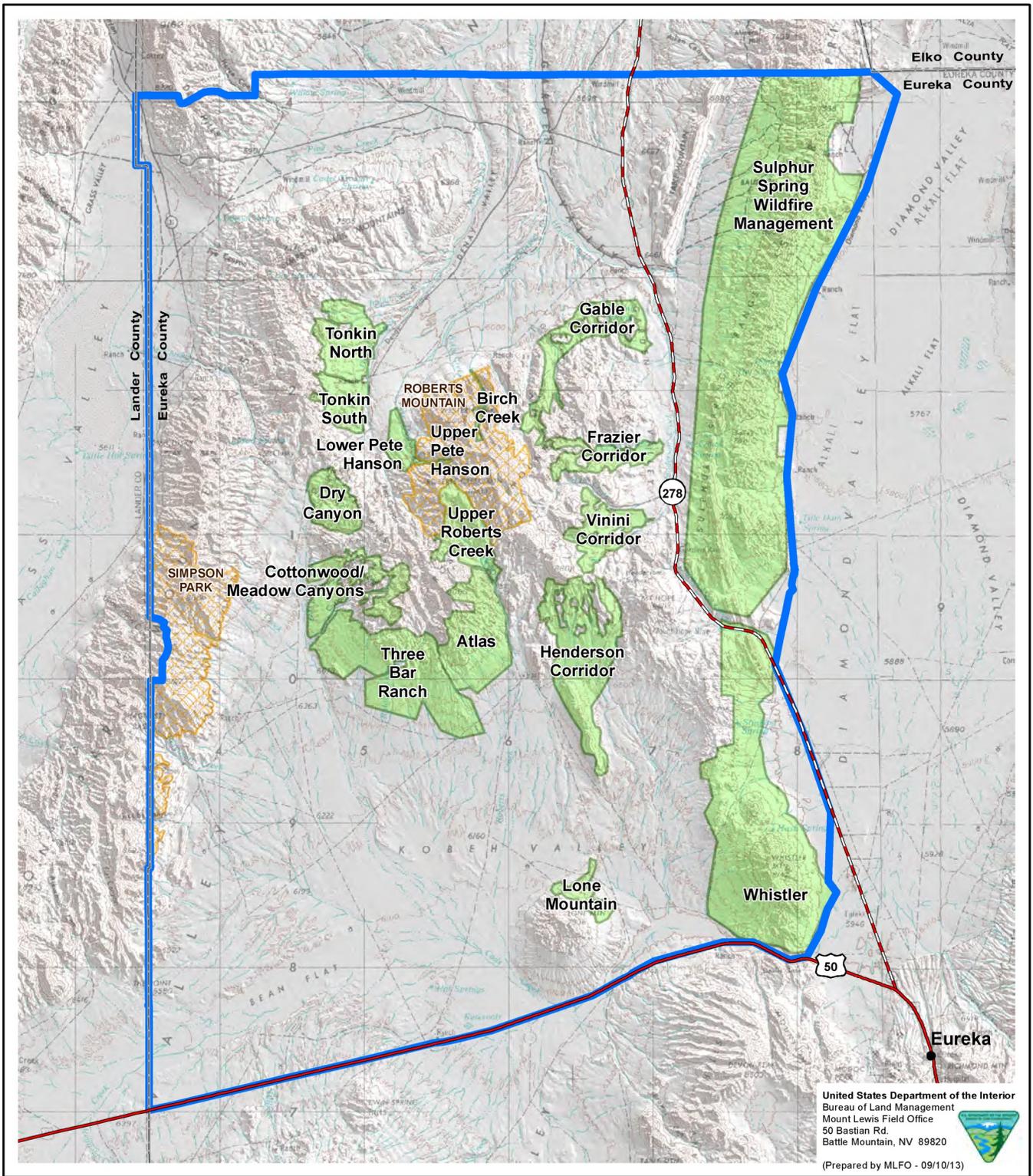
Slash from removal of pinyon-juniper would be left in place to promote aspen suckering and seedling establishment. Removal of pinyon-juniper may extend up to 200 feet from aspen stands, and some treatments may occur near roads to improve their effectiveness as fire breaks. Pinyon-juniper slash would be left in place to act as deadfall, to limit ungulate access to the treatment area, and to minimize other site disturbances. If there is the potential for wildland fire due to extensive slash material, trees having the potential for use as fence posts or for firewood would be gathered up and offered for sale to the public; any remaining material would be pile burned. The BLM would follow non-impairment standards for treatments in the Roberts Mountains and Simpson Park Wilderness Study Areas.

2.2.2.1.3 Pinyon-juniper Treatments

An estimated 47,500 to 94,000 acres of treatments involving the thinning and removal of pinyon-juniper would be conducted on Lone Mountain, Roberts Mountains, and other areas within the 3 Bars ecosystem (**Figure 2-3**). Selection of treatment areas was based on: 1) the need to remove pinyon-juniper to develop and enhance movement corridors for greater sage-grouse between low elevation breeding habitats and upper elevation brood rearing habitats; 2) the need to remove pinyon-juniper to slow encroachment into greater sage-grouse lekking and nesting areas; 3) the need to remove pinyon-juniper near streams to enhance habitat for Lahontan cutthroat trout; 4) the need to remove and thin pinyon-juniper to break up the continuity of fuels and reduce the risk of catastrophic wildland fire; 5) the need to improve wildlife habitat on the Sulphur Spring Wildfire Management Unit using wildland fire for resource benefit; and 6) the need to improve woodland health. **Table 2-3** provides information on unit size and amount of area to be treated, project goals and objectives, and equipment and methods used for pinyon-juniper treatments.

The BLM would enhance habitats critical to greater sage-grouse on up to 1,387 acres in the Lone Mountain area of Kobeh Valley using manual and mechanical methods. The BLM would thin pinyon-juniper stands to remove these trees from historic sagebrush habitats. The BLM would create a series of fire breaks to moderate fire behavior in treated areas and reduce the risk of loss of habitat from wildfire.

The BLM would treat pinyon-juniper to enhance habitats that are important to greater sage-grouse in several drainages on Roberts Mountains using manual, mechanical, and fire treatments. Treatment units include the Atlas, Frazier, Gable, Henderson, Upper Roberts Creek, and Vinini Corridor units (Atlas Unit Group). These drainages serve as important greater sage-grouse travel corridors between lower elevation wintering and lekking habitats and upper elevation nesting and brood-rearing habitats. Treatments would be completed in phases, with a minimum of 9,328 and



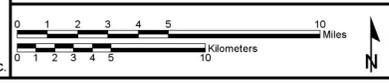
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 50 Bastian Rd.
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 (Prepared by MLFO - 09/10/13)



- Legend**
- Pinyon-juniper Treatment Area
 - Wilderness Study Area
 - 3 Bars Project Area

3 Bars Ecosystem and Landscape Restoration Project

Figure 2-3
Pinyon-juniper Treatment Areas



Source: BLM 2011c.
 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.

TABLE 2-3

Proposed 3 Bars Pinyon-juniper Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Atlas	7,085	<p>Enhance habitat for greater sage-grouse in occupied habitat and restore vegetative functionality and stability to movement corridors and historic brood-rearing habitats.</p> <p>Improve wildlife habitat in the long term.</p> <p>Provide links with natural fuel breaks in adjacent areas.</p> <p>Improve pinyon-juniper woodland health.</p> <p>Reduce pinyon-juniper encroachment onto rangeland sites and into historic greater sage-grouse habitats.</p> <p>Reduce the severity of future wildfires in the area by reducing hazardous fuels (ground and aerial) and provide for a safer fire suppression environment.</p> <p>Reduce the likelihood for loss of life and property and natural resources due to catastrophic wildfire.</p>	<p>Remove Phase I pinyon and juniper, and selected Phase II pinyon and juniper, within historic sagebrush habitats.</p> <p>Remove all pinyon-juniper within 200 feet of riparian areas except on south or west facing slopes lacking shrubs or herbaceous vegetation.</p> <p>Remove Phase III pinyon-juniper trees to create minimum 30-foot canopy spacing to create fuel breaks.</p> <p>Reduce crown closure in Phase II and III pinyon-juniper to less than 40 percent to improve stand health.</p> <p>Reduce stocking levels in Phase II and III pinyon-juniper to less than 200 stems/acre to improve stand health.</p> <p>Dispose of activity fuels as needed to reduce dead fuel loadings.</p>	Treat up to 4,970 acres	Treat up to 3,542 acres	Treat up to 1,417	<p>Manual: Chainsaws, hand saws, pruners, and activity fuel disposal (biomass utilization, chipping [off-site], and leave on-site).</p> <p>Mechanical: Roller chopper, feller buncher, tree shearer, “bull-hog,” seeding, chaining, and activity fuel disposal (biomass utilization and chipping [on-site]).</p> <p>Prescribed fire: Broadcast burning, slash burning, and pile burning).</p>

**TABLE 2-3 (Cont.)
Proposed 3 Bars Pinyon-juniper Treatment Projects**

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Frazier	2,725	See Atlas Unit	See Atlas Unit	Treat up to 1,908 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 1,363 acres with manual and mechanical methods.	Treat up to 545 acres with manual methods.	See Atlas Unit
Gable	5,012	See Atlas Unit	See Atlas Unit	Treat up to 3,508 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 2,506 acres with manual and mechanical methods.	Treat up to 1,002 acres with manual methods.	See Atlas Unit
Henderson	9,348	See Atlas Unit	See Atlas Unit	Treat up to 6,544 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 4,674 acres with manual and mechanical methods.	Treat up to 1,870 acres with manual methods.	See Atlas Unit
Upper Roberts Creek	3,894	See Atlas Unit	See Atlas Unit	Treat up to 2,726 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 1,947 acres with manual and mechanical methods.	Treat up to 779 acres with manual methods.	See Atlas Unit

TABLE 2-3 (Cont.)

Proposed 3 Bars Pinyon-juniper Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Vinini	3,277	See Atlas Unit	See Atlas Unit	Treat up to 2,294 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 1,639 acres with manual and mechanical methods.	Treat up to 655 acres with manual methods.	See Atlas Unit
Lone Mountain	1,387	See Atlas Unit	See Atlas Unit	Treat up to 971 acres with manual and mechanical methods.	Treat up to 971 acres with manual and mechanical methods.	Treat up to 277 acres with manual methods.	Manual: Chainsaws, hand saws, pruners, and activity fuel disposal (biomass utilization, chipping [off-site], and leave on site). Mechanical: Roller chopper, feller buncher, tree shearer, "bull-hog," seeding, and activity fuel disposal (biomass utilization and chipping [on-site]).
Birch Creek	218	See Atlas Unit	See Atlas Unit	Treat up to 218 acres with manual and pre-scribed fire methods.	Treat up to 218 acres with manual methods.	Treat up to 218 acres with manual methods.	Manual: Chainsaws, hand saws, pruners, and activity fuel disposal (biomass utilization, chipping [off-site], and leave on-site). Prescribed fire: Slash burning and pile burning).

TABLE 2-3 (Cont.)
Proposed 3 Bars Pinyon-juniper Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Upper Pete Hanson	243	See Atlas Unit	See Atlas Unit	Treat up to 243 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 243 acres with manual and mechanical methods.	Treat up to 243 acres with manual methods.	See Atlas Unit except no mechanical treatments within the Wilderness Study Area boundaries.
Cottonwood /Meadow Canyon	4,557	<p>Reduce the severity of future wildland fires in the area by reducing hazardous fuels (ground and aerial) and provide for a safer fire suppression environment.</p> <p>Reduce the likelihood for loss of life and property and natural resources due to catastrophic wildfire.</p> <p>Provide links with natural fuel breaks in adjacent areas.</p> <p>Protect and improve sage-grouse habitat.</p> <p>Protect and improve pinyon-juniper woodland health.</p>	<p>Remove pinyon-juniper trees to create minimum 30-foot canopy spacing in fuel breaks.</p> <p>Reduce fuel loadings in shrubs to 1 to 2 tons/acre.</p> <p>Reduce fuel loadings in pinyon-juniper to 1 to 5 tons/acre.</p> <p>Allow up to 100 cords of fuel wood (deadwood and greenwood combined) to be removed for commercial sale annually.</p> <p>Remove Phase I and selected Phase II pinyon-juniper, within historic sagebrush habitats.</p>	Treat up to 3,704 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 1,873 acres with manual and mechanical methods.	Treat up to 912 acres with manual methods.	See Atlas Unit

TABLE 2-3 (Cont.)

Proposed 3 Bars Pinyon-juniper Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Cottonwood /Meadow Canyon (cont.)		Reduce pinyon-juniper encroachment onto rangeland sites. Protect and improve wildlife habitat. Provide for vegetative and ecological diversity. Protect important wildlife habitat from devastating wildland fire effects.	Reduce crown closure in Phase II and III pinyon-juniper to 40 percent or less to improve stand health. Reduce stocking levels in Phase II and III pinyon-juniper to less than 200 stems/acre to improve stand health. Dispose of activity fuels as needed to reduce dead fuel loadings.				
Dry Canyon Unit	2,838	See Cottonwood/Meadow Unit	See Cottonwood/Meadow Unit	Treat up to 2,487 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 1,163 acres with manual and mechanical methods.	Treat up to 568 acres with manual methods.	See Atlas Unit
Whistler Unit	26,970	See Cottonwood/Meadow Unit	See Cottonwood/Meadow Unit	Treat up to 20,879 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 10,788 acres with manual and mechanical methods.	Treat up to 2,697 acres with manual methods.	See Atlas Unit

TABLE 2-3 (Cont.)

Proposed 3 Bars Pinyon-juniper Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Lower Pete Hanson Unit	1,340	See Cottonwood/Meadow Unit	See Cottonwood/Meadow Unit	Treat up to 1,000 acres with manual and mechanical methods.	Treat up to 1,000 acres with manual and mechanical methods.	Treat up to 200 acres with manual methods.	<p>Mechanical: Roller chopper, feller buncher, tree shearer, "bull-hog," seeding, chaining, mowing and activity fuel disposal (biomass utilization, chipping, pile burn, slash burn, broadcast burn, and leave on site).</p> <p>Manual: Chainsaws, hand saws, pruners, and activity fuel disposal (biomass utilization, chipping, pile burn, slash burn, broadcast burn, and leave on site).</p> <p>Prescribed fire: Activity fuel disposal (slash burning and pile burning).</p>
3 Bars Ranch Unit	11,900	See Cottonwood/Meadow Unit	See Cottonwood/Meadow Unit	Treat up to 9,330 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 4,760 acres with manual and mechanical methods.	Treat up to 1,190 acres with manual methods.	See Atlas Unit

**TABLE 2-3 (Cont.)
Proposed 3 Bars Pinyon-juniper Treatment Projects**

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Dry Canyon Unit	2,838	See Cottonwood/Meadow Unit	See Cottonwood/Meadow Unit	Treat up to 9,330 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 4,760 acres with manual and mechanical methods.	Treat up to 568 acres with manual methods.	See Atlas Unit
Tonkin South Unit	2,458	See Cottonwood/Meadow Unit	<p>Remove pinyon-juniper trees to create minimum 30-foot canopy spacing in fuel breaks.</p> <p>Reduce fuel loadings in shrubs to 1 to 2 tons/acre.</p> <p>Reduce fuel loadings in pinyon-juniper to 1 to 5 tons/acre.</p> <p>Allow up to 100 cords of fuel wood (deadwood and greenwood combined) to be removed for commercial sale annually.</p> <p>Treat in 5 to 20 acre increments, by removing pinyon-juniper stands infested with pathogens and/or pests to prevent or limit their spread.</p>	Treat up to 1,729 acres with manual, mechanical, and pre-scribed fire methods.	Treat up to 1,229 acres with manual and mechanical methods.	Treat up to 492 acres with manual methods.	See Atlas Unit

TABLE 2-3 (Cont.)

Proposed 3 Bars Pinyon-juniper Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Tonkin South Unit (cont.)			<p>Remove Phase I pinyon and juniper, and selected Phase II pinyon and juniper, within historic sagebrush habitats.</p> <p>Reduce crown closure in Phase II and III pinyon-juniper to less than 40 percent to improve stand health.</p> <p>Reduce stocking levels in Phase II and III pinyon-juniper to less than 200 stems/acre to improve stand health.</p> <p>Dispose of activity fuels as needed to reduce dead fuel loadings.</p>				
Tonkin North Unit	4,389	See Cottonwood/Meadow Unit	See Tonkin South Unit	Treat up to 4,072 acres with manual, mechanical, and prescribed fire methods.	Treat up to 1,756 acres with manual and mechanical methods.	Treat up to 439 acres with manual methods.	See Atlas Unit
Sulphur Spring Wildfire Management Unit	62,410	<p>Restore wildfire to fire adapted ecosystems.</p> <p>Reduce hazardous fuels.</p> <p>Create fuel breaks.</p>	Reduce fuel loadings in pinyon-juniper to 1-5 tons/acre.	Treat up to 24,964 acres by managing naturally	0 Acres	0 Acres	Wildland Fire for Resource Benefit

TABLE 2-3 (Cont.)

