

## **CHAPTER 4. ENVIRONMENTAL CONSEQUENCES**

This section describes the scientific and analytical comparison of the effects (environmental consequences) that would result from implementation of the proposed action and alternatives. An environmental effect or consequence is defined as a modification or change in the existing environment brought about by the action taken. Effects can be direct, indirect, or cumulative and can be temporary or permanent. Effects can vary in degree, ranging from only a slight change to a drastic change in the environment. The focus is on effects that may influence decisions about the proposed action and alternatives, rather than a laundry list of every conceivable environmental effect.

Some of the proposed actions require additional project or site-specific planning to determine actual on-the-ground detail; consequently, separate environmental analysis documents will be prepared to analyze these actions as project plans are developed.

### **Effects on Critical Elements of the Human Environment**

The environmental consequences to critical elements of the human environment are summarized in Table 4.1.

**Table 4.1. Summary of effects to critical elements of the human environment.**

<b>Critical Element of Human Environment</b>	<b>Present in BHMA</b>	<b>Affected by Alt. 1</b>	<b>Affected by Alt. 2</b>	<b>Affected by Alt. 3</b>	<b>Affected by Alt. 4</b>
Air Quality	Yes	Yes	Yes	Yes	Yes
Area of Critical Environmental Concern	No	No	No	Yes	No
Cultural Resources	Yes	Yes	Yes	Yes	Yes
Environmental Justice	No	NA	NA	NA	NA
Farm Lands (Prime/Unique)	No	NA	NA	NA	NA
Flood Plains	Yes	Yes	Yes	Yes	Yes
Native American Religious Concerns	No	NA	NA	NA	NA
Noxious Weeds	Yes	Yes	Yes	Yes	Yes
Threatened and Endangered Species	Yes	Yes	Yes	Yes	Yes
Wastes; Hazardous or Solid	No	NA	NA	NA	NA
Water Quality; Drinking/Ground	Yes	Yes	Yes	Yes	Yes
Wetlands/Riparian Zones	Yes	Yes	Yes	Yes	Yes
Wild and Scenic Rivers	No	NA	NA	NA	NA
Wilderness	No	NA	NA	NA	NA

**TABLE 4.2 Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Air Quality				
Mineral Development	Emissions and road dust likely, effects would be considered during site-specific analysis.	Same as Alternative 1.	Effects similar but less than Alternative 1. Minerals management plan may include measures to protect air quality.	
Recreation	Emissions and road dust from motor vehicles would increase.	Effects would be least, as motor vehicle use is restricted to administrative and emergency use only.	Effects similar to Alternative 1 but less due to seasonal motor vehicle restrictions.	Greatest effects due to greatest opportunity for motor vehicle use and recreation facility development.
Vegetation Management	Management activities likely to affect air quality. Effects would be considered during project planning.	An active management program would have the greatest effects on air quality. Effects would be considered during project planning.	Without active management mostly no effect, however a large wildfire is likely to produce large short-term impacts.	
Cultural/Historical				
Livestock Grazing	Artifacts may be uncovered and damaged.	Same as Alternative 1.	No effect	