Proposed 3 Bars Pinyon-juniper Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Sulphur Spring Wildfire Management Unit (cont.)		<p>Moderate fire behavior in treated areas.</p> <p>Reduce the damage from catastrophic wildfire.</p> <p>Provide woodland products for commercial use.</p> <p>Enhance wildlife habitat.</p>	<p>1 acre to 1,000 acre treatments in Phase II and III pinyon and juniper.</p> <p>Reduce crown closure in Phase II and III pinyon-juniper to less than 30 percent to improve stand health.</p> <p>Reduce stocking levels in Phase II and III pinyon-juniper to less than 200 stems/acre to improve stand health.</p> <p>Minimize shrub acres burned.</p> <p>Dispose of activity fuels as needed to reduce dead fuel loadings.</p>	<p>ignited wildfires for resource benefits in 1 acre to 1,000 acre increments.</p>			

¹ This list of methods/equipment is not all inclusive, but rather is intended to provide the reader with a general understanding of the various ways implementation may be carried out.

ALTERNATIVES

maximum of 21,544 acres treated to meet greater sage-grouse habitat enhancement objectives. Treatment units would range in size from about 818 acres to 6,544 acres. Treatments would involve removing pinyon-juniper from areas historically occupied by sagebrush and riparian plant species, and promoting development of native grasses, forbs, and shrubs through removal of pinyon-juniper. The BLM would also create a series of fire breaks to moderate fire behavior in the treated areas and reduce the risk of loss of habitat from wildland fire. Thinning and disposal of trees would be similar to the methods used at the Lone Mountain Unit, and would also include placing logs and larger diameter pieces of wood in streams to slow water flow.

The BLM would enhance habitats critical to Lahontan cutthroat trout in the Birch Creek and Upper Pete Hanson Creek drainages on Roberts Mountains using manual and fire treatments. Treatments would encompass about 461 acres and would be developed in consultation with the USFWS and coordinated with the NDOW. The BLM would also create a series of fire breaks to moderate fire behavior in treated areas and reduce the risk of loss of habitat from wildfire. Treatments would involve removing pinyon-juniper from areas historically occupied by sagebrush and riparian plant species, promoting the development of native grasses, forbs, and shrubs through removal of pinyon-juniper, and creating fire breaks. Thinning and disposal of trees would be similar to the methods used at the Lone Mountain Unit, and would also include placing larger diameter pieces of wood in streams to slow water flow. Treatments would adhere to the BLM's non-impairment standard for the Roberts Mountains Wilderness Study Area (WSA).

The BLM would reduce hazardous fuels on approximately 20,202 to 55,674 acres on the Cottonwood/Meadow Canyon, Dry Canyon, 3 Bars Ranch, Tonkin North, Tonkin South, and Whistler units (Cottonwood/Meadow Canyon Unit Group). Fuels treatments would be done in phases with approximately 1,000 to 2,000 acres of treatments conducted annually. The BLM would 1) reduce the amount of hazardous fuels and wildfire risk by mowing and shredding sagebrush and thinning pinyon-juniper stands in 500- to 2,000-acre increments with chainsaws; 2) use mechanical methods to create fuel breaks; and 3) slow pinyon-juniper expansion into sagebrush and other plant communities on 30 to 70 percent of the units through the use of manual and mechanical methods and prescribed fire.

The BLM would remove pinyon-juniper trees infested with pathogens and/or pests by removing up to half the trees within a unit using manual and mechanical methods and prescribed fire on the Tonkin North and Tonkin South units. Up to 1,729 acres could be treated in these units. On the Lower Pete Hanson Unit, the BLM would reduce both the amount of hazardous fuels and the wildland fire risk by mowing and shredding sagebrush and thinning pinyon-juniper stands on up to 1,000 acres by using chainsaws and mechanical methods to create fuel breaks. The BLM would treat 20 to 40 percent of the Sulphur Spring Wildfire Management Unit using wildland fire for resource benefit to benefit a variety of resources and to reduce hazardous fuels. An estimated 12,482 to 24,694 acres would be treated in the unit in increments up to 1,000 acres annually. The intent of these treatments would be to restore fire as an integral part of the ecosystem and to improve plant species diversity. By reducing fuel accumulations and creating canopy openings in the pinyon-juniper, sagebrush and other shrub species cover should increase by at least 30 percent from current levels. The BLM may allow wildland fire to burn in areas where fuel loads exceed 2 tons per acre in shrublands, and 10 tons per acre in pinyon-juniper woodlands. After fires, the BLM would promote the use of burned or downed trees for commercial or private uses. The BLM would monitor the site to limit post-fire occurrence of cheatgrass and other noxious weeds and invasive non-native vegetation.

In most instances, pinyon-juniper treatments would occur where stands are in the Phase I and II stage of development, and where soils are characteristic of those found in sagebrush communities. Phases are based on stand characteristics that differentiate between three transitional phases of woodland succession based on tree canopy, leader growth (of

dominant and understory trees), crown structure, potential berry production, tree recruitment, and the shrub layer. Pinyon-juniper stands on the 3 Bars Project area were characterized by phases and mapped in 2010 and 2011, and this information was used when developing pinyon-juniper treatments (AECOM 2011a). These phases, as described by Miller et al. (2008), are as follows:

Phase I (early) – trees are present, but shrubs and herbs are the dominant vegetation that influence ecological processes on the site.

Phase II (mid) – trees are co-dominant with shrubs and herbs, and all three vegetation layers influence ecological processes on the site.

Phase III (late) – trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

This scheme is useful for identifying the successional stage in expansion communities that may potentially be targeted for treatment. Phase III woodlands have the greatest tree density, and the greatest amount of canopy fuels, which puts them at increased risk for loss from high intensity fires (Tausch 1999 *in* Miller et al. 2008). However, according to Miller et al., treatments in Phase I and II expansion woodlands to halt their succession to Phase III woodlands may be more successful and cost-effective than treatments in Phase III woodlands.

Manual and mechanical treatments would be primarily utilized to disrupt the continuity of fuels and reduce the risk of catastrophic fire as well as to improve woodland health. Treatments would involve multiple tree removal options including use of chainsaws, chaining, hand thinning, ripping, feller-buncher, tree-shearer, and use of prescribed fire and wildland fire for resource benefit. Most trees in Phase I habitats would be removed. The density of trees in woodlands in the Phase II and III states would be reduced by a minimum of 50 percent within areas targeted for treatment.

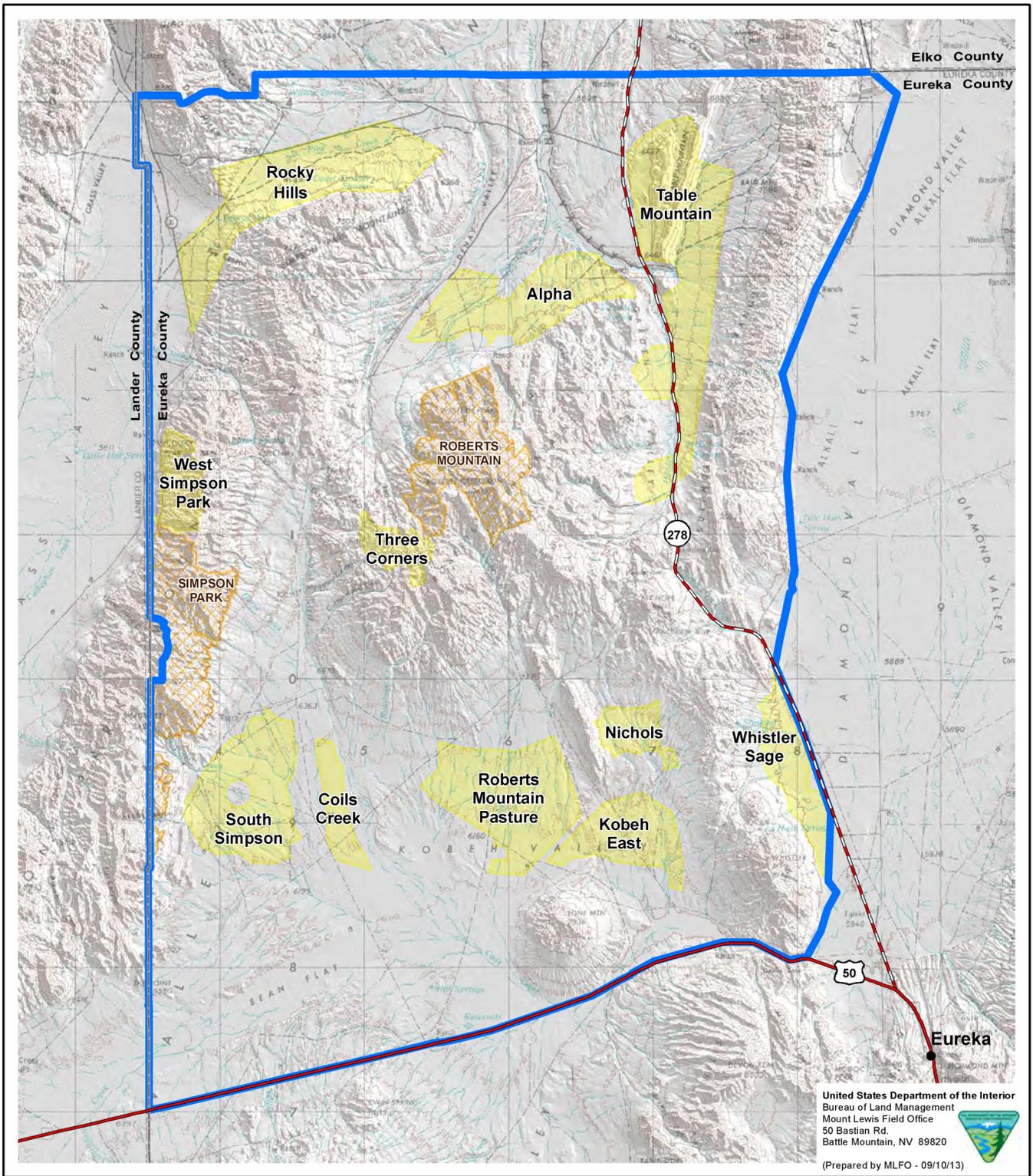
2.2.2.1.4 Sagebrush Treatments

The Mount Lewis Field Office proposes to enhance greater sage-grouse habitat within the 3 Bars ecosystem by treating approximately 31,300 acres of public lands on the 3 Bars, Flynn Parman, Grass Valley, JD, Lucky C, Roberts Mountain, and Santa Fe/Ferguson allotments (**Figure 2-4**). **Table 2-4** provides information on unit size and amount of area to be treated, project goals and objectives, and equipment and methods used for sagebrush treatments.

These areas were selected for treatments primarily to benefit greater sage-grouse habitat and improve rangeland health. In most areas, plant communities diverge from the expected reference state vegetation based on ecological site descriptions. Treatments would be completed in phases and implemented incrementally based on monitoring, funding, and BLM priorities.

At the Alpha, Coils Creek, Kobeh East, Nichols, Roberts Mountain Pasture, and South Simpson units (Alpha Unit Group), up to 11,016 acres would be treated and treatments would focus on using mechanical methods to thin low-elevation Wyoming big sagebrush to open up the sagebrush canopy and to seed to promote the growth of forbs and grasses.

The BLM would use mechanical methods on about 20,297 acres at the Table Mountain, Rocky Hills, Three Corners, Whistler Sage and West Simpson Park units to thin sagebrush to open up the sagebrush canopy to promote the growth of forbs and grasses, and to remove or thin pinyon-juniper to enhance or restore sagebrush communities. At the Rocky



United States Department of the Interior
 Bureau of Land Management
 Mount Lewis Field Office
 50 Bastian Rd.
 Battle Mountain, NV 89820
 (Prepared by MLFO - 09/10/13)



Legend

- Sagebrush Treatment Area
- Wilderness Study Area
- 3 Bars Project Area

Source: BLM 2011c.

3 Bars Ecosystem and Landscape Restoration Project

Figure 2-4

Sagebrush Treatment Areas

0 1 2 3 4 5 10 Miles
 0 1 2 3 4 5 Kilometers

North Arrow

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.

TABLE 2-4

Proposed 3 Bars Sagebrush Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Kobeh East	7,591	Enhance occupied greater sage-grouse habitat. Restore vegetative structure and diversity. Develop fuel breaks to protect intact habitats from wildfire.	Achieve 30 to 40 percent sagebrush canopy cover and increase composition of perennial grasses to 50 to 75 percent of ecological site potential within 5 to 10 years following treatment.	1,518	1,518	380	<p>Manual: Chainsaws, pruners, planting implements (shovels and rakes), and activity fuel disposal (biomass utilization, chipping [off-site], and leave on-site).</p> <p>Mechanical: Roller chopper, rangeland mower, tractor, chain (smooth), broadcast seeder, and activity fuel disposal (biomass utilization and chipping [on-site]).</p> <p>Prescribed fire: Broadcast burning (mountain big sagebrush, cheatgrass, forage kochia, and crested wheatgrass only).</p>
Nichols	3,505	See Kobeh East	See Kobeh East	661	661	165	See Kobeh East
Roberts Mountain Pasture	15,190	See Kobeh East	See Kobeh East	3,038	3,038	760	See Kobeh East
Coils Creek	3,267	See Kobeh East	See Kobeh East	653	653	163	See Kobeh East
South Simpson	13,400	See Kobeh East	See Kobeh East	2,680	2,680	670	See Kobeh East
Alpha	12,330	See Kobeh East	See Kobeh East	2,466	2,466	616	See Kobeh East

TABLE 2-4 (Cont).
Proposed 3 Bars Sagebrush Treatment Projects

Unit Name	Size (acres)	Goals	Objectives	Acres to be treated under Alternative:			Method/Equipment ¹
				A	B	C	
Table Mountain	24,100	See Kobeh East and reduce competition of invasive or non-native species and increase native species presence.	Achieve a 15-30 percent sagebrush canopy and increase composition of perennial grasses to 50-75 percent of the ecological site potential within 5-10 years. In areas treated to enhance or restore sagebrush, increase the percent composition of sagebrush to 50-75 percent of the ecological site potential within 15-20 years.	7,220	7,220	2,410	See Kobeh East plus rangeland drill, disk, and biological control (nematodes, fungi, and insects and use of livestock).
Rocky Hills	18,350	See Table Mountain	See Table Mountain	9,175	9,175	1,835	See Table Mountain
Three Corners	2,915	See Kobeh East	See Kobeh East	583	583	146	See Kobeh East
Whistler Sage	6,782	See Table Mountain	See Table Mountain	1,356	1,356	339	See Kobeh East
West Simpson Park	3,925	See Table Mountain	See Table Mountain	1,963	1,963	491	See Table Mountain

¹ This list of methods/equipment is not all inclusive, but rather is intended to provide the reader with a general understanding of the various ways implementation may be carried out.

Hills unit, the BLM would also remove crested wheatgrass and forage kochia and plant sagebrush seedlings and native herbaceous species to encourage sagebrush establishment near historic greater sage-grouse leks. Prescribed fire and mechanical methods (disking and broadcast and/or drill seeding) would also be used at the Rocky Hills unit to reduce herbaceous competition with sagebrush and to promote the establishment of a native sagebrush community.

Hand planting and/or broadcast seeding of sagebrush would follow cheatgrass treatments to promote reestablishment of sagebrush and other native shrubs on treated areas within these units. The BLM may also conduct multiple ground-disturbing treatments, such as disking, mowing, or use of livestock, before cheatgrass sets seed so as to kill the current year cheatgrass crop and to reduce competition between cheatgrass and sagebrush seedlings to help ensure that broadcast seeding would be successful.

Within intact sagebrush communities, no more than 20 percent of the area would be treated within a 30 year period. Within areas dominated by herbaceous or invasive species, including the West Simpson Park and Rocky Hills units, the BLM could treat up to 50 percent of the unit. Design features for the treatments are based on guidelines provided by Connelly et al. (2000) and the Wyoming Game and Fish Department (2010). In units where pinyon-juniper is felled, trees would be disposed of by using trees for posts or as mulch, by placing logs and larger wood in streams to slow water flow, by selling trees for public or commercial use, by burning piled or slashed trees, or by leaving downed trees on site as wildlife habitat.

2.2.2.2 Alternative B — No Fire Use Alternative

Alternative B is similar to Alternative A in that the BLM would focus treatments on the four priority management concerns—riparian, aspen, pinyon-juniper, and sagebrush—and would focus on the treatment areas shown in **Figures 2-1 to 2-4**. Alternative B differs from Alternative A in that the BLM would not use prescribed fire and wildland fire for resource benefit. Under Alternative B, the BLM would treat vegetation using manual, mechanical, and biological control (livestock and classical biological control) methods. This alternative was developed to address public concerns raised during scoping about the impacts to the landscape from fire, including the potential for erosion and spread of noxious weeds and other invasive non-native vegetation from fire treatments.

The BLM would conduct projects identified under Alternative A (see **Tables 2-1 to 2-4**), but would be able to treat only about half as many acres (63,500 acres), as compared to Alternative A, as costs for manual and mechanical treatments are more expensive than costs for fire treatments.

2.2.2.3 Alternative C — Minimal Land Disturbance Alternative

Alternative C is similar to Alternative A in that the BLM would focus treatments on the four priority management concerns—riparian, aspen, pinyon-juniper, and sagebrush—and would focus on the treatment areas shown in **Figures 2-1 to 2-4**. Alternative C differs from Alternative A in that the BLM would only treat vegetation within treatment areas using manual methods and classical biological control (use of nematodes, fungi, mites, and insects); use of livestock for biological control would not be allowed. The BLM would not be able to use mechanical methods or fire.

This alternative was developed in response to the proposed “passive restoration and use only treatments having minimal land disturbance alternative,” which was submitted during public scoping and is discussed below under Alternatives Considered but Not Further Analyzed.

ALTERNATIVES

The BLM would conduct projects identified under Alternative A (see **Tables 2-1 to 2-4**), but would be able to only treat about one-fourth as many acres (31,750 acres) as compared to Alternative A. Treatments would generally be small in acreage.

2.3 Alternative D — Continue Current Management (No Action Alternative)

Under the No Action Alternative, no new treatments would be authorized as a result of this project. However, as with all of the alternatives, the BLM would continue to conduct treatments approved under earlier NEPA authorizations. The BLM would have to conduct the appropriate level of NEPA analysis for future projects before they could be approved for implementation. Should this alternative be chosen by the decision-maker, and the BLM decides to conduct new treatments in the 3 Bars ecosystem in the future, decisions would have to be made at that time regarding the type of environmental analysis that must be conducted before treatments would be allowed within the ecosystem. There are approximately 15,000 acres of treatments that could occur within the ecosystem that have been previously authorized by the BLM, or that there are reasonably foreseeable in the future, during the life of the project. These treatments are discussed in Chapter 3 under Cumulative Effects (Section 3.2.2).

2.4 Summary of Alternatives Analyzed in this EIS

Table 2-5 shows how each of the alternatives respond to the project purposes. Information contained in these tables is discussed in more detail in Chapter 3 (Affected Environment and Environmental Consequences).

TABLE 2-5
Responses of the Alternatives to the Project Purposes

Analysis Element	Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
Improve woodland and rangeland health, productivity, and functionality.				
Approximate total acreage treated during life of project ^{1,2}	127,000	63,500	31,750	0 ³
Treatment methods used to improve ecosystem health	Manual, mechanical, biological control, and fire	Manual, mechanical, and biological control	Manual and classical biological control	NA
Number of resources typically benefitting from projects	Numerous resources	Numerous resources	Numerous resources	No resources
Grazing restrictions in treated areas	Yes, but can vary with treatment objectives	Same as Alternative A	Same as Alternative A	NA

TABLE 2-5 (Cont.)

Responses of the Alternatives to the Project Purposes

Analysis Element	Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
Increase stream flows and restore channel morphology in degraded streams.				
Approximate acreage of wetland and riparian habitat treated annually ²	400	200	100	0
Treatment methods used	Manual, mechanical, and fire	Manual and mechanical	Manual	NA
Possible use of fencing to restrict livestock and horse access to riparian areas?	Yes	Yes	Yes	NA
Improve stream habitat for fish and wildlife by implementing physical treatments that include installing large woody debris, rock clusters, check dams, plantings, and using fencing to minimize use by large herbivores.				
Approximate miles of stream restored/enhanced annually ²	31	31	8	0
Improve the health of aspen, mountain mahogany, and other mountain tree and shrub stands to benefit wildlife and Native Americans that use these plants for medicinal purposes.				
Approximate acres of mountain tree and shrub stands treated annually ²	6,000-9,000	3,000-4,500	750-1,125	0 ³
Manage pinyon-juniper woodlands to promote healthy, diverse stands within persistent woodlands.				
Approximate acreage of pinyon-juniper woodlands treated annually ²	6,000-9,000	3,000-4,500	750-1,125	0 ³
Treatment methods used	Manual, mechanical, and fire	Manual and mechanical	Manual	NA
Phase classes targeted for treatment ⁴	Phases I, II, and III	Phases I and II	Phase I and limited acreage of Phase II	NA
Slow the expansion of pinyon/juniper into sagebrush and riparian plant communities.				
Approximate acreage of pinyon-juniper encroachment treated annually ²	7,700-11,600	3,900-5,800	1,925-2,900	0 ³
Treatment methods used	Manual, mechanical, and fire	Manual and mechanical	Manual	NA
Phase classes targeted for treatment ⁴	Phases I and II, and some Phase III	Phases I and II	Phase I and limited amount of Phase II	NA

TABLE 2-5 (Cont.)

Responses of the Alternatives to the Project Purposes

Analysis Element	Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
Improve sagebrush habitat and restore sagebrush to areas of historic occurrence by removing trees in sagebrush habitats and improving the diversity of sagebrush communities.				
Approximate acreage of sagebrush habitat treated annually ²	7,600-11,500	Same as Alternative A	1,900-5,700	0 ³
Acres of historic sagebrush habitat restored annually ²	7,600-11,500	Same as Alternative A	2,400-3,600	0 ³
Treatment methods used	Manual, mechanical, biological control, and fire	Manual, mechanical, and biological control	Manual and classical biological control	NA
Slow the spread of noxious weeds and invasive non-native vegetation, including cheatgrass.				
Approximate acreage of noxious weeds and other invasive species treated annually ²	100-250	Same as Alternative A	Same as Alternative A	0 ³
Treatment methods used	Manual, mechanical, biological control, and fire	Manual, mechanical, and biological control	Manual and classical biological control	NA
Protect and enhance habitat for fish and wildlife, including species of concern such as raptors, greater sage-grouse, and Lahontan cutthroat trout.				
Approximate acres of sagebrush habitat treated annually ²	3,100	Same as Alternative A	300-500	0 ³
Approximate acres of key habitat treated annually to improve species diversity ²	2,000-3,500	1,500-2,600	200-350	0 ³
Approximate acres of key habitat improved annually through thinning and removal of pinyon-juniper in expansion areas ²	7,700-11,600	Same as Alternative A	1,925-2,900	0 ³
Approximate miles of stream restored for Lahontan cutthroat trout and other aquatic organisms ²	31	Same as Alternative A	8	0 ³

TABLE 2-5 (Cont.)

Responses of the Alternatives to the Project Purposes

Analysis Element	Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
Restore fire as an integral part of the ecosystem; reduce the risk of a large-scale wildfire; reduce extreme, very high, and high wildfire risks to moderate risk or less; create fuel breaks; and protect life, property, community infrastructure, and fish and wildlife habitat from wildfire.				
Approximate acreage treated annually to reduce hazardous fuels ²	12,700	6,350	3,175	0 ³
Approximate acreage converted annually from Fire Regime Condition Classes 3 and 2, to Classes 2 and 1 ²	9,525	750-1,500	375-750	0 ³
¹ Total acres treated based on maximum number of acres that could be treated in each project unit. ² Acres and miles treated contingent upon funding and staff resource availability. ³ No new treatments would be authorized under Alternative D. Only projects that are currently authorized by the Mount Lewis Field Office, or that would be authorized in the future under new NEPA analysis and decisions, would occur on the 3 Bars Project area. Currently authorized projects are discussed in Chapter 3 under Cumulative Effects (Section 3.2.2). ⁴ Phases are based on stand characteristics that differentiate between three transitional phases of woodland succession based on tree canopy, leader growth (of dominant and understory trees), crown lift, potential berry production, tree recruitment, and the shrub layer. Phase I (early) – trees are present, but shrubs and herbs are the dominant vegetation that influence ecological processes on the site. Phase II (mid) – trees are co-dominant with shrubs and herbs, and all three vegetation layers influence ecological processes on the site. Phase III (late) – trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site. NA = Not applicable.				

2.5 Alternatives Considered but Not Further Analyzed

Several other alternatives were identified during public scoping and reviewed by the BLM interdisciplinary team. These alternatives would not fulfill the purpose and need for the project, are inconsistent with BLM or other federal, state, or local policies or regulations, or are not practical based on likely funding for vegetation treatments. The alternatives that were considered, but not further analyzed are:

- Passive restoration and use only treatments having minimal land disturbance.** Under this alternative, the BLM would greatly reduce or eliminate human-related activities that contribute to resource degradation on the 3 Bars ecosystem, including livestock grazing, off-highway vehicle use, road construction, large-scale deforestation, and mining and energy exploration and development. In addition, the BLM would only use vegetation treatment methods that cause little site disturbance, primarily manual methods. The BLM would be allowed to continue burned area rehabilitation and emergency stabilization activities, including seeding (manual and mechanical) and hand planting of vegetation. This alternative was eliminated because it would not control the spread of unwanted vegetation or improve the health of the 3 Bars ecosystem, and it would prohibit human-related activities allowed under the Federal Land Policy and Management Act. The use of

treatment methods that would result in minimal disturbance to the landscape are being evaluated under Alternative C (Minimal Land Disturbance Alternative).

- **Revegetate solely with native vegetation.** Under this alternative, only native vegetation would be used to restore fire-impacted and other degraded public lands. This alternative was eliminated because the use of only native vegetation to restore degraded lands would not meet some of the project purposes discussed in Chapter 1. However, the use of native vegetation to restore degraded lands has been incorporated Alternatives A, B, and C to the extent practical, as discussed in Section 2.2.
- **Exclude logging, grazing, off-highway vehicle use, and energy and mineral development on public lands.** This alternative was eliminated because the Federal Land Policy and Management Act requires that the BLM manage public lands for multiple uses including those listed.

2.6 Mitigation

As defined by CEQ regulation 1508.20, mitigation includes: 1) avoiding the impact altogether by not taking a certain action or parts of an action; 2) minimizing impacts by limiting the degree or magnitude of the action and its implementation; 3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; 4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and 5) compensating for the impact by replacing or providing substitute resources or environments.

Mitigation measures have been identified for effects from treatments for several resource areas. These are discussed in Chapter 3 at the end of relevant resource sections under Mitigation.

2.7 Summary of Impacts by Alternative

Table 2-6 summarizes the likely effects of restoration and resource management activities for each alternative. Information contained in this table is discussed in more detail in Chapter 3 (Affected Environment and Environmental Consequences).

TABLE 2-6

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
SUMMARY OF EFFECTS ON GLOBAL CLIMATE			
Direct and Indirect Effects: The use of equipment and fire treatment methods would release CO ₂ , a greenhouse gas, to the environment. About 19,115 tons of CO ₂ would be emitted to the atmosphere annually, but effects on global climate change would be negligible. Treatments to reduce the incidence of wildfire, and associated CO ₂ emissions, would be greatest under this alternative.	Direct and Indirect Effects: There would be no CO ₂ emissions from prescribed fire and wildland fire for resource benefit under this alternative. Mechanical, manual, and biological control treatments would emit about 5,600 tons of CO ₂ to the environment annually, and effects on global climate change would be negligible. Treatments would reduce the incidence of wildfire, but not to the same extent as under Alternative A.	Direct and Indirect Effects: The only CO ₂ emissions would be from use of manual equipment and worker transport. Only about 2 tons of CO ₂ emissions would occur annually, and their effects on global climate change would be negligible. Treatments would do less to reduce wildfire risk than Alternatives A and B.	Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no emissions of CO ₂ or other emissions that could contribute to global warming. CO ₂ emissions from wildfire would likely be greater under this alternative than the action alternatives.
Cumulative Effects: Effects of future fire regimes and CO ₂ emissions are hard to predict. CO ₂ emissions in the cumulative effects study area (CESA) would occur from development and other projects, but wildfires would still be the primary contributor of CO ₂ to the atmosphere. 3 Bars Project treatments would contribute about 0.000003 percent to the national greenhouse gas emissions annually and have a negligible cumulative effect.	Cumulative Effects: CO ₂ emissions from treatment activities under Alternative B would be about one-fourth those under Alternative A, but would have a negligible cumulative effect on regional greenhouse gas emissions.	Cumulative Effects: CO ₂ emissions from treatment activities under Alternative C would be about 0.01 percent of those under Alternative A, and would have a negligible cumulative effect on regional greenhouse gas emissions.	Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative effects. CO ₂ emissions from wildfires within the CESA would likely be greatest under this alternative.
SUMMARY OF EFFECTS ON AIR QUALITY			
Direct and Indirect Effects: Air quality would be affected from use of vehicles and other equipment, dust from roads and treatment activities, and from fire use. None of the predicted annual emissions by pollutant would exceed national or state air quality standards. Particulate matter	Direct and Indirect Effects: Air quality would be affected from use of vehicles and other equipment, and dust from roads and treatment activities. There would be no fire treatments and smoke production. None of the predicted annual emissions by pollutant would exceed national or state	Direct and Indirect Effects: Air quality would be affected from use of vehicles and manual equipment; there would be no emissions associated with mechanical and fire treatments. None of the predicted annual emissions by pollutant would exceed national or state air quality	Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no air emissions. However, the BLM would do little to reduce the risk of wildfire, so air pollutant emissions could be greater under this alternative than the other alternatives.

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
concentrations from treatments are expected to be negligible based on modeling. Treatments to reduce wildfire occurrence would benefit air quality, as wildfire impacts on air quality are generally greater than those from prescribed fire.	air quality standards. Particulate matter concentrations from treatments are expected to be negligible based on modeling, and less than those under Alternative A. Treatments to reduce wildfire occurrence would benefit air quality, but benefits would be less under Alternative B than under Alternative A.	standards. Particulate matter concentrations from treatments are expected to be negligible and less than those under Alternatives A and B. Treatments to reduce wildfire occurrence would benefit air quality, but benefits would be less under Alternative C than under Alternatives A and B.	
Cumulative Effects: Land development and associated infrastructure would have adverse air quality effects. Given that 3 Bars Project treatments would affect only 1 percent of the CESA annually, treatment effects on regional air quality would be negligible. Treatments would reduce the likelihood of wildfire, which is an important contributor to air quality impacts in the CESA.	Cumulative Effects: 3 Bars Project treatments under Alternative B would affect only half as much acreage as treated under Alternative A, and the BLM would not use fire treatments. Thus, particulate matter and other air emissions from treatments would be substantially less under Alternative B than under Alternative A and have a negligible cumulative effect on regional air quality. Treatments would reduce the likelihood of wildfire, but not to the same extent as would occur under Alternative A.	Cumulative Effects: 3 Bars Project treatments under Alternative C would be substantially less than under Alternatives A and B, as manual and biological control treatments have few air emissions. Thus, particulate matter and other air emissions from treatments would have a negligible cumulative effect on regional air quality. Treatments would reduce the likelihood of wildfire, but not to the same extent as would occur under Alternatives A and B.	Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative air quality effects. Air quality effects from wildfires within the CESA would likely be greatest under this alternative.
SUMMARY OF EFFECTS ON GEOLOGY AND MINERALS			
Direct and Indirect Effects: Geology resources would not be affected. Mineral resources may be needed for stream restoration, but gravel and rock resources in the project area are abundant and treatments would have negligible effects on mineral resources. Treatments could hinder future mineral exploration and development.	Direct and Indirect Effects: Geology resources would not be affected. Effects on local gravel and rock resources would be similar to those for Alternative A. Potential conflicts over access to and use of mineral resources should occur about half as often as compared to Alternative A.	Direct and Indirect Effects: Geology resources would not be affected. Effects on local gravel and rock resources would be about one-fourth those for Alternative A. Potential conflicts over access to and use of mineral resources should occur about one-fourth as often as compared to Alternative A.	Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no effects to geology and mineral resources.