**TABLE 4.2 Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Mineral Development	Artifacts are likely to be uncovered and destroyed by mineral activities. Cultural resources would be considered during analysis of minerals proposals.	Same as Alternative 1.	Minerals management plan may increase protection of cultural resources. Otherwise similar to Alternative 1.	
Recreation	Artifacts may be vandalized or removed by recreationists. Vehicle use may uncover and damage cultural resources.	Less than Alternative 1 as motorized recreation is prohibited and developed facilities limited. Primary effect would be vandalism and theft.	Similar types of effects as Alternative 1, but at slightly greater level. Development of recreation facilities may uncover and damage artifacts.	Greatest effects to cultural resources. Most recreation facility development and motorized recreation.
Vegetation Management	Artifacts are likely to be uncovered and damaged by vegetation management activities. Cultural inventories shall be performed prior to management activities.	Higher likelihood of damage to cultural resources than Alternative 1. An active vegetation management program is proposed. Cultural inventories shall be performed prior to management activities.	With the absence of vegetation management activities cultural resources should not be damaged. The risk of catastrophic wildfire is increased, artifacts maybe damaged during a large fire.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Livestock Grazing				
Mineral Development	Development would reduce forage availability by removing vegetation and displacing livestock. Livestock grazing would be considered during analysis of minerals proposals.	Same as Alternative 1.	Minerals management plan may increase protection of livestock resources. Otherwise similar to Alternative 1.	
Recreation	Recreationists and motor vehicles may harass and displace livestock. A slight decrease in forage availability is likely from vegetation trampling and competition from recreation stock.	Similar effects, but less than Alternative 1 as motorized recreation is prohibited and developed facilities are limited.	Similar types of effects as Alternative 1, but at slightly greater level. Development of recreation facilities may reduce available forage.	Greatest effects to livestock resources. Most recreation facility development and motorized recreation.
Vegetation Management	Management activities may displace livestock and modify forage availability. Forest and shrubland treatments are likely to increase forage production.	Likely to have the greatest short-term impacts on livestock grazing and the greatest long-term benefits. Goal is to maintain historical range of variability.	Vegetation will continue to age, declining in productivity and palatability. Available forage will decrease over time.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Minerals				
Recreation	Recreationists may utilize roads developed for minerals possibly interfering with mineral activities. Vandalism of facilities is possible.	Motor vehicle use by recreationists is prohibited. Use and vandalism of mineral facilities is likely to less than in Alternative 1.	Special management designation will be evaluated, which may lead to restrictions on mineral development. Otherwise similar to Alternative 1.	Same as Alternative 1.
Recreation				
Livestock Grazing	Livestock presence may reduce satisfaction levels. Interior fences may lead to confusion on boundaries. Livestock provide trails and some users enjoy seeing livestock.	Same as Alternative 1.	Lack of livestock may increase recreation satisfaction levels for some users while decrease satisfaction for users seeking the “western” atmosphere.	
Mineral Development	Development would likely decrease satisfaction levels. New roads may provide additional recreational opportunities. Mineral development may provide financial resources for recreational facility development.	Same as Alternative 1.	Effects similar to Alternative 1 but likely to be less as minerals management plan may place additional restrictions on mineral development.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Recreation	User conflicts between motorized and non-motorized recreationists. No developed facilities provided. Those seeking developed facilities and those seeking solitude may be disappointed.	Non-motorized recreationists likely to be satisfied, motorized recreationists would not be. Primitive character of area maintained. Those seeking developed facilities would not be satisfied.	Limited motor vehicle use, conflicts between user groups should be decreased. Facilities or opportunities provided for all user groups.	Those seeking developed facilities or motorized recreation would be most satisfied. Those seeking primitive conditions would be dissatisfied.
Vegetation	Some users likely to be dissatisfied with level of fire suppression efforts. Other vegetation management activities, likely to be at a low level, but would likely to detract from the recreation experience.	An active vegetation management program is may detract from the recreation experience. If used as an educational opportunity, may add to appeal of some users.	The lack of active vegetation management would not detract from the recreation experience. Risk of wildfire would increase; a large wildfire would likely detract from the recreation experience.	
Wildlife	No active management which would influence population levels, little effect on recreation.	Habitat enhancements should increase wildlife population levels and enhance the recreation experience.	Same as Alternative 2.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Social/Economic				
Livestock	Continued grazing would provide positive social and economic effects.	Same as Alternative 1.	Prohibition of livestock grazing would negatively effect economic resources.	
Minerals	Mineral activities would provide economic stimulus.	Same as Alternative 1.	Effects may be slightly less than Alternative 1 if the minerals management plan contains requirements which limits or deters development.	
Recreation	Recreation opportunities would provide positive social/economic effects.	Similar effects as Alternative 1. Possibly slightly less positive effects due to limited motor vehicle use.	Similar to Alternative 1.	Effects similar to Alternative 1. Possibly slightly greater positive economic effects due to greater developed and motorized recreation opportunities.
Vegetation Management	The limited vegetation management activities would provide some economic and social benefit	An active vegetation management program is likely to provide social/economic benefits to the community.	No economic effects.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Soils				
Livestock	Hoof action may result in <b>localized</b> soil erosion and soil compaction. In other areas hoof action can have a positive affect on water infiltration and nutrient cycling.	Same as Alternative 1.	Prohibition of livestock grazing would not increase soil erosion or compaction. Beneficial soil effects would also not be realized.	
Minerals	Mineral development would result in localized soil erosion and compaction.	Similar to Alternative 1.	Minerals management plan would likely provide additional measures to protect soil resources.	
Recreation	Soil erosion and compaction likely in areas traveled by motor vehicles or heavy non-motorized use.	Effects similar to Alternative 1, but less due to prohibition on recreational motor vehicle use.	Similar to Alternative 1. Developed facilities likely to increase localized soil compaction, hardening should reduce erosion. Seasonal motor vehicle restrictions should protect fragile soils.	Types of effects similar to Alternative 1. Overall effects would be greater due to developed facilities which may compact soils, hardening should reduce erosion.

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Vegetation Management	Removing vegetative cover is likely to increase soil erosion until vegetation becomes re-established.	An active vegetation management program would have greater effects than Alternative 1.	Soil erosion would be reduced without vegetation treatments. Large wildfire could remove vegetation cover increasing soil erosion.	
Vegetation				
Livestock	Current grazing management may contribute to lack of riparian shrub and cottonwood regeneration. Upland vegetation should remain compatible with livestock grazing.	Proposed livestock management practices should increase vegetation health and productivity, thereby increasing forage availability. Shrub and cottonwood regeneration should be enhanced.	Shrub and cottonwood regeneration would be enhanced. Benefits of hoof action breaking vegetation mats and aerating soil would be lost. Litter may accumulate, decreasing grass production, without livestock grazing.	
Minerals Development	Vegetation would be lost as mineral facilities are developed. Prairie communities may recover fairly quickly, shrub and forest communities would require several decades to recover.	Same as Alternative 1.	Effects similar to Alternative 1, but less if minerals management plan restricts development or includes strong reclamation requirements.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Recreation	Localized areas of vegetation would be trampled by recreationists and their vehicles. Invasive non-native vegetation may increase. Vegetation would likely be removed for use by recreationists.	Types of effects would be similar to Alternative 1 but should be less with restrictions on motor vehicle use.	Types of effects would be similar to Alternative 1 but may be greater with developed camping facilities.	Effects to vegetation would be greatest for Alternative 4 as it authorizes the most development and motor vehicle use.
Wildlife Management	Habitat enhancements would alter vegetative communities, the goal being to increase vegetative diversity and structure.	Similar to Alternative 1.	Types of effects similar to Alternative 1. Effects are likely to be greater as there are likely to be more habitat enhancements.	
Water				
Livestock	Non-functioning condition of water resources would likely continue. Water quality would not improve.	Management activities should decrease soil erosion and increase water quality. Riparian community health and diversity should improve, as should the functioning condition of the water resources.	Prohibition of grazing may result in a faster recovery of the riparian community and water resources than Alternative 2.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Mineral Development	Increased levels of sedimentation, emissions, hazardous materials, and produced water are likely.	Same as Alternative 1.	Types of effects would be similar to Alternative 1 but may be less if the minerals management plan provides additional protection of water resources.	
Recreation	Camping near water, improper sanitation, and vehicles crossing streams are likely to impact water resources. Effects would increase as recreation use and motor vehicle access increases.	Types of effects same as Alternative 1, restrictions on vehicle use and lack of developed facilities should benefit water resources.	Effects would be less than Alternative 1 but greater than Alternative 2. Seasonal vehicle restrictions would provide protection for soil and water resources.	Greatest effects to water resources as it provides for the most motor vehicle use.
Vegetation Management	Sedimentation and solar radiation would increase with the removal of vegetation cover. Recruitment of woody debris would decline. Over the long-term management activities would benefit water resources.	Types of effects would be the same as Alternative 1, but the level of management activities would be greater than Alternative 1. Both the short-term negative effects and the long-term beneficial effects would be greater.	Sedimentation and solar radiation would be the least, benefiting the water resources. Water quantity would continue to decline as juniper and pine density continues to increase.	