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>Cumulative Effects: Geology resources would not be affected. In the context of other ongoing and proposed development, including mining, in the CESA, cumulative effects to mineral resources would be negligible under Alternative A.</p>	<p>Cumulative Effects: Geology resources would not be affected. In the context of other ongoing and proposed development, including mining, in the CESA, cumulative effects to mineral resources would be similar to those under Alternative A.</p>	<p>Cumulative Effects: Geology resources would not be affected. In the context of other ongoing and proposed development, including mining, in the CESA, cumulative effects to mineral resources would be negligible under Alternative C and about one-fourth less than those under Alternatives A and B.</p>	<p>Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative effects to geology or mineral resources.</p>
SUMMARY OF EFFECTS ON PALEONTOLOGICAL RESOURCES			
<p>Direct and Indirect Effects: Treatments that disturb the soil to depths greater than 6 inches, or bedrock, have the greatest potential to disturb paleontological resources. Mechanical treatments in riparian zones, and use of prescribed fire near bedrock, have the greatest potential to effect paleontological resources. However, most treatments under Alternative A would be above or only within the first few inches of soil. Overall, potential effects to paleontological resources from treatments would be negligible.</p>	<p>Direct and Indirect Effects: The BLM would use mechanical equipment near streams and to till soil. Because the BLM would not use fire under this alternative, the BLM may use mechanical treatments instead of fire treatments in some treatment areas. Still, potential effects to paleontological resources would be less under Alternative B than under Alternative A.</p>	<p>Direct and Indirect Effects: The BLM would not use mechanical equipment or fire, thus potential effects to paleontological resources would be substantially less under Alternative C than under Alternatives A and B. The BLM would treat only a few miles of stream, thus there could be future loss of paleontological resources from stream degradation.</p>	<p>Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no adverse effects to paleontological resources.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>Cumulative Effects: Surface-disturbing activities, including mining and drilling, could affect paleontological resources in the CESA. Less than 2 percent of the CESA would be disturbed annually by 3 Bars Project activities, and most treatments would only disturb the upper few inches of soil. Thus, cumulative effects to paleontological resources from project actions would be negligible.</p>	<p>Cumulative Effects: Although the BLM may conduct more mechanical treatments under Alternative B than under the other alternatives, treatment effects would generally be limited to the upper few inches of soil. In addition, only about half as many acres would be treated under Alternative B than under Alternative A. Thus, cumulative effects to paleontological resources from project actions would be negligible.</p>	<p>Cumulative Effects: The BLM would not use equipment or fire for restoration treatments, and would treat only one-fourth as many acres as under Alternative A, thus potential cumulative effects to paleontological resources from the 3 Bars Project would be negligible.</p>	<p>Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative effects to paleontological resources.</p>
SUMMARY OF EFFECTS ON SOIL RESOURCES			
<p>Direct and Indirect Effects: Restoration treatments could lead to short-term erosion, and reduced rates of water infiltration, from soil disturbance and compaction. Effects may be greater for stream restoration projects, and where heavy equipment or fire are used. Risks would be greatest in areas with erosion-prone soils and on hillslopes, and areas with high fire damage susceptibility. Adverse effects are greatest under Alternative A as about 90 percent of treatments are in pinyon-juniper, which are often found on slopes, and which could be burned under this alternative. However, treatments would improve the health and resiliency of native vegetation, reduce the risk of wildfire, and control noxious weeds and other invasive non-native vegetation, to the benefit of soil</p>	<p>Direct and Indirect Effects: Short-term soil erosion and compaction, and loss of soil productivity, would occur under Alternative B, but not to the extent that would occur under Alternative A. The BLM would not treat vegetation using fire, thus there would be less risk of loss of soil organic matter and potential formation of water-repellent surface layers from fire use. However, in place of fire, the BLM may conduct more mechanical treatments that could disturb the soil and possibly cause erosion to a greater extent than fire use. Because the BLM would not use fire, it would not be able to improve the health of pinyon-juniper stands and create fuel breaks, and remove cheatgrass, to the extent that would occur under Alternative A. The BLM would also treat only about half as many acres under</p>	<p>Direct and Indirect Effects: Short-term loss of soil to erosion and soil compaction, and potential for soil disturbance to lead to an increase in noxious weeds and invasive non-native vegetation, would be less under this alternative than under Alternative A and B as the BLM would only use manual and classical biological control treatments, and would only treat about 3,200 acres annually. However, long-term benefits to soil health and productivity would be less under this alternative because the BLM would be able to do little to improve soil fertility, increase infiltration, reduce erosion, and implement actions to reduce the risk of wildfire.</p>	<p>Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no effects to soil resources. However, the BLM would do little to improve the health of the landscape, reduce the occurrence and spread of noxious weeds and invasive non-native vegetation, or reduce the risk of wildfire. Thus, long-term loss of soil and soil productivity could be greater under this alternative than the other alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>productivity and reduction of loss of soil due to erosion. Treatments should also improve soil infiltration, biodiversity, and moisture. Since the BLM would treat about 12,700 acres annually, adverse and beneficial effects of treatments would be greatest under Alternative A.</p>	<p>Alternative B than under Alternative A. Thus, the risk of wildfire, and its effects on soil, would be greater under this alternative than under Alternative A.</p>		
<p>Cumulative Effects: Numerous factors have contributed to soil degradation and productivity, including historic overgrazing, large wildfires, introduction of cheatgrass, and mining and other land development. To help improve soil function and productivity, the BLM would treat about 14,200 acres (12,700 for 3 Bars Project treatments, and 1,500 for other authorized treatments) annually within the CESA, or less than 1 percent of the CESA, and restore about 31 miles of stream, using all treatment methods. Treatments would have negligible short-term cumulative effects, but long term, treatments under Alternative A would help to reduce the risk of wildfire, a major contributor to soil loss and function, and would help to offset the effects from loss of soil function and productivity elsewhere in the CESA.</p>	<p>Cumulative Effects: Short-term cumulative effects from treatments under Alternative B would be similar to those for Alternative A. Although fire would not be used under this alternative, the BLM may have to conduct more mechanical treatments to achieve treatment goals. Still, the BLM would only treat about 7,800 acres (6,300 for 3 Bars Project treatments, and 1,500 for other authorized treatments) annually within the CESA, and would not conduct fire treatments in pinyon-juniper stands on hillslopes, to the short-term benefit of soil resources. The BLM would not be able to use fire to improve ecosystem health. Thus, risks to soil from deterioration in ecosystem health and from wildfire would be greater under this alternative than under Alternative A.</p>	<p>Cumulative Effects: Because the BLM would treat only about 4,700 acres (3,200 acres for 3 Bars Project treatments, and 1,500 for other authorized treatments) annually within the CESA, and would not use mechanical treatments and fire, short-term effects associated with these methods would not occur within the CESA. Without these methods, though, improvements to soil would be less, and risk of wildfire would be greater, within the project area and CESA than under Alternative A and B, and loss of soil function and health would accumulate with losses elsewhere in the CESA.</p>	<p>Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative effects to soil resources from treatments. Treatments under Alternative D would do little to offset effects to soils from other reasonably foreseeable future actions in the CESA. 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 ecosystem; and reduce the risk of large-scale wildland fire under current and reasonably foreseeable future authorized actions, but on only about 1,500 acres annually. The trend toward large-sized wildfires of moderate to high severity in sagebrush and large stand-replacing wildfires in pinyon-juniper would likely increase. As a result, soil resources would continue to deteriorate under this alternative.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
SUMMARY OF EFFECTS ON WATER RESOURCES			
<p>Direct and Indirect Effects: Short-term, there could be restrictions on water access along portions of streams. Removal of vegetation and disturbance of the soil could lead to increases in water runoff and soil erosion and decrease in infiltration, groundwater recharge, stream flows, and flow duration. Treatments could lead to degradation of streambeds and banks due to removal of undesirable riparian vegetation, and from in-channel earthwork, which could cause erosion and affect water quality. Long term, hydrologic functions would improve due to stream restoration, including stabilization or reduction of drainageway erosion features such as knickpoints, headcuts, gullies, and bank caving, and from reconnecting hydrologic pathways. Treatments would improve infiltration, base streams flows, and the amount of time water flows in streams. Treatments would help to stabilize soils and reduce the risk of wind and water erosion. Removal of hazardous fuels from public lands and improvements to vegetation resiliency would result in a long-term benefit to surface water quality by reducing the risk of a future high-severity wildfire on the treatment site.</p>	<p>Direct and Indirect Effects: Excluding prescribed burns would avoid the increases in runoff and erosion common to burned areas. Reduced soil infiltration, due to resinous sealing after intense burning that can occur in high fire susceptibility risk areas, would not occur as a result of prescribed burns. Long term, the BLM would have fewer options, and treat only half as many acres, under Alternative B compared to Alternative A to improve pinyon-juniper and other vegetation health and resiliency and to stabilize soils and reduce the risk of wind and water erosion. Less work would be done in Phase II and III pinyon-juniper stands, to the detriment of base water flows, than under Alternative A. This could lead to greater risk of wildfire, and its effects on water quality and quantity, than under Alternative A. If mechanical methods are used instead of fire, they could result in more soil disturbance than the use of fire, which could lead to water degradation in areas with high water erosion risk.</p>	<p>Direct and Indirect Effects: The risk of localized soil compaction and short term accelerated erosion from treatments, and its contribution to water quality degradation, would be less under Alternative C than the other alternatives, as there would be little ground disturbance under Alternative C and only one-fourth as many acres would be treated compared to Alternative A. By not being able to use mechanical methods and fire to reduce hazardous fuels, including noxious weeds and invasive non-native vegetation, and decadent pinyon-juniper, and create fire and fuel breaks, the risk of wildfire and its impacts on water resources would be greater under this alternative than the other action alternatives.</p>	<p>Direct and Indirect Effects: No treatments would be authorized under this alternative. However, the BLM would do little to improve the health of the landscape, reduce the occurrence and spread of noxious weeds and invasive non-native vegetation, or reduce the risk of wildfire. Thus, long-term adverse effects to water quantity and quality could be greater under this alternative than the other alternatives.</p>
<p>Cumulative Effects: Numerous factors have degraded water resource quantity and</p>	<p>Cumulative Effects: Short-term cumulative effects to water resources from</p>	<p>Cumulative Effects: Because the BLM would not use mechanical treatments and</p>	<p>Cumulative Effects: No treatments would be authorized under this alternative</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>quality on the project area, including historic overgrazing, large wildfires, introduction of cheatgrass, and land development. The Mount Hope Project could significantly impact groundwater levels and streamflows on the 3 Bars Project area. Hazardous fuels reduction, habitat improvement, and noxious weeds and invasive non-native species control projects would occur on approximately 142,000 acres, or 8 percent of the CESA (about 1 percent of the CESA annually), using all treatment methods. The BLM would also restore about 31 miles of stream. Treatments would have negligible short-term cumulative effects, but long term, there would be benefits to water quality and possibly to water flows. Treatment would also help to reduce the risk of wildfire, a major contributor to water degradation, and would help to offset the effects from degradation elsewhere in the CESA.</p>	<p>treatments under Alternative B would be similar to those for Alternative A. Although fire would not be used under this alternative, the BLM may have to conduct more mechanical treatments to achieve treatment goals. The BLM would not conduct fire treatments in pinyon-juniper stands on hillslopes, to the short-term benefit of water resources. Under Alternative B, annual hazardous fuels reduction and habitat improvement projects could occur on about 6,300 acres within the 3 Bars Project area, and on an additional 1,500 acres within the CESA, or less than 1 percent of acreage within the CESA. The BLM would not be able to use fire to improve ecosystem health. Thus, risks to water resources from deterioration in ecosystem health and from wildfire would be greater under this alternative than under Alternative A.</p>	<p>fire, short-term effects associated with these methods would not occur within the CESA. Without these methods, though, improvements to water resources would be less, and risk of wildfire would be greater, within the project area under this alternative than under Alternatives A and B, and loss of water resource functionality would accumulate with losses elsewhere in the CESA.</p>	<p>and there would be no cumulative effects to water resources from treatments. The BLM would be able to conduct treatments on a limited acreage, as discussed above under Soil Resources, but treatments under Alternative D would do little to offset effects to water resources from other reasonably foreseeable future actions in the CESA.</p>
<p>SUMMARY OF EFFECTS ON WETLANDS, FLOODPLAINS, AND RIPARIAN ZONES</p>			
<p>Direct and Indirect Effects: Short term, removal of vegetation and soil disturbance associated with treatments could lead to increased soil erosion and surface water runoff, which could lead to channel alteration and sedimentation in wetlands and riparian zones. Siltation could reduce the acreage of wetland and riparian habitat. Removal of vegetation could also</p>	<p>Direct and Indirect Effects: Under this alternative, the BLM would likely be able to restore a similar amount of Non-functioning and Functioning-at-risk wetlands and riparian zones to Proper Functioning Condition as under Alternative A, although the level of benefit could be reduced in certain locations. Without the use of fire, there</p>	<p>Direct and Indirect Effects: Under Alternative C, the BLM would only treat 8 stream miles and one-fourth as much riparian zone habitat as under Alternative A. By treating fewer acres, and not using fire and mechanical treatment methods, the BLM would restore less Non-functioning and Functioning-at-risk wetlands and riparian zones to Proper</p>	<p>Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no effects to wetlands, floodplains, and riparian zones. However, the BLM would do little to improve the health of the landscape, reduce the occurrence and spread of noxious weeds and invasive non-native vegetation, or reduce the risk of wildfire.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>decrease the amount of rainfall captured by plants, detritus, and soil, potentially leading to increased stormwater flows and runoff velocity in streams. Increased light and disturbance tend to favor early successional species, including noxious weeds and other invasive non-native vegetation. Removal of vegetation may decrease resistance to overland flow. It would also decrease canopy interception of precipitation and evapotranspiration, which would increase the amount of free water. Long term, vegetation treatments would help restore treated wetlands and riparian zones to Proper Functioning Condition and increase stream flows along 31 miles of stream. Removal of pinyon-juniper may improve water flows in streams and water yields at spring sources and in near-surface aquifers. By restoring streams to stable channel types, reducing runoff, and increasing infiltration, water should stay on the land longer to the benefit of deep-rooted riparian/wetland vegetation, resulting in expanded riparian zones and more stable streams. Hand planting native species would benefit wetland and riparian zones by providing additional vegetation that would help prevent erosion and protect streambanks.</p>	<p>would be no short-term increase in erosion and stream sedimentation, and the spread of noxious weeds and other invasive non-native vegetation, from fire treatments. The inability to use fire could reduce the effectiveness of pinyon-juniper removal in some areas, and benefits to spring and stream flows. Risks to wetlands, floodplains, and riparian zones from wildfire would be greater under this Alternative than under Alternative A. In general, prescribed fires would have fewer impacts than wildfires, however, as they are of low severity and can be controlled to occur in one particular area.</p>	<p>Functioning Condition as compared to Alternatives A and B. By not using heavy equipment, however, there would be less soil compaction, particularly in areas of moist soils, which can increase surface runoff from the treated areas, reduce soil porosity, and limit water infiltration. While an improvement in wetland/riparian function would be expected across all treated areas, the level of improvement would likely be less than under Alternatives A and B. Benefits associated with improvements to upland community types would be less than under Alternatives A and B, since a much smaller portion of the project area would be treated, and the reduction in wildfire risk would also likely be lower.</p>	<p>Thus, long-term adverse effects to wetlands, floodplains, and riparian zone functionality could be greater under this alternative than under the other alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>Cumulative Effects: Past land uses in the CESA have resulted in the degradation of wetlands, riparian zones, and floodplains and reduced their functions. In particular, the BLM has indicated that roads, historic grazing regimes, wildfire, spread of noxious weeds and invasive non-native vegetation, and pinyon-juniper encroachment have negatively affected riparian and wetland functions and values, water quantity and timing, and water quality. Hazardous fuels reduction and habitat improvement projects on the 3 Bars Project and other areas within the CESA would occur on approximately 14,200 acres annually, or on less than 1 percent of the CESA. These treatments would lead to short-term increases in soil erosion and surface water runoff, but long-term benefits to water quality and possible water flows. Long term, 3 Bars Project actions should have a substantial contribution toward improving wetland, floodplain, and riparian zone conditions within the CESA and help to offset adverse effects to these resources from other reasonably foreseeable future actions under Alternative A.</p>	<p>Cumulative Effects: By not using fire on the 3 Bars Project area, there would be no effects to wetland and stream water quantity and quality from fire on several thousand acres annually within the CESA. The amount of wetland, floodplain, and riparian habitat treated under Alternative B would be similar to that under Alternative A. The BLM would conduct hazardous fuels reduction and habitat improvement projects using manual and mechanical methods on half as many acres within the 3 Bars Project area compared to Alternative A, thus the risk of future wildfires, and their effects on wetlands, floodplains, and riparian zones within the CESA would be greater under Alternative B than under Alternative A.</p>	<p>Cumulative Effects: Short-term effects to wetlands, riparian zones, and floodplains associated with the use of fire and mechanized equipment would not occur under Alternative C. By not being able to use mechanical methods and fire to reduce hazardous fuels and create fire and fuel breaks, the risk of wildfire and its effects on wetlands, floodplains, and riparian zones would be greater under Alternative C than under Alternatives A and B. Only about 100 acres of wetland and riparian habitat, and 1 mile of stream habitat, would be restored annually on the 3 Bars Project area. Wetland, riparian, and floodplain habitat should improve within the 3 Bars Project area and within the CESA, although not to the extent as would occur under Alternatives A and B.</p>	<p>Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative effects to water resources from treatments. The BLM would be able to conduct treatments on a limited acreage, as discussed above under Soil Resources. These treatments under Alternative D would do little to offset effects to water resources from other reasonably foreseeable future actions in the CESA.</p>
SUMMARY OF EFFECTS ON NATIVE AND NON-INVASIVE VEGETATION RESOURCES			
<p>Direct and Indirect Effects: Short term, vegetation removal treatments would result in a temporary loss of some desirable or more mature vegetation</p>	<p>Direct and Indirect Effects: Under this alternative, the total acreage treated would be approximately half that of Alternative A. By not using fire, there would be less</p>	<p>Direct and Indirect Effects: Given that fire, mechanical methods, and livestock would not be used under this alternative, risks to non-target native vegetation would</p>	<p>Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no effects to native and non-invasive vegetation.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>through inadvertent removal of non-target vegetation. Removal of pinyon-juniper could reduce the amount of pine nuts, wood, and other woodland products available for commercial and individual harvest. Thinning and removal of pinyon-juniper also would result in dead wood and slash material that, if not removed, mulched, or burned, could provide fuel for a wildfire. Long term, treatments would enhance native plant (re)establishment, and therefore would be expected to have a beneficial impact on native vegetation by increasing the extent of native plant communities in the project area. Treatments that benefit native plant communities could potentially provide habitat that is more suitable for rare and sensitive plant species. Treatments would result in improved health and vigor of riparian, aspen, and sagebrush communities. As treatments restore the functionality of the ecosystem, the system would become more resistant to invasion by noxious weeds and other invasive non-native vegetation, drought, and wildfire. Treatments that reduce the buildup of hazardous fuels would help reduce the risk of wildfire in the 3 Bars Project area.</p>	<p>risk of loss of non-target native vegetation, and establishment and spread of noxious weeds and other invasive non-native vegetation. It would be difficult for the BLM to conduct pinyon-juniper treatments on hillslopes, or over large acreages, using mechanical methods, where fire use treatments would be effective. Loss of pinyon-juniper and associated increase in sagebrush would be less than under Alternative A, as less acreage would be treated. The acreage of persistent woodlands and sagebrush habitats benefiting from treatments would be less than under Alternative A. Since treatment of Phase III woodlands would be minimal, these areas, which have the greatest risk for loss from high intensity fires, would remain at a high risk under this alternative. It is likely that the amount of area meeting Potential Natural Community objectives would be less than would occur under Alternative A.</p>	<p>be low. However, the BLM would have the fewest options for its treatment programs, and these programs would likely not be as effective as under the other alternatives. Mechanical methods and fire would not be available to promote aspen suckering. The BLM would be unable to combine treatment methods for optimal control of certain species and for enhancement of native plant communities. Additionally, removal of fuel hazards would be least under this alternative, and the risk of catastrophic wildfire would be greatest. The BLM would not be able to use chaining to effectively treat late Phase II and III pinyon-juniper habitats and effectively promote the establishment of seeded species. Seeding and planting of native and non-native vegetation may have limited success without mechanical equipment. The BLM would not be able to use mechanical methods to create fuel breaks within homogeneous stands of sagebrush along roads or existing linear disturbances. Additionally, the BLM would not be able to slash and pile burn following treatments to reduce the short-term fire hazard, although programs to use felled trees for posts, mulch, biomass, or other uses would help minimize the fire risk. The amount of area meeting Potential Natural Community objectives would be</p>	<p>However, the BLM would do little to improve the health of the landscape, reduce the occurrence and spread of noxious weeds and invasive non-native vegetation, or reduce the risk of wildfire. Thus, long-term benefits to native vegetation health and resiliency would be least under this alternative than under the other alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
		less than would occur under Alternatives A and B.	
<p>Cumulative Effects: Historic overgrazing, introduction of cheatgrass, large wildfires, and other natural and human-caused factors have contributed to the departure of the plant communities from the Potential Natural Community across the 3 Bars ecosystem. Hazardous fuels and other habitat improvement treatments would occur on about 142,000 acres within the 3 Bars Project area, or about 8 percent of the CESA. These treatments would help to reduce the risk of wildfire within the CESA. Overall, there would be a net beneficial accumulation of effects from BLM treatments and treated areas would move toward their Potential Natural Community. These benefits would be greatest under Alternative A.</p>	<p>Cumulative Effects: Under Alternative B, the inability to use prescribed and wildland fire for resource benefit would restrict BLM's ability to reduce wildfire risk, restore natural fire regimes, and influence vegetation communities on a large scale within the 3 Bars Project area. Prescribed fire use would be limited to a few hundred acres annually in other portions of the CESA outside the 3 Bars Project area based on previous authorizations. Hazardous fuels and other habitat improvement treatments would occur on about 78,000 acres within the 3 Bars Project area, or about 4 percent of the CESA, and would help to reduce the risk of wildfire within the CESA. Overall, there would be a net beneficial accumulation of effects from BLM treatments and treated areas would move toward their Potential Natural Community. However, because the BLM would treat fewer acres, and would not be able to use fire, benefits to vegetation would be less under Alternative B than under Alternative A.</p>	<p>Cumulative Effects: 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 one-fourth as many acres under Alternative C as under Alternative A. These methods would cause little vegetation and soil disturbance and would also give the BLM greater control on the types and amount of vegetation that are removed. By not being able to use mechanical methods and fire to improve the health and resiliency of native vegetation, reduce hazardous fuels, create fire and fuel breaks, and remove downed wood and slash, the risk of wildfire and its impacts on vegetation would likely increase on the 3 Bars Project area. Hazardous fuels reduction and habitat improvement projects could occur on about 47,000 acres within the 3 Bars Project area. Collectively, about 3 percent of the CESA would be treated by the BLM. There would still be a net benefit from BLM treatments and treated areas would move toward their Potential Natural Community on portions of the project area, however, as the BLM would not be able to use fire and mechanical treatments, and fewer acres would be treated, benefits</p>	<p>Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative effects from noxious weeds and invasive non-native vegetation associated with 3 Bars Project treatments. However, factors that contribute to the loss of native and non-invasive vegetation health and resiliency would remain, and would likely be greatest under this alternative.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