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Wildlife				
Livestock	Riparian and stream habitat quality would likely remain static or decrease.	Riparian and stream habitat quality should increase. Improved grazing practices should provide more forage for both livestock and wildlife.	Riparian and stream habitat quality would increase. All forage would be available for wildlife.	
Mineral Development	Development would result in loss of wildlife habitat while activities would likely displace wildlife.	Same as Alternative 1.	Types of effects would be the same as Alternative 1, effects may be less if the minerals management plan includes additional restrictions for wildlife protection.	
Recreation	Wildlife would be displaced by vehicle activity.	Restrictions on motor vehicle use and facility development would benefit wildlife.	Construction of facilities would result in localized loss of habitat. Vehicle use would displace wildlife, seasonal restrictions would provide some relief.	Effects similar to Alternative 3 but greater as more development and motor vehicle use is authorized. There are no seasonal vehicle restrictions.

**TABLE 4.2 (cont.) Summary of Environmental Effects on Key Resources Identified in the Burnt Hollow Management Plan.**

Resource Issue	Alternative 1 No action	Alternative 2 proposed action	Alternative 3	Alternative 4
Vegetation Management	Treatments would remove wildlife habitat. Wildlife would be displaced during treatments. Early seral species may benefit.	Types of effects similar to Alternative 1. The level of short-term negative effects is likely to be great, the goal is to restore historical vegetation conditions which should benefit wildlife long-term.	Vegetation communities would continue to mature benefiting late seral species. Risk of catastrophic wildfire would increase, a large wildfire would favor early seral species.	

#### **4.1 Effects on Air Quality**

Mineral development, recreation (motorized vehicle use), and vegetation management are the activities most likely to affect air quality

##### Mineral Development Effects on Air Quality

Given the low level of anticipated mineral activity and good atmospheric dispersion conditions, it is not expected that mineral development would significantly deteriorate air quality under alternative 1 (no action) or alternative 2 (proposed action). Air quality would be considered when site-specific mineral development proposals are analyzed.

Alternative 3 proposes a minerals management plan to guide mineral development. Mineral development would likely impact air quality to a lesser degree than the no action alternative, as the minerals management plan would likely include measures to protect air quality.

##### Recreation Effects on Air Quality

Existing roads and trails would be available for vehicle use with no seasonal restrictions under alternative 1 (no action). Vehicle emissions and road dust would impair air quality, but with good atmospheric dispersion conditions motor vehicles should not be a significant effect. Effects would be less under alternative 3 (semi-motorized) which includes seasonal road closures; environmental consequences would be similar or greater under alternative 4 (developed motorized) which does not have seasonal road restrictions and includes an OHV trail. Alternative 2 (non-motorized) would benefit air quality, as motor vehicles for recreational use would be prohibited within the BHMA.

##### Vegetation Management Effects on Air Quality

Vegetation management activities could degrade air quality under alternative 1 (no action) and alternative 2 (historic range). Given the nature of the vegetation management activities and the good atmospheric dispersion conditions, significant effects to air quality are not anticipated. Air quality would be considered when planning vegetation management activities, and measures taken to reduce impacts. For example, prescribed fires may only be conducted under good atmospheric dispersion conditions. Vegetation management activities would reduce the risk of catastrophic wildfire; smoke and emissions from a large wildfire would impair air quality.

Alternative 3 (natural processes) would not authorize management activities such as timber harvest or prescribed fire, this would benefit air quality. However, by not allowing vegetation management activities risk of catastrophic wildfire would increase. Smoke and emissions from a large wildfire would impair air quality.

#### **4.2 Effects on Cultural/ Historic Resources**

Given the low percentages of existing inventory in BHMA, it is crucial to identify and evaluate all cultural properties which might be directly affected by development, or indirectly by use of the study area, per the management plan for the area. As developments are identified, project specific inventories will be conducted to identify and evaluate cultural resources which might be impacted. Additionally, a program of

systematic survey organized by research objectives will be undertaken. Inventory has the potential to identify sites eligible to the National Register of Historic Places, which can contribute significant information on environmental change and cultural settlement patterns.

One site eligible to the National Register has been recorded in the BHMA, and should be excavated. The Texas Trail is considered to be an eligible historic property, although the known route lies north of BHMA; trail use extended over a much wider area than the defined linear corridor, and sites relating to use of the trail might occur in the BHMA.

If data recovery operations are proposed, BLM will consult with the State Historic Preservation Officer and interested Native American groups on appropriate data recovery plans and interpretation of the results.

#### Native American Concerns

Any effects the proposed action might have on identified traditional cultural sites must be considered as directed by the National Historic Preservation Act, the American Indian Religious Freedom Act, PL 95-341 and the Archaeological Resources protection Act of 1979. No sites of Native American religious or cultural importance have been identified to date. Native American groups can comment, submit information, or visit the area informally or formally. If sites or localities of religious or cultural importance are identified, the information will be treated confidentially, and appropriate actions will be taken to address concerns related to those sites.

#### Paleontology

Ground disturbing activities will require sufficient inventory and mitigation to determine whether significant paleoresources occur in the area of the proposed action. Mitigation beyond initial findings may range from no further mitigation necessary to full and continuous monitoring of significant localities during the action. Mitigation activities can also include survey and inventory, researching regional databases and collections, spot check survey, monitoring during dirt work, and collection and analysis of specimens.

Activities most likely to affect cultural and historic resources are livestock grazing, mineral development, recreation, and vegetation management.