		to vegetation under Alternative C would be less than under Alternatives A and B.	
SUMMARY OF EFFECTS ON NOXIOUS WEEDS AND INVASIVE NON-NATIVE VEGETATION			
<p>Direct and Indirect Effects: Short-term, treatments that cause disturbance or remove plants from an area could lead to a competitive advantage for many noxious weeds and other invasive non-native vegetation, particularly if a seed source is present on the site. There is also some potential for noxious weeds and other invasive non-native vegetation seeds to be transported onto treatment sites on workers' shoes and clothing, with the plant materials used in rehabilitation projects, and on vehicles. Long term, treatments designed to control noxious weeds and other invasive non-native species would be expected to have a beneficial impact by reducing populations of these species. The reduction of fuel loads would decrease the risk of severe or repeat wildfires, thereby reducing the risk of spread of cheatgrass and other noxious weeds and other fire-dependent invasive non-native species. By removing these species, overall ecosystem health and functionality would improve, and by restoring rangeland health native species would be better able to compete with noxious weeds and other invasive non-native species.</p>	<p>Direct and Indirect Effects: Prescribed fire could increase the dominance of cheatgrass and other introduced annual grasses in areas where these species are present pre-burn. Because only mechanical and manual methods would be used, however, it would be difficult for the BLM to conduct hazardous fuels reduction, and noxious weeds and other invasive non-native vegetation treatments on steep hillslopes, or over large acreages. Biological control has been identified for use on the Table Mountain, Rocky Hills, and West Simpson Park units. Targeted grazing would be used to maintain firebreaks to help reduce wildfire risk in these areas. Grazing can contribute to the spread of noxious weeds and other invasive non-native vegetation. The BLM would not be able to use fire to remove the mat of dead vegetation in cheatgrass-dominated areas, or to promote the health and resiliency of native vegetation. Thus, wildfire risk would be greater under this alternative than under Alternative A, as would the potential for establishment and spread of noxious weeds and other invasive non-native vegetation after a wildfire.</p>	<p>Direct and Indirect Effects: The effects of not using fire would be similar to those under Alternative B. By not using machinery, there would be less risk of inadvertent removal of native vegetation, and potential to spread of seeds of noxious weeds and other invasive non-native vegetation. Mechanical equipment can also damage or crush existing desirable riparian and wetland vegetation or bring propagules of non-native species into treatment areas and create sites for noxious weeds and other invasive non-native vegetation establishment. These effects would be greatest in treatment areas with the largest acreage and that employ the most extensive mechanical treatments (project groups that include streambank earthwork as well as pinyon-juniper removal). By not using fire and mechanical equipment, however, it is unlikely that the BLM would slow the spread of noxious weeds and other invasive non-native vegetation, including cheatgrass; restore fire as an integral part of ecosystem; and reduce extreme, very high, and high wildfire risks to moderate risk or less. Thus, wildfire risk would be greater under this alternative than under Alternatives A and B, as would the</p>	<p>Direct and Indirect Effects: No treatments would be authorized under this alternative. There would be no effects to noxious weeds and invasive non-native vegetation. However, the BLM would do little to improve the health of the landscape, reduce the occurrence and spread of noxious weeds and invasive non-native vegetation, or reduce the risk of wildfire. Thus, long-term adverse effects to ecosystem health and resiliency could be greater under this alternative than under the other alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
		potential for establishment and spread of noxious weeds and invasive non-native vegetation.	
<p>Cumulative Effects: Past land uses in the CESA have resulted in the degradation of public and private lands and reduced their functions. In particular, the BLM has indicated that roads, historic grazing regimes, wild horse overpopulation, and wildfire have contributed to the establishment and spread of noxious weeds and invasive non-native vegetation within the CESA. Hazardous fuels reduction, habitat improvement, and noxious weed and other invasive non-native vegetation control projects would occur on up to 142,000 acres, or 8 percent of the CESA. These treatments would help to reduce the risk of wildfire within the CESA, which often leads to the establishment and spread of noxious weeds and other invasive non-native vegetation.</p>	<p>Cumulative Effects: The BLM would treat about half as many acres under Alternative B as under Alternative A, and less effort would be spent by the BLM on treatments to reduce wildfire risk and its impacts on vegetation, including use of fire to restore natural fire regimes. The use of mechanical treatments would give the BLM greater latitude to control various types of vegetation compared to fire treatments, but efforts to control cheatgrass and other noxious weeds and other invasive non-native vegetation would be difficult on steep slopes and over large acreages. Hazardous fuels reduction and habitat improvement projects could occur on about 63,000 acres within the 3 Bars Project area, and on about 15,000 acres within other portions of the CESA, or about 4 percent of acreage within the CESA. Thus, the BLM would be less successful in controlling noxious weeds and other invasive non-native vegetation on the project area and in the CESA under Alternative B than under Alternative A.</p>	<p>Cumulative Effects: By not being able to use fire, and mechanical methods such as mowing, chopping, tilling, disking, harrowing, and drill seeding, the BLM would do little to reduce hazardous fuels, create fire and fuel breaks, treat areas with noxious weeds and other invasive non-native vegetation, or remove downed wood and slash. Thus, the risk of wildfire and spread of noxious weeds and other invasive non-native vegetation would remain high on the 3 Bars Project area and within the CESA. Only about 47,000 acres, or about 2 percent of the CESA, would be treated on the CESA. These treatments would benefit the 3 Bars ecosystem, but not to the extent as for Alternatives A and B.</p>	<p>Cumulative Effects: No treatments would be authorized under this alternative and there would be no cumulative effects from noxious weeds and invasive non-native vegetation associated with 3 Bars Project treatments. However, factors that contribute to the spread of noxious weeds and other invasive non-native vegetation would remain, and would likely be greatest under this alternative.</p>
SUMMARY OF EFFECTS ON WILDLAND FIRE			
<p>Direct and Indirect Effects: Proposed treatments would have few adverse</p>	<p>Direct and Indirect Effects: The risk of treatments causing a wildfire that spreads</p>	<p>Direct and Indirect Effects: There would be no wildland fire risks associated with</p>	<p>Direct and Indirect Effects: There would be no direct effects to wildland fire from 3</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>impacts on wildfire risk. It is possible that the use of vehicles to transport workers to the treatment site, or use of chainsaws or other gas-powered equipment, could cause a spark that results in a wildfire. Slash from manual and mechanical treatments can create a short-term fire hazard. Long term, the BLM would restore fire as an integral part of the ecosystem and reduce hazardous fuels. Treatments that remove hazardous fuels from public lands would be expected to benefit the health of plant communities in which natural fire cycles have been altered. These include treatments that control populations of noxious weeds and invasive non-native species. Enhancing fuel breaks in pinyon-juniper stands would break up the continuity of fuel, moderate fire behavior, and reduce the risk of loss of habitat and other resources from a catastrophic wildfire. Treatments would help to reduce the Fire Regime Condition Class (FRCC), and meet Fire Management Unit (FMU) objectives, over portions of the 3 Bars Project area.</p>	<p>beyond treatment boundaries would be less under this alternative than Alternative A. Miles traveled by vehicles, the number of acres treated using manual and mechanical equipment, the amount of downed trees and slash material created, and the miles of fire and fuel breaks created would be similar between this alternative and Alternative A. Because the BLM would not use prescribed fire to treat vegetation under this alternative, there would be no risk of a prescribed fire spreading beyond treatment boundaries. Without the use of prescribed fire and fire for resource benefits, the BLM would be unable to restore fire as an integral part of the ecosystem, reduce the risk of a large-scale wildfire, or reduce extreme, very high, and high wildfire risks to moderate risk or less. About half as much acreage would be treated under Alternative B to reduce hazardous fuels and reduce the FRCC compared to Alternative A. Prescribed fire and fire for resource benefit are identified as important treatment options under the Fire Management Plan for all FMUs, except the Big Smoky FMU, but would be unavailable to the BLM as a management tool under this alternative. It is unlikely the trend toward large-sized fires of moderate to high severity in sagebrush and large stand-replacing fires in pinyon-juniper</p>	<p>the use of prescribed fire. The BLM would not use mechanical equipment (other than vehicles to transport work crews to treatment sites), so there would be no risk of a wildland fire being started by tractors, mowers, and other mechanical treatment equipment. However, workers still would use chainsaws and other hand-held power equipment that could cause a spark and start a wildland fire. Large numbers of workers and their vehicles would be needed to accomplish proposed treatments under this alternative. Vehicle miles traveled would likely be greatest under this alternative. Downed trees and slash material from treatments would be difficult to remove without mechanical equipment or pile/slash burning. The number of miles of fire and fuel breaks created under this alternative would be less than for Alternatives A and B, as the BLM would not be able to use mechanical equipment, such as bulldozers, mowers and shredders, and prescribed fire to create fire and fuel breaks. Alternative C would not restore fire as an integral part of ecosystem, reduce the risk of large-scale wildfire, or reduce extreme, very high, and high wildfire risks to moderate risk or less. Only about 500 to 1,000 acres would be treated annually to reduce hazardous fuels, and the BLM estimates that the FRCC would be reduced on only about 3,750 to</p>	<p>Bars Project treatments as no treatments would be authorized under this alternative. Under this alternative, the BLM would not meet the fire use purposes to 1) restore fire as an integral part of ecosystem, 2) reduce the risk of large-scale wildland fire, 3) reduce extreme, very high, and high wildland fire risks to moderate risk or less, and 4) develop fuel breaks within treatment and adjacent areas. There would be little or no improvement in the Fire Regime Condition Class on the 3 Bars Project area and the BLM would not meet Fire Management Unit objectives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
	would slow or reverse in the long term, and the BLM would still need an aggressive wildland fire prevention and control program for the long term.	7,500 acres over the next 10 to 15 years, fewer acres than under Alternatives A and B. The BLM would not meet FMU objectives under the Fire Management Plan.	
<p>Cumulative Effects: Historic overgrazing, introduction of cheatgrass, large wildfires, and other natural and human-caused factors have contributed to the departure of the plant communities from the Potential Natural Community across the 3 Bars ecosystem. These actions have made rangeland and woodland habitat less fire resilient and increased the potential for spread of wildfire. Hazardous fuels treatments would occur on about 142,000 acres (7 percent) of lands within the CESA. Although this would still be a small portion of lands within the CESA, treatments would be targeted toward public lands with high to very high wildfire risk. Given that over 90 percent of acres impacted by future actions are focused on hazardous fuels reduction and resource management, actions would reduce wildfire risk long term. At fire management treatment levels projected to occur in the CESA during the next 25 years under Alternative A, the BLM should meet the FMU objectives for most FMUs.</p>	<p>Cumulative Effects: Because the BLM would not use fire to treat vegetation on the 3 Bars Project area, the risk of a prescribed fire spreading beyond treatment boundaries and burning other portions of the CESA would be less under this alternative. However, the BLM would be less able to restore fire as an integral part of ecosystem, reduce the risk of a large-scale wildland fire, or reduce extreme, very high, and high wildfire risks to moderate risk or less within the CESA under this alternative than under the other action alternatives. About 78,000 acres of vegetation would be treated to reduce hazardous fuels and improve rangeland health within the CESA, or about 4 percent of the CESA. Acres treated to reduce the FRCC under this alternative would be half that of Alternative A, and it is also less likely that the BLM would meet FMU objectives under this alternative than under Alternative A on the 3 Bars Project area.</p>	<p>Cumulative Effects: The BLM anticipates treating about one-fourth as many acres under Alternative C as under Alternative A, mostly due to the higher costs associated with manual and classical biological control methods. The risk of treatments causing a wildland fire would be less under this alternative than Alternative A. Miles traveled by vehicles, and amount of downed trees and slash material created, but not removed, by pile/slash burning or other methods would be greater under this alternative than under Alternatives A and B. By not being able to use fire, and mechanical methods such as mowing, chopping, tilling, disking, harrowing, and drill seeding, the BLM would do little to reduce hazardous fuels, create fire and fuel breaks, treat areas with noxious weeds and other invasive non-native vegetation, or remove downed wood and slash. Under Alternative C, the BLM would conduct fire management treatments on only about 2 percent of the CESA. It is less likely that the BLM would meet FMU objectives under the Fire Management Plan under this</p>	<p>Cumulative Effects: There would be no cumulative effects on wildland fire from 3 Bars Project treatments as no treatments would be authorized under this alternative. 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. The BLM would do little to reduce the FRCC, and it is also unlikely that the BLM would meet FMU objectives under the Fire Management Plan. Given the large number of utilities and infrastructure, mineral, oil, gas, geothermal, and other land developments that are reasonably foreseeable in the CESA, the need for an aggressive wildland fire prevention and control program to protect natural resources and public health and infrastructure would likely increase from current levels.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
		alternative than under Alternatives A and B on the 3 Bars Project area.	
SUMMARY OF EFFECTS ON FISH AND OTHER AQUATIC RESOURCES			
<p>Direct and Indirect Effects: Short term, proposed treatments would disturb aquatic habitat if equipment or vehicles enter streams or other waterbodies, could cause soil disturbance and erosion, and there could be a spill of fuel or lubricants into water bodies. Removal of vegetation could adversely affect aquatic habitat and ecological requirements for aquatic species, and cause a temporary increase in bank erosion. Increases in sediment entering a stream could adversely affect fish health and stream quality. Prescribed fire and mechanical treatments could 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. 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. Treatments would focus on streams used by Lahontan cutthroat trout, a federally listed threatened species. Stream enhancements could involve the</p>	<p>Direct and Indirect Effects: 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 potential buildup of hazardous fuel materials that could have been removed through the use of prescribed fire and wildfire for resource benefits. 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</p>	<p>Direct and Indirect Effects: 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 adverse 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</p>	<p>Direct and Indirect Effects: 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. Alternative D poses the greatest threat to Lahontan cutthroat trout and other aquatic species through long-term habitat loss and degradation.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>creation or expansion of pool habitat, improvements in the riffle to pool ratio, and the addition of instream cover for fish. Replacing invasive plant species with native vegetation can improve food availability for insectivorous fish species, as native plants typically support a more diverse native insect community. 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. Protective fencing would restrict access to treated areas by domestic livestock, wild horses, and wild ungulates. 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. Prescribed fire treatments could benefit aquatic species by reducing hazardous fuel loads, and therefore the risk of a destructive high-intensity wildfire.</p>	<p>Alternative A. However, risks to fish from wildfire would be greater under this alternative than for Alternative A.</p>	<p>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 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.</p>	
<p>Cumulative Effects: 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. Recreation, land development, mineral development, and oil, gas, and geothermal exploration and development have also affected fish and other aquatic resources. 3 Bars Project</p>	<p>Cumulative Effects: 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 the use of fire to restore natural fire regimes. By not using prescribed fire and wildland fire for</p>	<p>Cumulative Effects: 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 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 and fire,</p>	<p>Cumulative Effects: 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. 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 under this alternative.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>treatments would have short-term adverse effects on about 4,000 acres of riparian habitat, 8 miles of occupied Lahontan cutthroat trout streams, and 34 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 and ephemeral streams on the 3 Bars Project area. 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. A reduction in wildfire risk on the CESA would benefit aquatic organisms, and would be greatest under Alternative A.</p>	<p>resource benefit, there would be no risks to fish and other aquatic resources or their habitat from fire on 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. Hazardous fuels reduction and habitat improvement projects could occur on about 78,000 within the CESA, or about 4 percent of 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.</p>	<p>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. Only about 8 miles of stream and 100 acres of riparian habitat would be restored to benefit fish and other aquatic organisms. Treatments in the CESA would affect about 42,000 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.</p>	<p>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. 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 trend toward large-sized fires of moderate to high severity in sagebrush and large stand-replacing fires in pinyon-juniper would likely increase. These effects would be detrimental to fish and other aquatic organisms.</p>
<p>SUMMARY OF EFFECTS ON WILDLIFE RESOURCES</p>			
<p>Direct and Indirect Effects: Short-term adverse effects to wildlife include injury and loss of life, noise and other disruptions associated with treatment applications, and temporary and long-term habitat effects. Treatment work at streams, ponds, wells, and springs would involve using heavy equipment, which could pose a risk of injury or death by crushing animals or their breeding sites; amphibians would be most susceptible to</p>	<p>Direct and Indirect Effects: 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</p>	<p>Direct and Indirect Effects: 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</p>	<p>Direct and Indirect Effects: There would be no direct effects to wildlife resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. Because no habitat would be restored, Alternative D poses the greatest threat to wildlife through long-term habitat loss and degradation. Species at risk from habitat degradation include greater sage-grouse, pygmy rabbit, northern goshawk, cavity nesting birds,</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>harm or injury. Removal of Phase II and III pinyon-juniper would reduce the amount of habitat available to pinyon-juniper dependent species. 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. Long term, proposed treatments would target areas with declining habitat quantity and quality, and would facilitate wildlife movement across the landscape. 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 aimed at restoring natural fire cycles would improve vegetation resilience and increase plant diversity across the landscape, to the benefit of wildlife. Treatments would allow more desirable vegetation, such as forbs and grasses, to better compete and thrive. 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.</p>	<p>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, reducing the amount of historic sagebrush habitat restored, and reducing the acres of priority habitat treated to improve species diversity, especially through cheatgrass control. 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 not be able to promote more fire resilient and diverse habitat on the 3 Bars Project area.</p>	<p>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; sage-grouse, pygmy rabbit, and other sagebrush dependent wildlife would see few benefits.</p>	<p>and migratory birds through densification of pinyon-juniper and sagebrush, loss of aspen habitat, and pinyon-juniper encroachment.</p>
<p>Cumulative Effects: Historic livestock use, land development, and other natural</p>	<p>Cumulative Effects: Long term benefits from prescribed fire and wildland fire for</p>	<p>Cumulative Effects: Because fire and mechanical treatments would not be used,</p>	<p>Cumulative Effects: There would be no cumulative effects on wildlife resources</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>and human-caused factors have contributed to wildlife habitat loss and fragmentation, especially in riparian zones and near streams. In addition, habitat for greater sage-grouse, pygmy rabbit, and other wildlife will be lost due to the Mount Hope Project and future development in 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.</p>	<p>resource benefit, including improving pinyon-juniper health, stimulating aspen suckering to benefit northern goshawks, 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 within the CESA under previous and future authorizations under this alternative and provide limited benefits for wildlife. About 4 percent of the CESA would be treated to reduce hazardous fuels, improve ecosystem health and resiliency, and reduce wildfire risk. Treatments within the CESA would benefit wildlife and their habitats, but not to the extent as for treatments under Alternative A.</p>	<p>the BLM would not be able to use these methods stimulate aspen suckering on about 450 acres. 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 is concern, however, 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. 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, however, 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. 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. Wildlife species</p>	<p>from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would be able to conduct treatments on a limited acreage, as discussed above under Soil Resources, but this alternative would do little to slow the loss of wildlife habitat within the CESA.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
		<p>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, and the BLM would be limited in the types of treatments it could conduct to reduce the risk of wildfire and improve wildlife habitat.</p>	
<p>SUMMARY OF EFFECTS ON WILD HORSES</p>			
<p>Direct and Indirect Effects: 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. 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. Treatments could reduce the ability of the treatment site 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. 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</p>	<p>Direct and Indirect Effects: Because the BLM would not use fire, however, there would be no 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 of pinyon-juniper encroachment into sagebrush and riparian communities would be treated with the overall outcome of less reduction of Phase II and III pinyon-juniper, and fewer acres of historic</p>	<p>Direct and Indirect Effects: The consequences of not using fire under Alternative C would be the same as those discussed under Alternative B. 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 less under this alternative than under Alternatives A and B. 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</p>	<p>Direct and Indirect Effects: 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 be able to conduct treatments on a limited acreage, as discussed above under Soil Resources. This alternative, however, would do little to return the 3 Bars ecosystem to its Potential Natural Community and improve the distribution and genetic health of wild horses.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>amount of area treated annually would comprise only a small portion of the HMAs. 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 would native vegetation. Long term, 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. 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. Treatments that reduce the risk of future catastrophic wildfire through fuels reduction, including removal of noxious weeds and other</p>	<p>sagebrush habitat 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.</p>	<p>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. 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. Wild horse movement patterns 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.</p>	