#### Livestock Grazing Effects on Cultural/Historic Resources

Alternative 1 (current management) and alternative 2 (deferred grazing) provide for livestock grazing. Effects from grazing are not expected to be significant. Hoof action may occasionally uncover buried resources and damage exposed resources. Alternative 3 (no grazing) would be beneficial to cultural and historic resources. Livestock would not be present to potentially damage sensitive resources.

#### Mineral Development Effects on Cultural/Historic Resources

Cultural and historic resources could be destroyed by surface disturbing activities, i.e. road or well pad construction, during mineral development. Under alternatives 1 and 2 mineral development would proceed only after site-specific proposals are analyzed,

cultural resources would be considered during the analyses. Given the low level of anticipated mineral development effects to cultural resources are not expected to be significant. Alternative 3 proposes development of a minerals management plan which could provide for increased protection of cultural resources.

#### Recreation Effects on Cultural/Historic Resources

Developing recreation facilities such as roads, trails, and campgrounds could damage or destroy cultural resources. Users may vandalize or steal cultural resources. Alternative 1 (no action) does not provide for additional recreation facilities, therefore cultural resources would not be impacted by facility development. The primary impact to cultural resources would be vandalism or theft by recreational users.

Alternative 2 (non-motorized) authorizes an educational facility and two trailheads to be developed; no additional roads, campgrounds or other facilities would be constructed within the BHMA interior. The education facility would require a site-specific environmental analysis, in which cultural resources would be considered. Impacts to cultural resources would likely be less than under the no action alternative due to the lack of surface disturbance from motor vehicles and facility development.

Alternative 3 (semi-motorized) would authorize recreation facility development including an education center, dispersed camp sites, trailheads, and improvements to existing roads. A cultural inventory would be performed prior to any surface disturbing activities to identify cultural resources. Projects such as camp site development and the educational facility would require site-specific environmental analysis, in which cultural resources would be considered. Impacts to cultural resources would likely be greater than under the no action alternative due to the development of recreational facilities.

Alternative 4 (developed motorized) would have the greatest effect on cultural resources as it allows for the greatest vehicle use and facility development. Projects such as campground development, ATV trail, and the educational facility would require site-specific environmental analysis, in which cultural resources would be considered.

#### Vegetation Management Effects on Cultural/Historic Resources

Vegetation management effects to cultural resources is expected to be similar under alternative 1 (no action) and alternative 2 (historic range). Surface disturbance from activities such as timber harvest or fire line construction could expose, damage, or destroy cultural resources. Cultural inventories will be performed prior to planned vegetation management activities which should identify and enable the protection of cultural resources.

Alternative 3 (natural processes) should have the least effect on cultural resources as vegetation management activities such as timber harvest and prescribed fire would not be authorized. Risk of catastrophic wildfire is increased, artifacts maybe damaged or destroyed during a large wildfire.

### **4.3 Effects on Livestock Grazing**

Activities most likely to affect livestock grazing are mineral development, recreation, and vegetation management.

#### Mineral Development Effects on Livestock Grazing

A direct effect of mineral development is the loss of forage availability due to the construction of roads, well pads, and other infrastructure. An indirect effect is the displacement of cattle from near mineral facilities due to the activities at the facilities.

Effects are likely to be similar under Alternative 1 (no action) and Alternative 2 (proposed action). Effects to livestock grazing would be considered during the site-specific analysis of mineral proposals. Alternative 3 provides for the development of a minerals management plan which may increase protection of the livestock resources, otherwise effects are similar to Alternatives 1 and 2.

#### Recreation Effects on Livestock Grazing

The development of recreation facilities would result in a direct loss of available forage. Activities at these facilities may further displace cattle, thereby increasing the loss in available forage. Recreational activities outside of developments may also displace cattle, and some users may harass grazing livestock. Vegetation trampled by recreationists may also decrease forage availability. Recreation stock may compete with cattle for forage.

Effects would be least with Alternative 2 (non-motorized) as there are no developed facilities, with the exception of an education center, and the lowest level of authorized motor vehicle use. The level effects would likely increase in Alternative 1 (no action), Alternative 3 (semi-motorized), and Alternative 4 (motorized developed) respectively as the amount of development and/or motor vehicle use increases.

#### Vegetation Management Effects of Livestock Grazing

A direct effect of vegetation management would be the short-term loss of forage due to vegetation removal. Following treatments, forage production and palatability is likely to exceed pre-treatment levels for several years before gradually returning to pre-treatment forage levels. Alternative 1 (no action) and Alternative 2 (maintain historic range) provide for vegetative treatments. Alternative 2 proposes an active vegetation management plan which would result in the greatest short-term negative effects and greatest long-term beneficial effects. Alternative 3 (natural processes) does not propose active vegetation management, forage production is likely to gradually decrease as vegetation communities age; grass and forbs are replaced by shrub and forest cover. Risk of catastrophic fire would also increase, a large fire would initially reduce forage availability but forage production in the fire area would then likely exceed current levels for several years.

### **4.4 Effects on Mineral Resources**

Most resource activities should not affect the mineral base. Mineral development may be influenced by other resources concerns, primarily the effects of mineral development on

the other resources. Only alternatives within the recreation resource would significantly affect mineral development authorization. Recreation alternative 3 (semi-motorized) proposes special management area (ACEC) consideration. ACEC designation may include restraints on mineral development. Alternative 1 (no action), alternative 2 (non-motorized), and alternative 4 (developed motorized) do not propose special management area consideration and would not significantly influence mineral development. Recreationists using roads developed for minerals may interfere with minerals activities, and some vandalism is likely.

#### **4.4 Effects on Recreation and Education Resources**

##### Livestock Grazing Effects on Recreation/Education Resources

Under Alternative 1 (no action), the present stocking rate in the BHMA would not be adjusted. The present stocking rate may influence recreational opportunities. Adverse effects may include cow litter on the trails and encounters with livestock on the trails. Rutting of recreation trails from cow use may occur if the livestock heavily use the trails, which may require an increase in trail maintenance. Recreation users may also use the network of livestock trails. Livestock may also enhance some recreation users' satisfaction due to the aesthetic appeal of grazing cattle in a rural western setting.

Existing livestock fences within the BHMA may introduce issues such as confusion of whether or not the fence is the border to private land, or the user may neglect to close gates. Under this alternative, there will be no signs informing the user of boundary locations and livestock management practices.

Other issues with the current livestock management may be livestock harassment from some users, or some livestock harassing users, and an increase of conflicts between the users and the ranchers and landowners.

With Alternative 2 (deferred rotation), the types and levels of effects would likely be similar to Alternative 1.

With Alternative 3, prohibiting livestock grazing would likely benefit recreation activity in the BHMA. The recreation users' satisfaction level may increase due to the lack of livestock presence in the area, no additional network of livestock trails, no cow litter, and no livestock damage on the existing trails. Those users seeking the western appeal of grazing cattle would likely be disappointed.

##### Mineral Development Effects on Recreation/Education Resources

Under alternative 1 (no action), the lands would be available for leasing and the mineral development proposals would be evaluated when received. Mineral activity may undermine the recreation users' satisfaction level due to reduced aesthetic values. Mineral extraction may pose a safety hazard to recreation users, for example hydrogen sulfide gas and other toxic or explosive materials. Other possible issues may be conflicts between operators and users, and possible vandalism to mineral extraction equipment.

Mineral development may make financial resources available for recreation facilities. For alternative 2 (proposed action), mineral development effects would be similar to those described for alternative 1. Alternative 3 provides for additional consideration of recreation resources during the development of a minerals management plan, which should reduce effects to recreation resources.

### Recreation/Education Effects on Recreation/Education Resources

#### Alternative 1

Alternative 1 (no action) would not change the existing recreational resources; there would not be development of any campgrounds, trailheads, education facilities, or other recreational facilities. The lack of any developed sites will enhance the natural setting and will not subject the land to any surface disturbance, thus sustaining the semi-primitive integrity of the area. The lack of developed camping may also spread out recreation use throughout the BHMA instead of containing camping use to defined areas.

Without direct management action to manage for the projected public use, the environment may experience degradation in certain areas where activities are more popular and other issues such as littering, and difficulty in managing other recreation use issues.

Under the no action alternative, recreation management for the BHMA will not design or establish a sign program. Issues such as user conflicts between users and private land owners may remain unresolved. Recreation users may experience confusion over the network of fences existing within the BHMA area and where the private land parcels exist. Other issues that could be addressed by a sign program include a direct and unobtrusive approach of informing and educating the users, respect for private land boundaries, litter management, motorized vehicle management, identifying recreation opportunities, and describing BLM's role in managing the BHMA.

Without trailhead parking areas users may park along the main roads on the western (Wyoming Highway 59) and northern (Cow Creek County Road) borders, creating a safety hazard. Interior roads provide unlimited parking opportunities, which may result in exceeding the BHMA's carrying capacity during times of heavy use resulting in environmental damage and recreation experience degradation.

Under alternative 1, the existing roads and trails in the BHMA will be made available for motorized use with no seasonal restrictions. This management decision may negatively impact some recreation users' satisfaction level. User conflicts may escalate between users such as hikers and horseback riders and motorized vehicle users. A potential for an increased risk of accidents between users may ensue without any motorized vehicle management. There will be an increased environmental risk with the possible increased presence of motorized vehicle use. Soil degradation and vegetation trampling are likely in areas of high use.

Under the no action alternative, recreation monitoring will be utilized as resources are

available. Such recreation monitoring may include surveying recreation users, road counters, monitoring the existing trails, and monitoring the environmental condition of the BHMA from the effects of heightened recreation use.

The limited law enforcement presence may result in increased levels of littering, user conflicts, trespassing, unauthorized motor vehicle use, poaching, wildlife and livestock harassment, and vandalism. This issue may be especially critical along the southern border, specifically North Draw and Provant Creek. Well used 2-track roads and jeep trails exist in this area and both routes exit the southern boundary onto private lands, which may escalate conflicts between recreational users and private land owners. No roads exist on the Cow Creek area along the southern boundary, but the smooth topography enables access to private land. Conversely, the rough terrain within the Cow Creek Breaks may make it difficult to decipher where the public and the private boundaries exist, thus making access into private land almost inevitable.

The BHMA will be available for outdoor education, but no developed facilities to meet the users' needs or designated bus parking will be available. This may result in littering and surface disturbance due to the lack of a hardened parking area and littering issues due to lack of facilities that could be used to address these issues. Without educational facilities, the BHMA would remain in a semi-primitive state thus sustaining the current and natural environmental integrity, attractive for environmental education, but probably under utilized.

Special recreation permits for recreational activity such as outfitting would be permitted under the no action alternative. This will allow for economic stimulation. This will also allow more diverse recreational activity which can be enjoyed at only certain times of the year. Outfitting opportunities may also provide for higher levels of satisfaction expressed by the users who participate in outfitting activity.

Recreational firearm shooting would be permitted under the no action alternative. This activity would affect other recreation users in a negative way undermining the users' satisfaction levels by creating a hazardous environment. Other issues related to firearms use may be an increase in vandalism, littering, environmental degradation, livestock and wildlife endangerment, user conflicts, and conflicts between firearm users and private land owners.

Under the no action alternative, an Area of Critical Environmental Concern (ACEC) designation would not be pursued for the BHMA. The lack of extra management to pursue a recommendation for an ACEC should not affect the environmental quality and integrity of the BHMA. The same management procedures are applied for alternative 2, the proposed action.

Under the no action alternative, the BHMA is open for motorized access, but not for construction of any new OHV trails within the BHMA. This management decision will decrease user conflicts between OHV operators and other users, and maintain an elevated satisfaction level for recreationists who do not utilize OHVs. Possible issues for not

managing and implementing new OHV trails may be conflicts between OHV operators and other recreation users due to the limited number of trails, the possibility of OHV operators creating their own trails resulting in an increase of environmental degradation, and possible conflicts between OHV operators and recreation management by the limitation of the recreation use for certain users.