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
invasive non-native vegetation, would also benefit wild horses.			
<p>Cumulative Effects: 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. In addition, livestock congregation and concentrated use by overpopulation of wild horses near streams, springs, and wetlands has 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 Mount Hope Project would have a significant impact on wild horses in the CESA by removing approximately 14,200 acres of wild horse habitat and prohibiting wild horse access to natural watering sources and forage. Long term, 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. 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</p>	<p>Cumulative Effects: Under Alternative B, half as many 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, than under Alternative A. 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 3 Bars Project area. 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 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 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). Although 3 Bars Project treatments would improve the physical</p>	<p>Cumulative Effects: 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. 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.</p>	<p>Cumulative Effects: There would be no cumulative effects on wild horses from 3 Bars Project treatments as no treatments would be authorized under this alternative. 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, under current and reasonably foreseeable future authorized actions, but on a very limited acreage. 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.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>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 as well as the physical and genetic health of the 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.</p>	<p>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.</p>		
SUMMARY OF EFFECTS ON LIVESTOCK AND RANGELAND CONDITIONS			
<p>Direct and Indirect Effects: Short term, most treatment methods would result in a temporary loss of forage available to livestock. Livestock injury or death could occur as a result of project activities, most likely from a vehicle-livestock collision. Temporary exclosure fencing could interfere with livestock use of treatment areas and could interfere with the movement patterns of livestock. Treatments would result in short-term water quality degradation from soil erosion and sedimentation of streams. Long term, treatments that improve woodland, rangeland, and riparian health, productivity, and functionality would benefit livestock and their health. Riparian treatments should help several streams achieve Proper Functioning Condition and</p>	<p>Direct and Indirect Effects: Because the BLM would not be able to use fire, 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. Thus, the time</p>	<p>Direct and Indirect Effects: 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. 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</p>	<p>Direct and Indirect Effects: There would be no direct effects to livestock from 3 Bars Project treatments as no treatments would be authorized under this alternative. Thus, this alternative would not return the 3 Bars ecosystem to its Potential Natural Community and improve rangeland conditions for livestock.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>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. Removal of pinyon-juniper in several drainages on Roberts Mountains would provide forage for livestock in areas once dominated by pinyon-juniper, and may facilitate livestock movements between valley and mountain use areas. 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.</p>	<p>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 historic sagebrush habitat restored, 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 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. Thus, overall benefits to livestock from treatment actions would be less under this alternative than under Alternative A.</p>	<p>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 less 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 undesirable development; 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</p>	