Recreational use levels are expected to be greatest during big-game hunting seasons, when the chance for user conflicts between hunters and non-hunting recreationists would be greatest.

### Alternative 2

Through alternative 2 (non-motorized), ownership issues will be addressed through a sign program. This will include maps at the two established trailhead parking areas; the maps shall delineate the BHMA and surrounding private lands ownership, reminding users to respect private land property which surrounds the BHMA, and to respect the BHMA land as well. Through a sign program, social conditions such as user conflicts between users and private land owners may be resolved. Confusion expressed by recreation users over the network of fences existing within the BHMA area and where the private land parcels exist may be addressed and eliminated. Other issues that could be addressed by the signage program may be a direct and unobtrusive approach of informing and educating the users of the benefits by respecting the BHMA by observing private land boundaries, littering laws, management action towards motorized vehicles, available recreation trails, and BLM's role in managing the BHMA.

Establishing two trailhead parking areas, in Cedar Draw and at Windmill, and an education facility will help maintain the environmental integrity. Hardening developed areas will provide specific sites that can withstand increased use, while allowing more sensitive areas to be protected. The trailheads may address issues such as carrying capacity, behavior management, littering issues, motorized vehicle control, parking control, education, and recreation monitoring from management (surveys, etc). Implementing two separate trailheads will protect the environmental integrity of the entire area, but will result in site specific surface disturbance. Other issues may be vandalism, littering, and maintenance costs. The proposed action will include inventorying the existing recreation resources, which will enable hardening specific sites of high value or interest and reclamation of damaged or sensitive areas.

If the trailhead parking areas fill, recreationists are likely to park along the main roads bordering the western (Wyoming Highway 59) and the northern (Cow Creek Road) borders allowing for an increased risk in accidents. The excess parking may also result in exceeding the BHMA's carrying capacity during times of heavy use due to management difficulties in dictating the number of users, resulting in environmental and social degradation.

Prohibiting motor vehicle access would reduce conflicts between user groups, by eliminating the motorized recreation users. Motorized recreationists would be required to utilize other areas such as the Weston Hills Recreation Area and the Thunder Basin

National Grasslands. Allowing no motor vehicle access, and not allowing for any new OHV trails will ensure a semi-primitive management level for the BHMA. This alternative may also negatively affect users who utilize OHVs as part of their recreational enjoyment. Other possible conflicts for not allowing OHV use may be conflicts between OHV operators and recreation management (BLM), or possible legal actions against management for not implementing a multiple use management plan for the BHMA.

Under the proposed action, recreation use will be monitored by any available resources and by a campground host or volunteers. The monitoring work and methods will be the same as the no action alternative.

Under the proposed alternative, a cooperative agreement with the Campbell County Sheriff and the use of a volunteer manager will be pursued. The presence of any authority may aid in controlling users behaviors and eliminate conflicts. Some recreation users may find that they are reassured and feel safer with the presence of an authoritative figure, whether it be a law enforcement officer, or a volunteer. Other users may find that the presence of any law enforcement is degrading or obtrusive.

Under the proposed alternative, a developed educational facility will be implemented. This action will create a method for raising environmental and social awareness by educating the users about the importance of respecting the BHMA and the surrounding lands. The education facility will result in site specific surface disturbance. An education facility should be beneficial to managing and sustaining the BHMA's environmental integrity. However, construction of these facilities will result in site specific surface disturbance. Other issues may include facility maintenance costs, and possibly property vandalism.

Special Recreation Permits, such as outfitting permits, managed under the proposed action will maintain the same procedures used prior to the land exchange thus maintaining both social and environmental integrity of the BHMA. Special recreation permits provide economic stimulation. This will also allow more diverse recreational activity which can be enjoyed at only certain times of the year. Outfitting opportunities may also provide for higher levels of satisfaction expressed by the users who participate in outfitting activity.

The management decision to limit firearm shooting to hunting may positively affect most of the recreation users' satisfaction level by reducing a hazardous environment. Other users may be frustrated with the decision to prohibit firearm target shooting, introducing the possibility of negative impacts such as vandalism. Other issues such as vandalism, littering issues, environmental degradation, possible livestock and wildlife endangerment, user conflicts, and conflicts between firearm users and private land should be reduced.

The proposed management should not impair ACEC suitability, trailheads would be located along the management area boundaries. An education facility would be the only development potentially impairing ACEC suitability, this issue shall be addressed when a site-specific plan for the education facility is developed. Alternative 2 does not propose

special management designation.

### Alternative 3

Alternative 3 provides for limited motorized vehicle use, trailheads, including a third trailhead, are moved in from the management area boundaries, existing roads are seasonally available for motorized use, and dispersed campsites shall be developed along the Cedar Draw Road. Opening the area to additional uses, may increase conflict between recreation user groups. Motor vehicles will likely increase environmental effects such as vegetation damage, soil erosion, and air quality impacts.

Evaluation for ACEC eligibility would not affect the environmental quality. Managing to maintain an ACEC will enhance the environmental integrity of the area. Possible issues may be users who do not respect special regulations pertaining to an ACEC, such as if OHV use is prohibited.

Developing the 10 dispersed sites along Cedar Draw should not significantly degrade the environmental quality of the BHMA. Possible issues may be site specific surface disturbance due to developing the camping sites, and the increase of surface disturbance as a result of focusing camping at the specific sites. However, hardening the BHMA will result in directing recreation impacts to durable sites that can withstand an increase of use, and allow for more sensitive areas to maintain environmental quality and integrity.

In all other aspects, effects to the recreation resources are similar to alternative 2.