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
		be less under this alternative than under Alternatives A and B.	
<p>Cumulative Effects: Rangeland health studies have shown a need to improve the quantity and quality of forage within allotments. 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. A total of 813 AUMs in the Romano and Roberts Mountain Allotments would be lost for 70 years or more as a result of the 734-acre Mount Hope Project. The BLM would treat about 127,000 acres in the 3 Bars Project area, and an additional 15,000 acres under existing and 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</p>	<p>Cumulative Effects: By not using fire on the 3 Bars Project area, there would be no risks to livestock forage from fire on several thousand acres annually within the 3 Bars Project area. 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 extent as would occur under Alternative A.</p>	<p>Cumulative Effects: 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, 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.</p>	<p>Cumulative Effects: There would be no cumulative effects on livestock from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would be able to conduct treatments on a limited acreage, as discussed above under Soil Resources, to benefit livestock within the CESA. 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.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>plantings on about 31 miles of stream to slow stream flow and create pools and wet meadows to improve wetland and riparian habitat 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.</p>			
<p>SUMMARY OF EFFECTS ON VISUAL RESOURCES</p>			
<p>Direct and Indirect 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. Treatments could create visually distinct areas of discolored vegetation, which could contrast markedly from surrounding areas of healthy vegetation. Impacts would last for the longest amount of time in pinyon-juniper stands where large trees and shrubs are removed. Long term, treatments 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</p>	<p>Direct and Indirect Effects: 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,</p>	<p>Direct and Indirect Effects: By not being able to use fire and mechanical equipment, there would be no adverse visual effects associated with burned vegetation; 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. 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</p>	<p>Direct and Indirect Effects: There would be no direct effects to visual resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. 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.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>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. Efforts to restore native, fire-resilient vegetation would make these areas more visually appealing, and would reduce the risk of future wildfires.</p>	<p>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. An increase in wildfire risk compared to Alternative A could lead to a long-term reduction in the visual qualities of the landscape. 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.</p>	<p>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. Thus, the risk of catastrophic wildfire, and its effects on the visual landscape, would be greater under Alternative C than the other action alternatives. Overall, there would be less improvement in the visual quality of the 3 Bars Project area under this alternatives than under Alternatives A and B.</p>	
<p>Cumulative Effects: Past and present actions discussed above for soil resources have affected visual resources within the CESA. In addition, the Mount Hope Project 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; however, the changes in the landscape would conform</p>	<p>Cumulative Effects: 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 could occur on a few hundred acres annually outside the 3 Bars Project treatment areas. Hazardous</p>	<p>Cumulative Effects: 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 future authorizations. By not being able to use mechanical methods, disking, plowing, chaining, shredding, and mulching would not occur that would</p>	<p>Cumulative Effects: There would be no cumulative effects on visual resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. As discussed above under soil resources, existing and future authorizations would improve ecosystem functionality on a limited acreage, to the benefit of visual resources. Based on historic treatments in the 3 Bars Project area, only about 1,500 acres would be treated annually in the CESA. Thus, the BLM would not move rangelands toward</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>to VRM objectives. Proposed hazardous fuels reduction and habitat improvement treatments would occur on about 127,000 acres for the 3 Bars Project, and on about 15,000 acres in other portions of the CESA under current and future authorizations, or collectively on about 5 percent of the CESA. Treatments would help to offset some of the adverse effects to visual resources from other reasonably foreseeable future actions in the CESA, and to a greater extent than would occur under the other alternatives.</p>	<p>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 only about 3 percent of the acreage within the CESA. Still, 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 Alternative A.</p>	<p>cause a visual contrast with untreated area. The BLM, however, would not be able to use fire and mechanical methods to restore riparian, aspen, pinyon-juniper, and sagebrush habitats, restore areas dominated by cheatgrass and other noxious weeds and invasive non-native vegetation, or restore degraded stream channels and riparian zones, 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.</p>	<p>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.</p>
SUMMARY OF EFFECTS ON LAND USE AND ACCESS			
<p>Direct and Indirect Effects: Adverse effects to land use include short-term access limitations to land uses and current land use authorizations. Treatments that reduce the risk of future catastrophic</p>	<p>Direct and Indirect Effects: Because fire would not be available to reduce hazardous fuel loads and improve habitat, Alternative B may pose a greater long-term risk for wildfire than Alternative A</p>	<p>Direct and Indirect Effects: Because fire and mechanical methods would not be available to reduce hazardous fuel loads and improve habitat, Alternative C would pose a greater long-term risk for wildfire</p>	<p>Direct and Indirect Effects: There would be no direct effects to land use and access from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM would not take</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>wildfire through fuels reduction would reduce the risk of loss of life, property, constructed facilities on public land, and resources on the 3 Bars Project area. Treatments would not result in long-term, substantial conflicts with existing land uses, changes in land use designations, or reduction in opportunity for right-of-way authorizations and development activities. Additionally, there would not be a substantial reduction in the opportunity for land tenure adjustments. The BLM would have the ability to issue new authorizations needed to implement treatments, including restricting access to an area and closing treatment areas to livestock and humans for periods of time needed to ensure treatment success.</p>	<p>due to the accumulation of fuels that could lead to loss of life and property. Without the use of prescribed fire, treatments could take longer, especially those needed to thin and remove Phase II and III pinyon-juniper stands, and the public may be restricted from accessing treatment sites for longer periods than if fire could be used. There could be temporary access restrictions from treatments, but treatments would not preclude future land use authorizations within the project area, and would not conflict with county and BLM land use objectives.</p>	<p>than the other action alternatives due to the accumulation of fuels that could lead to loss of life and property. Without the use of fire and mechanical methods, treatments would take longer, especially those needed to thin and remove Phase II and III pinyon-juniper stands, thin sagebrush, restore lands dominated by cheatgrass and other noxious weeds and other invasive non-native vegetation, or to restore stream channels. Thus, the public may be restricted from accessing treatment sites for longer periods than if fire and mechanical methods could be used. There could be temporary access restrictions from treatments. Treatments would not preclude future land use authorizations within the project area, and would not conflict with county and BLM land use objectives.</p>	<p>actions to reduce wildfire risk, so there would be no short-term access restrictions.</p>
<p>Cumulative Effects: Permanent features or exclusion areas associated with the Mount Hope Project and future land development actions, in combination with 3 Bars Project activities, could impact future right-of-way authorizations, development activities, and land tenure adjustments, and conflict with Eureka County and BLM land use objectives. These effects would be greatest under Alternative A. Wildfires could adversely affect life and property, access, and resource use, on or near the 3 Bars Project</p>	<p>Cumulative Effects: By not using fire on the 3 Bars Project area, there would be no land access restrictions associated with use of prescribed fire and wildland fire for resource benefit on several thousand acres annually within the 3 Bars Project area. However, by not conducting fire treatments to reduce the risk of wildfire, the potential for wildfire to adversely affect life and property, access, and resource use on or near the 3 Bars Project area, would be greater than for Alternative A. 3 Bars Project treatments, and potential</p>	<p>Cumulative Effects: By not being able to use mechanical methods and fire, the BLM would treat fewer acres to reduce hazardous fuels, create fire and fuel breaks, remove downed wood and slash, control noxious weeds and other invasive non-native vegetation, and improve vegetation health and condition to make it more resilient to wildfire. Thus, the potential for wildfire to adversely affect life and property, access, and resource use, on or near the 3 Bars Project area, would be greater than for Alternatives A and B. 3</p>	<p>Cumulative Effects: There would be no cumulative effects on land use and access from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could take actions under existing and future authorizations to benefit ecosystem health, as discussed above under Soil Resources, but only on about 1,500 acres annually. 3 Bars Project treatments, and potential short-term access restrictions, would occur on about 2 percent of the CESA under Alternative D. There would be no permanent features or</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>area. The BLM is proposing to treat about 127,000 acres on the 3 Bars Project area, and about 15,000 acres elsewhere in the CESA under current and reasonably foreseeable future authorizations to restore ecosystem health. 3 Bars Project treatments, and potential short-term access restrictions, could occur on about 17 percent of the CESA under Alternative A. There would be no permanent features or exclusion areas associated with 3 Bars Project actions.</p>	<p>short-term access restrictions, would occur on about 78,000 acres, or about 8 percent of the CESA under Alternative B. There would be no permanent features or exclusion areas associated with 3 Bars Project actions.</p>	<p>3 Bars Project treatments, and potential short-term access restrictions, would occur on about 47,000 acres, or 4 percent of the CESA under Alternative C. There would be no permanent features or exclusion areas associated with 3 Bars Project actions.</p>	<p>exclusion areas associated with 3 Bars Project actions.</p>
<p>SUMMARY OF EFFECTS ON RECREATION</p>			
<p>Direct and Indirect Effects: There would be some short-term scenic degradation, as well as distractions to users (e.g., noise from machinery), from treatments. Some areas would be off-limits to recreation activities as a result of treatments, for periods ranging from a few hours to days, or even 1 full growing season or longer, depending on the treatment. There could be temporary displacement of wildlife for both consumptive (e.g., hunting, fishing, etc.) and non-consumptive (e.g., wildlife viewing, photography, etc.) users. Users of the Pony Express National Historic Trail could potentially be impacted by treatment activity and noise during implementation of the treatments and the visual aspects of the recreational experience of the trail may be affected in the short term until vegetation recovers to</p>	<p>Direct and Indirect Effects: Because the BLM would not be able to use fire, there would be none of the adverse effects associated with this treatment type. However, with greater reliance on mechanical methods, there may be greater disturbance to the public from the use of mechanical equipment than would occur under Alternative A. There would be fewer gains in wildlife forage production outside of riparian zones, and greater risk of habitat loss from catastrophic wildfire, under this alternative than under Alternative A, to the detriment of recreational resources and the public. Some treatments to improve historic pinyon-juniper communities would occur, which could benefit future pine nut harvest in these areas long term, but the acreage benefiting from these treatments</p>	<p>Direct and Indirect Effects: The consequences of not using fire under Alternative C would be the same as those discussed under Alternative B. Effects to visitors from noise and disturbance associated with mechanical treatment equipment would not occur under this alternative. By not being able to use mechanical equipment, however, there would be less improvement in vegetation and water quantity and quality, and more risk of catastrophic wildfire, than under Alternatives A and B, to the detriment of the recreational user. Under Alternative C, the BLM would not substantially improve the native vegetation community nor stop the loss of important ecosystem components. As a result, the visitor use experience could decline long term.</p>	<p>Direct and Indirect Effects: There would be no direct or indirect effects on recreation from 3 Bars Project treatments as no treatments would be authorized under this alternative. Thus, loss of recreational opportunities and deterioration in the visitor experience would be greatest under Alternative D.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>the point where it no longer appears that it has been manipulated. Long term, improved fish and game habitat and populations should provide additional and/or improved hunting and fishing opportunities. Improved habitat should enhance the overall scenic quality of the area, while removal of noxious weeds and invasive non-native vegetation would reduce the likelihood of visitors being harmed or inconvenienced by these plants, and could influence the visitor experience. Riparian projects would be beneficial to anglers if they lead to improved fish populations. Prescribed burns would require the closure of burn areas to visitors during burn activities. People recreating in nearby areas would be able to see and perhaps smell smoke. The potential for smoke inhalation could result in some health risks to these users, A reduction in wildfire risk, however, should lead to fewer temporary closures to protect human safety (i.e., fewer public access constraints from fires). As a result of thinning and removal treatments, the number of pinyon pine and juniper trees within woodland products harvest areas would be reduced.</p>	<p>would be substantially lower than under Alternative A.</p>		
<p>Cumulative Effects: In general, while there are locally important recreation resources in the CESA, the types of dispersed recreation resources available in</p>	<p>Cumulative Effects: By not using fire, the amount of area disturbed by treatments would generally be smaller, and have less impact on fish and wildlife resources and</p>	<p>Cumulative Effects: By not being able to use fire and mechanical methods there would be less disturbance to public from treatments compared to Alternatives A</p>	<p>Cumulative Effects: There would be no cumulative effects on recreation from 3 Bars Project treatments as no treatments would be authorized under this alternative.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>the area are not of regional or national significance except for the Pony Express National Historic Trail, which has been Congressionally designated as a recreational resource. Recreational use within the CESA is likely to increase proportionally to changes in the regional population. To reduce the risk of catastrophic wildfire and to restore the health and resiliency of native vegetation, the BLM would treat up to 127,000 to reduce hazardous fuels. The BLM also proposes to treat hazardous fuels on an additional 15,000 acres under current or reasonably foreseeable future authorizations in high to very high fire risk areas within other portions of the CESA. Recreational access to treatment areas could be restricted during the treatment period, and it is likely that the treated area would have few recreation values for several years after treatments. Over time, this reduction in fuels, however, would allow for more natural forage within the analysis area, benefiting game populations and hunting opportunities, and improve the health of pinyon-juniper stands, which could benefit nut production. In addition, treatments would reduce the risk of catastrophic wildfire, which would benefit native plant communities and fish and game within the CESA. 3 Bars Project treatments would occur on only about 5</p>	<p>scenery, than other treatment methods. However, fewer acres would also be treated to restore landscape health and habitat for fish and game, and reduce the risk of catastrophic wildfire, and would not likely offset the increased potential for more extensive and intense wildfires to occur in place of controlled burns on the 3 Bars Project area. About 63,000 acres of vegetation, and 31 miles of stream, would be disturbed from the 3 Bars Project, or only about 2 percent of the CESA. Treatments would result in localized effects and would not substantially alter the availability of dispersed recreation opportunities in the CESA or larger region. Still, there would be a long-term net benefit from BLM treatments that would help to offset some of the adverse effects to recreation resources from other reasonably foreseeable future actions. Actions would provide more recreation opportunities for a growing population, but not to the extent as would occur under Alternative A.</p>	<p>and B. Without the use of fire and mechanical methods, however, the BLM would do little to improve ecosystem health. The risk of wildfire and its effects on recreation would likely increase, while there would be few benefits to fish and game, under this alternative compared to Alternatives A and B. About 32,000 acres of vegetation, and 8 miles of stream, would be disturbed from the 3 Bars Project, or only about 1 percent of the CESA. Treatments would result in localized effects and would not substantially alter the availability of dispersed recreation opportunities in the CESA or larger region. Still, there would be a minor long-term net benefit from BLM treatments that would help to offset some of the adverse effects to recreational resources from other reasonably foreseeable future actions. Actions would provide more recreational opportunities for a growing population, but not to the extent as would occur under Alternatives A and B.</p>	<p>The BLM could take actions under existing and future authorizations to benefit ecosystem health, as discussed above under Soil Resources, but only on about 1,500 acres annually. Thus, benefits to the recreating public would be substantially less under this alternative than under the action alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
percent of the CESA. Treatments would result in localized effects and would not substantially alter the availability of dispersed recreation opportunities in the CESA or larger region.			
SUMMARY OF EFFECTS ON WILDERNESS STUDY AREAS AND OTHER SPECIAL MANAGEMENT AREAS			
<p>Direct and Indirect Effects: Treatments within the Roberts Mountains and Simpson Park WSAs could temporarily impair the wilderness characteristics of solitude, naturalness, and primitive and unconfined recreation within and adjacent to these areas. The overall effect of treatments on the WSAs would depend on whether the end condition of the treatment site (considering both long-term benefits and short-term effects) was an improvement in wilderness characteristics. In many cases (e.g., an eradication of a small population of an incipient pest, a prescribed fire that mimicked historical fire), communities in the treatment area would quickly recover, and the overall effect would be positive. Manual treatments would be the least obtrusive method to use in WSAs and the most appropriate. Manual treatment methods are typically focused on small areas, which would have localized impacts on naturalness, solitude, and primitive and unconfined recreation. Although an appropriate buffer would be applied to minimize impacts to the Pony Express</p>	<p>Direct and Indirect Effects: The BLM anticipates treating about half as many acres (about 200 acres) within WSAs under Alternative B as under Alternative A. Without the use of fire, there would be no localized deterioration of air quality and reduced visibility caused by smoke, no disturbance, and no blackened appearance that could affect the naturalness of treatment areas. As noted under Alternative A, though, only a few acres, if any, would be treated using fire in WSAs so the adverse and beneficial effects of not using fire would be negligible under this alternative. As noted under Alternative A, users of the Pony Express National Historic Trail may detect activity and noise during project implementation and the effects of the treatments may be visible from the trail in the short term until the vegetation no longer shows signs of manipulation.</p>	<p>Direct and Indirect Effects: Under Alternative C, the BLM would only be able to use manual and classical biological control methods to treat vegetation. Fire and mechanical treatments would seldom used under Alternatives A and B, so the cumulative effects associated with WSA treatments among the alternatives would show few differences under Alternative C. As noted under Alternative A, users of the Pony Express National Historic Trail may detect activity and noise during project implementation and the effects of the treatments may be visible from the trail in the short term until the vegetation no longer shows signs of manipulation.</p>	<p>Direct and Indirect Effects: There would be no direct or indirect effects on WSAs and the Pony Express National Historic Trail from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could take actions under existing and future authorizations to benefit ecosystem health, as discussed above under Soil Resources, but on only about 1,500 acres annually. Little, if any, acreage would be treated within WSAs.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
National Historic Trail, users of the trail may still detect activity and noise during project implementation and the effects of the treatments may be visible from the trail in the short term until the vegetation no longer shows signs of manipulation.			
<p>Cumulative Effects: Historic livestock grazing practices, wild horse use, and other natural- and human-caused factors have led to the degradation of riparian and aspen habitat, establishment and spread of noxious weeds and other invasive non-native vegetation, and the expansion of pinyon-juniper beyond its historical ranges in portions of the WSAs. To reduce wildfire risk and improve ecosystem health, approximately 127,000 acres would be treated annually on the 3 Bars Project area, and an additional 15,000 acres could be treated under current and future authorizations within the CESA, or about 16 percent of the CESA, but only on about 1 percent of WSAs. Although the acreage treated within WSAs would be small, treatments elsewhere in the CESA would help to reduce hazardous fuels and improve ecosystem health, and reduce the potential for wildfire that could have substantial adverse affects on WSAs and lands adjacent to the Pony Express National Historic Trail.</p>	<p>Cumulative Effects: Because fire would used sparingly within WSAs under Alternative A, its lack of use under Alternative B would be insignificant. However, fire could not be used under this alternative on about 78,000 acres elsewhere in the CESA under the 3 Bars Project and current and future authorizations, or about 8 percent of the CESA. Without being able to use of fire on other portions of the CESA, the BLM would be less successful in reducing the risk of catastrophic wildfire within the CESA, and would not likely offset the increased potential for more extensive and intense wildfires to occur in place of controlled burns on the 3 Bars Project area compared to Alternative A. As demonstrated by wildfires in 1999, wildfires can have substantial effects on WSAs and could also affect the scenery near the Pony Express National Historic Trail.</p>	<p>Cumulative Effects: Adverse, short-term effects to wilderness characteristics, primarily solitude and visual qualities, associated with the use of fire and mechanized equipment would not occur under Alternative C. However, fire and mechanical treatments would seldom used under Alternatives A and B, so the cumulative effects associated with WSA treatments among the alternatives would show few differences. The BLM would treat only about 10 acres annually in the WSAs, and about 47,000 acres within the remainder of the CESA, or about 4 percent of the CESA. The risk of wildfire and its adverse impacts on WSAs and lands near the Pony Express National Historic Trail would likely be greater on the 3 Bars Project area than under Alternatives A and B.</p>	<p>Cumulative Effects: There would be no cumulative effects on WSAs or the Pony Express National Historic Trail from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could take actions under existing and future authorizations to benefit ecosystem health, as discussed above under Soil Resources, but only on about 1,500 acres annually. Thus, benefits to the WSAs and the Pony Express National Historic Trail would be less under this alternative than under the action alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
SUMMARY OF EFFECTS ON CULTURAL RESOURCES			