### Alternative 4

Recreational effects would be greatest under alternative 4, which provides for the greatest level of development and motor vehicle uses. Motor vehicles would be restricted to existing roads as in alternative 3, however, soil erosion, other environmental degradation, and a possibility of increased conflicts between users and OHV operators is likely to be greater as there would not be seasonal restrictions. In addition, an OHV trail would be developed. OHV use would be restricted to the trail, in order to minimize environmental damage. Recreational firearm use is likely to result in litter, vandalism, and vegetation damage. Other effects would be similar to those discussed in alternative 2.

### Vegetation Management Effects on Recreation/Education Resources

Under the no action alternative (alternative 1), the fire suppression activities will be managed according to current agreements. Possible vegetation management issues that may conflict with recreational users include a low satisfaction level due to poor aesthetic values from the vegetation management activities practiced, i.e. burned vegetation, skid trails, fire lines, etc. Fire lines created from fire suppression activities may create new recreation opportunities. Issues conflicting with vegetation management by recreational activities may include recreation users hampering weed suppression activities by unknowingly introducing weeds to the area.

Vegetation management alternative 2 (proposed action) should reduce unsightly and environmentally damaging bull dozer suppression lines through a fire management plan

emphasizing fire's ecological role and regulating heavy equipment use. Vegetation management activities are likely to be more frequent than under the no action alternative, possibly creating more unsightly treatment areas. An active educational program could interpret the objectives in restoring vegetation communities within their historic range of composition and structure.

Vegetation management alternative 3 (natural processes) should have the least effect on the recreation resources. Vegetation treatments would not be proposed, succession would be allowed to proceed uninterrupted. Fire suppression use of heavy equipment would be limited to protection of human life, eliminating unsightly dozer lines and their environmental effects. However, without planned vegetation treatments, fuel loads and the risk of catastrophic wildfire will continue to increase. The resulting fire may likely consume a larger area, having greater recreational effects, than if an active vegetation management program were initiated.

#### Wildlife Effects on the Recreation/Education Resources

Effects from wildlife management activities should not vary much between any alternative. The primary difference between wildlife alternatives is alternative 2 (proposed action) places slightly greater emphasis on mule deer and predator management than the other alternatives. Recreationists that enjoy mule deer and predator hunting would likely favor alternative 2. Mule deer management would emphasize habitat enhancements; harvest management is a responsibility of the Wyoming Game and Fish Department and beyond the scope of BLM's management authority. Therefore it is unlikely the mule deer hunting opportunities would be significantly different under wildlife management alternative 2 than alternatives 1 or 3.

Opportunities for predator hunting are not greater in wildlife management alternative 2; however, implementation of alternative 2 may make predator hunters more aware of the BHMA availability to recreational hunting.

#### **4.5 Effects on Social Economic Resources**

Resource activities having effects on social economic resources are livestock grazing, minerals, recreation, and vegetation management.

#### Livestock Grazing Effects on Social Economic Resources

Livestock grazing alternative 1 (no action) and alternative 2 (deferred rotation) propose continued livestock grazing within the BHMA which would benefit the local economy. With alternative 3 (no grazing), more than 6 miles of fence would need to be built and maintained if the lease was not issued and livestock grazing was not permitted on the public land. A current estimate of fence construction is \$32,000.00 and maintenance costs are estimated at 5% of the fence cost, or \$1,600.00 annually: The grazing operator would have to either spend over \$24,000 per year to replace the forage provided by the public lands or cull a portion of the herd. The projected herd loss has an economic value of approximately \$60,000.00.

#### Mineral Development Effects on Social Economic Resources

Mineral development would result in direct positive effects to the local economy. With alternatives 1 and 2 site-specific mineral projects would be analyzed when proposed. Alternative 3 proposes a minerals management plan, if the plan were to discourage mineral development, economic benefits may be lost.

#### Recreation Effects on Social Economic Resources

All recreation alternatives would have a positive effect on social resources, as the BHMA provides social and recreational opportunities. Limited employment opportunities may also be available through special recreation permits (all alternatives), a developed educational facility (alternatives 2, 3, 4), and a volunteer manager (alternatives 2, 3, 4). Many of the specific projects such as campground construction (alternatives 3, 4), would be contracted providing benefit to the local economy.

#### Vegetation Management Effects on Social Economic Resources

Vegetation management activities (alternatives 1, 2) would be contracted providing benefit to the local economy. Vegetation management alternative 3 proposes to allow natural processes, succession, to proceed without interference, and would not provide economic benefits.

### **4.6 Effects on Soil Resources**

Resources affecting the soil resources include livestock grazing, minerals, recreation, and vegetation management. Livestock grazing proposed in alternative 1 (no action) and alternative 2 (deferred rotation) may result in localized soil erosion and soil compaction. Livestock grazing may also benefit soil resources by increasing soil aeration, breaking down soil crusts and plant litter, and promoting nutrient cycling. These effects would be less in alternative 3 which would prohibit livestock grazing.

Mineral development activities would likely result in localized soil compaction and soil erosion. Any mineral development proposal would be analyzed for environmental effects, alternatives 1 and 2. Alternative 3 (mineral management plan) would result in the least environmental impacts as the minerals management plan would likely include measures to protect soil resources, such as prohibiting minerals development in areas of fragile soils.

Recreation use is also likely to result in localized soil compaction and soil erosion. Effects are expected to increase with increasing development and motor vehicle use; degree of effects should be least with alternative 1 (no action), followed by alternative 2 (non-motorized), alternative 3 (semi-motorized), and greatest with alternative 4 (motorized).

Removing vegetation cover likely to elevate soil erosion until the vegetation cover is restored. Management activities designed to promote native riparian vegetation such as cottonwoods, willows, sedges, and rushes are likely to stabilize stream banks and decrease soil erosion potential. Alternative 2 (maintain historic range) is likely to have

the greatest short-term negative effects on soil resources and the greatest long-term beneficial effects. Effects with alternative 1 (no action) would be of similar types but to a lesser degree, although vegetation management is authorized an active management program would not be pursued. Alternative 3 (natural processes) does not provide for a vegetation management program, the beneficial effects of a vegetation management program would not be realized.