<p>Direct and Indirect Effects: Manual methods would result in general surface disturbance that could disrupt the spatial context of archaeological constituents, mulching with organic materials would compromise radiometric dating, and the use of hard-edged tools could damage artifacts. There is also the potential for unauthorized collection of artifacts by workers. The use of a track hoe or back hoe for stream channel restoration, and mechanical treatments on upland sites, could damage surface and subsurface cultural resources if the sites were not avoided. Mechanical treatments could also result in surface and shallow subsurface disturbance that would likely introduce organic materials to lower soil layers, thereby contaminating any surface or shallow subsurface cultural resource. Archaeological materials may be damaged, destroyed, or remain essentially unaffected by prescribed fire. Wooden structures or wooden parts of stone structures (such as those within the Roberts Creek Unit) are very susceptible to fire. Long term, stabilization and restoration of riparian systems would reduce streambank erosion and ensure that cultural and paleontological resources buried near streams remained intact. Uncontrolled wildfire, similar to</p>	<p>Direct and Indirect Effects: Mechanical and fire treatments have the greatest potential for harming cultural resources. Prescribed fire and wildland fire for resource benefits would not be used on several thousand acres annually, as they would under Alternative A. Fire has the potential to cause inadvertent effects to cultural sites. Under Alternative B, the BLM would be unable to restore fire as an integral part of ecosystem restoration. It is unlikely that the BLM would be able to slow the spread of noxious weeds and other invasive non-native vegetation, including cheatgrass. Cheatgrass is a major contributor to providing fuel for wildfire. It is unlikely that the trend toward large-sized fires of moderate to high severity in sagebrush and large stand-replacing fires in pinyon-juniper would slow or reverse in the long term, which would continue to be a threat to historic properties and this threat would be greater under Alternative B than under Alternative A.</p>	<p>Direct and Indirect Effects: Given that mechanical and fire treatments, and to a lesser extent biological treatments using livestock, have the greatest potential to harm cultural sites, these risks would be eliminated under this alternative. However, large numbers of workers and their vehicles would be needed to accomplish proposed treatments under this alternative. Vehicle miles traveled would likely be greatest under this alternative and vehicles could crush cultural materials. Increased number of workers could increase the potential for looting. Downed trees and slash material from treatments would be difficult to remove without mechanical equipment or pile burning. Some downed wood and slash could be sold, used for biomass, or made available to the public as firewood, but the demand for this wood is unknown. The number of miles of fire and fuel breaks created under this alternative would be substantially less than for Alternatives A and B as the BLM would not be able to use mechanical equipment and prescribed fire to create fire and fuel breaks. Under Alternative C, it is unlikely the trend toward large-sized fires of moderate to high severity in sagebrush and large stand-replacing fires in pinyon-juniper would slow or reverse long term, and wildfire</p>	<p>Direct and Indirect Effects: There would be no direct effects on cultural resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The long-term threat to historic resources from wildfire would be greatest under Alternative D.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>prescribed fire, has the potential to significantly impact cultural resources. By improving ecosystem health and resiliency and reducing hazardous fuels, the risk of an uncontrolled catastrophic wildfire that could adversely affect historic properties would be reduced under this alternative.</p>		<p>would continue to be a threat to historic properties.</p>	
<p>Cumulative Effects: Past and present actions discussed above for Soil Resources have affected cultural resources within the CESA. In addition, the Mount Hope Project would disturb about 8,300 acres, which include 80 prehistoric and 142 historic sites, and an additional 352 sites within the larger area of potential effects, which includes a portion of the 3 Bars Project area. Implementation of the Mount Hope Project would result in adverse impacts to 83 eligible sites, and these impacts would be considered significant. Under the 3 Bars Project and previous and reasonably foreseeable future authorizations, the BLM would treat about 142,000 acres within the CESA, totaling about 11 percent of the CESA. The BLM would conduct surveys prior to treatments to determine whether there are additional cultural sites in these areas which could be impacted by treatment actions; existing and newly found sites would be mitigated in accordance with the 2012 <i>Programmatic Agreement between the Mount Lewis Field Office of the Bureau of</i></p>	<p>Cumulative Effects: Although use of fire would not occur within the 3 Bars Project area, the use of fire could occur on several hundred acres annually in the remainder of the CESA. By not using fire to reduce hazardous fuels and improve vegetation resiliency to fire, there would be greater potential for more extensive and intense wildfires to occur in place of controlled burns on the 3 Bars Project area under this alternative compared to Alternative A. Because 3 Bars Project actions would affect only about 6,350 acres annually, or 1 percent of the CESA, and treatment areas would be surveyed prior to treatment to avoid or reduce impacts to cultural sites, there would be a negligible cumulative effects to cultural resources from 3 Bars Project actions.</p>	<p>Cumulative Effects: Adverse, short-term effects to cultural resources associated with the use of fire and mechanized equipment would not occur under Alternative C. However, fire and mechanized equipment could be used on about 1,500 acres annually on other portions of the CESA and outside of 3 Bars Project areas to improve habitat, remove hazardous fuels, and reduce the risk of wildfire, and could affect cultural resources in those areas. Because 3 Bars Project actions would affect only about 3,200 acres annually (less than 0.5 percent of the CESA), and the BLM would conduct pre-treatment surveys for cultural resources to reduce the potential for effects to eligible sites, effects to cultural resources within the CESA would be negligible.</p>	<p>Cumulative Effects: There would be no cumulative effects on cultural resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could take actions under existing and future authorizations to benefit ecosystem health, as discussed above under Soil Resources, but only on about 1,500 acres annually. Thus, benefits to cultural resources would be less under this alternative than under the action alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p><i>Land Management and the Nevada State Historic Preservation Officer regarding National Historic Preservation Act Compliance for the 3 Bars Ecosystem and Landscape Restoration Project, Eureka County, Nevada.</i> The Agreement was signed on September 5, 2012. Long term, the 3 Bars Project and other restoration treatments should result in a landscape that is more fire resilient and similar to the Potential Natural Community. These activities would help to reduce the potential for streambank erosion and catastrophic wildfire and potential loss of cultural materials.</p>			
<p>SUMMARY OF EFFECTS ON NATIVE AMERICAN TRADITIONAL/CULTURAL VALUES, PRACTICES, AND RESOURCES</p>			
<p>Direct and Indirect Effects: Treatment activities that remove vegetation or alter the distribution, health, and welfare of plants and animals used by Native peoples would have the greatest potential to harm natural resources with associated traditional values. Manual treatment is highly selective and would have less of an effect on plants with traditional lifeway values than other treatment methods. Concerns have been expressed by local tribes regarding traditional pine nut harvesting in general and the removal of pinyon pine. Some seed bearing trees would be destroyed or removed by mechanical or hand treatments and fire, and prescribed and wildland fires would</p>	<p>Direct and Indirect Effects: Because the BLM would not be able to use fire, there would be none of the adverse or beneficial impacts associated with this treatment method. In particular, there would be no harm to or loss of native vegetation or fish and wildlife habitat from prescribed fire and wildland fire for resource benefit. There would also be no risk of a prescribed fire spreading beyond treatment boundaries and impacting native plants and fauna of interest to the Native American community, which could be the case under Alternative A. The few native plants and wildlife that are found in dense stands of pinyon-juniper may not experience habitat loss under this</p>	<p>Direct and Indirect Effects: 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 plants and animals used by Native Americans from treatments under this alternative than the other alternatives, because adverse impacts, such as harm to, or death of, plants and wildlife, and noise and other disturbance, would be much less with manual methods than the other methods. Manual treatments would be small in scale and mostly targeted to pinyon-juniper stands. Under Alternative C, riparian restoration treatments would</p>	<p>Direct and Indirect Effects: There would be no direct effects on Native American traditional/cultural values, practices, and resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. Under Alternative D, the BLM would not improve the native vegetation community nor stop the loss of important ecosystem components, including native vegetation and fish and wildlife habitat. As a result, Native American traditional/cultural values, practices, and resources would not see benefits under this alternative.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>require the construction of fuel breaks, which could also compromise plant species of importance to Native American lifeways. Fire may top-kill some plants used by Native Americans, but fire has been shown to enhance their long-term health and development. Treatments to enhance riparian vegetation and increase the number of miles of BLM-administered streams that are classified as “Proper Functioning,” would provide good habitat for fish that are harvested by Native peoples. Because water is scarce on the 3 Bars Project area, stream and riparian restoration projects would improve water availability for fish and wildlife. Improvements in habitat quality would increase the carrying capacity of the landscape and allow it to support larger and healthier wildlife populations. Treatments that remove hazardous fuels from public lands would be expected to benefit the health of plant and animal communities in which natural fire cycles have been altered, and to improve accessibility for tribal cultural practices.</p>	<p>alternative. By not using fire, risks to non-target vegetation, including plants used by local tribes, from treatments would be negligible. Long term, however, native vegetation and fish and game species would experience fewer of the benefits associated both with creating openings in dense pinyon-juniper habitat and creating a mosaic of pinyon-juniper and sagebrush habitat. 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. Under Alternative B, Native American traditional/cultural values, practices, and resources would benefit from treatments, but not to the extent that would occur under Alternative A.</p>	<p>primarily be limited to manual treatments (placing logs and rocks in streams to slow water flows; using fencing streams to exclude livestock, wild horses, and wild ungulates; and stimulating aspen regeneration) that would help to create wet meadows and enhance riparian vegetation and fish and wildlife habitat. Under Alternative C, the BLM would not substantially improve the native vegetation community nor stop the loss of important ecosystem components, including native vegetation and fish and wildlife habitat. As a result, the health and abundance of Native American traditional/cultural resources would be expected to decline from current levels.</p>	
<p>Cumulative Effects: Historic livestock grazing practices, wild horse overpopulation, other land uses, and wildfire have contributed to the degradation of vegetation and loss of fish and wildlife used by Native Americans on Roberts Mountains and elsewhere in the</p>	<p>Cumulative Effects: By not using fire to reduce hazardous fuels and improve vegetation resiliency to fire, there would be greater potential for more extensive and intense wildfires to occur in place of controlled burns on the 3 Bars Project area under this alternative compared to</p>	<p>Cumulative Effects: By not being able to use mechanical methods and fire to reduce hazardous fuels, improve vegetation resiliency to fire, create fire and fuel breaks, and remove downed wood and slash, the risk of wildfire and its impacts on Native American traditional/cultural</p>	<p>Cumulative Effects: There would be no cumulative effects on Native American traditional/cultural values, practices, and resources from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could take actions under existing and future</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>CESA. Of most interest to local tribes would be the removal of vegetation that is used by tribes for traditional purposes, and the harvest of fish and game on public lands within the CESA. Approximately 142,000 acres that could be treated on the 3 Bars Project area and elsewhere in the CESA (4 percent of the CESA) under existing or reasonably foreseeable authorizations to reduce hazardous fuels and restore ecosystem health. Most of these treatments would occur within pinyon-juniper and sagebrush treatment areas, including on the Roberts Mountains and Sulphur Spring Range, areas with ethnographic significance to the Western Shoshone. Treatments would have short-term effects on vegetation and wildlife habitat and displace game species. The BLM would consult with local tribes, and treatment areas would be surveyed prior to treatment, to avoid or reduce impacts to Native American traditional/cultural values, practices, and resources. Thus, there should be negligible cumulative effects to these resources from 3 Bars Project actions. Within a few years conditions within treatment areas should improve vegetation and fish and wildlife habitat. The beneficial effects of treatments would be greatest under Alternative A.</p>	<p>Alternative A. This could lead to loss of vegetation and fish and wildlife habitat of importance to local tribes. 3 Bars Project actions would only affect about 63,500 acres, or 2 percent of the CESA. These effects would be less than for Alternative A, but greater than for Alternative C.</p>	<p>values, practices, or resources would likely increase on the 3 Bars Project area, to the potential detriment of vegetation, and fish and wildlife and their habitats, within the CESA. About 32,000 acres would be treated annually in the 3 Bars Project area, and another 15,000 acres in other portions of the CESA to reduce hazardous fuels and to improve ecosystem health, or only about 1 percent of the CESA. There should be negligible cumulative effects to these resources from 3 Bars Project actions and effects would be less than for Alternatives A and B.</p>	<p>authorizations to benefit ecosystem health, as discussed above under Soil Resources, but only on about 1,500 acres annually. Thus, benefits to Native American traditional/cultural values, practices, and resources would be negligible and least among the alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
SUMMARY OF EFFECTS ON SOCIAL AND ECONOMIC VALUES AND ENVIRONMENTAL JUSTICE			
<p>Direct and Indirect Effects: Because the 3 Bars Project area is rural and largely undeveloped, potential adverse social effects related to restoration would be indirect and largely intangible, and would most likely affect general degrees of satisfaction or dissatisfaction of individuals, families, and various stakeholders. There could be short-term reductions in authorized grazing levels and subsequent loss or reduction of ranch income as a result of grazing restrictions and increases in the required amount of livestock management. The BLM would experience short-term, and possibly long-term, reductions in annual grazing fees as a result of reductions in the level of authorized grazing use during and following treatment. Social effects on ranchers, outfitters, individual recreationists, some business owners, and others would manifest themselves in terms of concerns for social and economic well-being, increased satisfaction or dissatisfaction with public lands management by the Mount Lewis Field Office, and quality of life in general. The project would generate a short-term temporary local economic stimulus associated with BLM and contractor efforts and jobs. Locally, these benefits would accrue primarily to residents and</p>	<p>Direct and Indirect Effects: The cost per acre of treatment would be greater under Alternative B than under Alternative A. This reflects, in part, the higher expenditures associated with manual and mechanical treatments, which generally cost about 2 times or more to implement than do fire treatments. Such outlays could increase the annual level of expenditures and the associated short-term employment and income and business revenue benefits associated with landscape restoration. Grazing permittees would experience short-term reductions in income in conjunction with the proposed treatments, particularly the pinyon-juniper and sagebrush treatments. Temporary and long-term social effects under Alternative B would be similar to those for Alternative A, although some individuals and stakeholder groups would be more or less satisfied by the preclusion of prescribed fire.</p>	<p>Direct and Indirect Effects: The cost per acre of treatment would be greater under Alternative C than under Alternatives A and B. This reflects, in part, the higher expenditures associated with manual and classical biological control treatments, which generally cost 3 to 5 times or more to implement than do fire and mechanical treatments. Due to the reduction in acres treated, the temporary reductions in grazing use associated with treatments would be lower, and the potential for other reductions due to declining rangeland health would persist. Over the long-term, treatments would do little to slow the declines in rangeland health and promote a stabilization of future grazing levels and support for rural lifestyles. Treatments would do little to improve habitat for fish and wildlife, conditions of woodlands to the benefit of pine nut production and other woodland products, and aesthetic qualities of the landscape for the recreational and commercial resource users.</p>	<p>Direct and Indirect Effects: There would be no direct effects on social and economic values from 3 Bars Project treatments as no treatments would be authorized under this alternative. Treatments to improve 3 Bars ecosystem health, and increase or improve the amount and quality of commercial and casual uses of public lands, improve or maintain market and non-market values of public land resources, and reduce the cost of operations on public lands would not occur under this alternative.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>businesses in southern Eureka County. Pinyon-juniper trees with potential for use as fence posts or for firewood could be gathered up and offered for sale to the public, providing additional benefits to residents, local businesses, and landowners, including farmers and ranchers. Restoration treatments would reduce the risk of wildfire and improve ecosystem health. The reduction in wildfire would benefit nearby private property owners and facilities constructed on public land, including facilities for mining and infrastructure, reducing the risk of property damage and interference with operations.</p>			
<p>Cumulative Effects: Agriculture, land development, and mineral, oil, gas, and hydrothermal exploration and development could affect lands within the CESA in the reasonably foreseeable future, including land sales, new croplands, roads, and rights-of-way for power and telephone lines. These actions would provide economic benefits to the local community, but would also result in loss of fish and wildlife habitat, and possibly recreational opportunities. The Mount Hope Project would directly disturb approximately 8,300 acres over the long term and another 6,000 acres would be fenced to exclude the public and livestock. The proposed mine project</p>	<p>Cumulative Effects: The BLM would conduct treatments on approximately 63,000 acres on the 3 Bars Project area, and about another 15,000 acres on other portions of the CESA, or collectively about 4 percent of the CESA, to reduce hazardous fuels and improve fish and wildlife habitat. The types of risks and benefits to social and economic resources under Alternative B would be about half those for Alternative A within the CESA. 3 Bars Project and other BLM actions within the CESA would have negligible effect on the social and economic conditions within the CESA. The growth in economic activity and social trends, and stakeholder perceptions and concerns</p>	<p>Cumulative Effects: The BLM would conduct treatments on approximately 32,000 acres on the 3 Bars Project area, and on about 15,000 acres under existing and reasonably foreseeable future actions on other portions of the CESA, or collectively about 2 percent of the CESA, to reduce hazardous fuels and improve fish and wildlife habitat. The types of risks and benefits to social and economic resources under Alternative C would be about one-fourth those for Alternative A within the CESA. 3 Bars Project and other BLM actions within the CESA would have negligible effect on the social and economic conditions within the CESA. The growth in economic activity and</p>	<p>Cumulative Effects: There would be no cumulative effects on social and economic values from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could take actions under existing and future authorizations to benefit ecosystem health, as discussed above under Soil Resources, but only on about 1,500 acres annually. Thus, benefits to social and economic values would be negligible and least among the alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>would have economic costs and benefits. Economic costs would include the loss of 32 AUMs in perpetuity due to construction of the mine pit. In addition, another 781 AUMs would be lost for approximately 70 years due to the mine project. Annual mine payroll is projected to be \$33.4 million at full production, about half of which is projected to accrue to Eureka County residents. The increase in income would be equal to about 28 percent of the income realized by local residents in 2008. 3 Bars Project and other BLM actions within the CESA would have little effect on the social and economic conditions within the CESA. The growth in economic activity and social trends, and stakeholder perceptions and concerns regarding various issues related to rangeland health, including grazing use, and the allocation of forage for wildlife, wild horses, and grazing, would generally be greatest under Alternative A.</p>	<p>regarding various issues related to rangeland health, including grazing use, and the allocation of forage for wildlife, wild horses, and grazing, would generally be less under Alternative B than under Alternative A.</p>	<p>social trends, and stakeholder perceptions and concerns regarding various issues related to rangeland health, including grazing use, the allocation of forage for wildlife, wild horses, and grazing, would generally be less under Alternative C than under Alternatives A and B.</p>	
<p>SUMMARY OF EFFECTS ON HUMAN HEALTH AND SAFETY</p>			
<p>Direct and Indirect Effects: The greatest health and safety risks associated with treatments would be to workers performing the treatments, rather than to the public. These risks include injuries associated with use of heavy equipment, contact with sharp cutting blades, exposure to rocks and other flying debris,</p>	<p>Direct and Indirect Effects: The human health and safety risks associated with exposure to smoke from prescribed fire would not be present under this alternative. The acreage of land treated using mechanical methods, and the associated level of risk to worker safety associated with this treatment method,</p>	<p>Direct and Indirect Effects: Workers and the public would not be at risk for exposure to smoke, or for accidents associated with operation of heavy equipment. Risks associated with manual methods and classical biological control would be minimal. Out of all the action alternatives, short-term health and safety</p>	<p>Direct and Indirect Effects: There would be no direct effects on human health and safety from 3 Bars Project treatments as no treatments would be authorized under this alternative. The BLM could take actions under existing and future authorizations to benefit ecosystem health, as discussed above under Soil Resources,</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>loss of control of equipment, high noise levels, vehicle exhaust, and smoke inhalation. Fires can affect public safety by reducing visibility and create hazardous driving conditions on nearby roads. Long term, treatments would help reduce the risks to human health from wildfire smoke and fire.</p>	<p>would be similar or somewhat greater to that under Alternative A. The effectiveness of treatments at reducing catastrophic wildfire potential would likely be less than under Alternative A. While mechanical treatments can be used to remove fuels, in some instances a combination of treatments (mechanical plus fire) might produce better results. Therefore, wildfire risk reduction and associated health and safety benefits would likely be less under this alternative than under Alternative A.</p>	<p>risks associated with project treatments would be lowest under Alternative C. However the long-term health and safety benefits associated with reducing catastrophic wildfire risk would be lower than under the other alternatives because the least amount of hazardous fuel removal would occur.</p>	<p>but only on about 1,500 acres annually. The BLM would not reduce the risk of large-scale wildfire that could be detrimental to human health and safety.</p>
<p>Cumulative Effects: Agriculture, mining, land development, utilities construction and operation, and other land uses have associated occupational and public health and safety risks during the construction phase, and some would have associated risks during the operational phase. Members of the public who visit or drive through the 3 Bars Project area may also visit or drive through areas where other projects are occurring. Additionally, workers who implement the BLM's 3 Bars treatment projects may live in the vicinity of other projects, may visit or drive through areas where other projects are occurring, or may be hired to implement other projects that have been identified within the CESA. Therefore, it is likely that both workers and members of the public who would potentially be</p>	<p>Cumulative Effects: Because fire would not be used on the project area, risks associated with exposure to fire and smoke would not contribute to cumulative health effects. Hazardous fuels reduction and habitat improvement projects could occur on about 63,000 acres within the 3 Bars Project area, and on up to 15,000 acres within the CESA, or about 4 percent of acreage within the CESA. The cumulative risks to workers from these treatments could be greater from manual and mechanical methods than from fire treatments. Over the long term, cumulative effects to health and safety associated with wildfire would be greater than under Alternative A, since the acreage treated for fuels reduction would be less and treatments would likely not be</p>	<p>Cumulative Effects: Adverse, short-term effects to human health and safety with the use of fire and mechanized equipment would not occur under Alternative C. About 47,000 acres would be treated in the CESA to reduce hazardous fuels, of which about 32,000 acres would be treated in the 3 Bars Project area. This would be less than 2 percent of the land within the CESA and within the 3 Bars Project area. Under Alternative C, the acreage treated would be less than under Alternatives A and B, and only manual and classical biological would be used. Therefore, short-term cumulative health and safety risks would likely be lowest under Alternative C for the action alternatives. Over the long term, cumulative effects to human health and safety associated with wildfire would be greater than under the</p>	<p>Cumulative Effects: There would be no cumulative effects on human health and safety from 3 Bars Project treatments as no treatments would be authorized under this alternative. Thus, benefits to human health and safety would be negligible and least among the alternatives.</p>

TABLE 2-6 (Cont.)

Summary and Comparison of Effects on Resources by Alternative

Alternative A (Preferred Alternative/All Available Methods)	Alternative B (No Fire Use)	Alternative C (Minimal Land Disturbance)	Alternative D (No Action Alternative)
<p>exposed to 3 Bars project treatments would also be exposed to human health and safety risks associated with other reasonably foreseeable future actions, resulting in cumulative health and safety risks. The BLM would treat about 142,000 acres (127,000 on the 3 Bars Project area, and 15,000 on other areas within the CESA), or about 8 percent of the CESA, to restore natural fire regimes and encourage the growth of native vegetation that is more resilient to wildfire, reducing the risk of wildfire. If plant community structure, species composition, and disturbance regimes return to near historical ranges, then disturbances should have effects that would be less severe, and result in less wildfire danger and risks to the public, than at present.</p>	<p>as effective.</p>	<p>other action alternatives, as the least amount of hazardous fuel removal would occur under Alternative C.</p>	