#### **4.7 Effects on Vegetation Resources**

##### Livestock Grazing Effects on Vegetation Resources

Livestock management, minerals development, recreation, and wildlife management resources will all affect the vegetation resources. Livestock grazing may result in localized areas of vegetation damage such as reduced tree and shrub regeneration, reduced plant vigor, reduced native floral biodiversity, and increased weed infestations. Grazing would also produce beneficial vegetation effects by breaking soil crusts and vegetation mats, preparing seed beds, providing for nutrient cycling, etc.

The BHMA has been grazed by cattle for over 100 years. Currently there are no areas where vegetation damage due to livestock is significant as determined by the Ecological Site Inventory. The area along Cow Creek was seeded to pasture grasses and is in an early ecological condition. Cottonwood and shrub recruitment along Cow Creek and other drainages is low, livestock grazing is likely one of several contributing factors. In Alternative 1 the ecological condition and trend will not change significantly since no major changes in management are proposed. Alternative 2 would improve the ecological condition through implementation of the deferred grazing schedule and range improvements.

Elimination of livestock grazing (alternative 3) would result in an increase in standing herbaceous vegetation and accumulation of plant litter (dead plant material). The increased soil cover and a reduction in soil compaction from livestock should result in a slight decrease in soil erosion. Following elimination of grazing, ecological range condition would move toward the potential natural community over the short term. Over the long term, removal of livestock grazing may result in a decrease in plant diversity and production as dead plant material increases and nutrient cycling decreases. The increase in plant material would support a return of natural wildfire intervals on the site.

##### Mineral Development Effects on Vegetation Resources

The construction of roads, well pads, pipe lines, and other facilities associated with mineral development would require vegetation removal. Grass and forbs should successfully recover with proper reclamation techniques, recovery of tree and shrub vegetation would take several decades. Areas disturbed for mineral development provide suitable habitat for invasive non-native vegetation. Dust associated with mineral activities may also effect vegetation near mineral facilities. Any mineral development proposal would require a site-specific environmental analysis, including effects to vegetation. Alternative 1 (no action) and alternative 2 (proposed action) would likely result in the greatest effects to vegetation resources, while alternative 3 (mineral

management plan) should have the least effects to the vegetation.

#### Recreation Effects on Vegetation Resources

Recreation activities such as camping, hiking, motor vehicle use, etc. would have direct, indirect, and cumulative impacts to the vegetation resources. Recreationists are likely to trample vegetation; vegetation would likely recover with light use levels, but as recreation levels increase the vegetation's ability to recover would decrease. Trampling and soil compaction would also result in an increase in non-native vegetation. Campers are likely to remove logs, snags, and some live vegetation for campfire use. Effects to the vegetation resources are likely to increase as the level of development and motorized use increases. Vegetation effects are likely to be the least with alternative 1 (no action), greater with alternative 2 (non-motorized), greater with alternative 3 (semi-motorized) and greatest with alternative 4 (motorized).

#### Wildlife Management Effects on Vegetation Resources

Wildlife habitat management will have direct, indirect, and cumulative effects on the vegetation resources. All three wildlife management alternatives seek to improve habitat quality and biodiversity, and would include vegetation treatments designed to increase age class and structural diversity of native plant communities. Wildlife management activities should provide for healthier vegetation resources. Vegetation management activities are likely to be greatest with wildlife management alternative 3 and least with wildlife management alternative 1 (no action). Vegetation effects from wildlife management alternative 2 (proposed action) would lay in between.

### **4.8 Effects on Water Resources**

Livestock grazing, mineral development, recreation use, and vegetation management have direct, indirect, and cumulative effects on the water resources.

#### Livestock Grazing Effects on Water Resources

Unmodified livestock grazing under alternative 1 (no action) may likely continue the non-functioning condition of the water resources due to the lack of bank stabilizing vegetation. Without bank stabilizing vegetation, annual "flash" run-off of snowmelt and thunderstorms would continue to erode bank soils increase headcuts, and increase sedimentation rates to the Little Powder River drainage. Water quality would degrade, affecting downstream aquatic species.

Alternative 2 (deferred rotation) proposes management practices would be undertaken to improve the functioning condition on all drainages within the BHMA. The objective would be to have all streams classified as functional at risk or better within a 10 year period. Livestock management practices such as herding, fencing, rest periods, salting, and water developments may be employed to improve the water resources. These practices should allow cottonwoods along with other woody plants and grasses to regenerate protecting stream banks, filtering sedimentation, and improving the functioning condition of the streams and riparian habitat.

Alternative 3 (no grazing) would provide the greatest benefit for the water resources. Without livestock grazing, cottonwoods along with other woody plants and grasses should recover protecting stream banks, filtering sedimentation, and improving the functioning condition of the streams and riparian habitat.

#### Mineral Development Effects on Water Resources

Effects from mineral development include increased sedimentation, emissions, hazardous material spills, and produced water disposal. These effects are expected to be greatest with alternative 1 (no action), similar with alternative 2 (proposed action), and least with alternative 3 (minerals management plan). No mineral activities will be permitted within 500 feet of any spring, reservoir, water well, or perennial stream (BLM 2001). A minerals management plan would include measures to protect water resources. Any minerals development proposal would require site-specific environmental analysis, under all alternatives, providing for an evaluation of and protection of water resources.

#### Recreation Effects on Water Resources

Effects to water resources from recreation are expected to increase as the number of users increases with authorized levels of development and motorized use. Poor camping techniques, such as camping too close to water and improper waste disposal, may degrade water resources. Developed campsites (alternative 3) and campground (alternative 4) provide hardened camping areas, which should reduce impacts to stream resources. Camp sites would be provided away from streams, and outhouses would be provided to reduce human wastes. Vehicles crossing streams and road borne dust will likely increase sedimentation levels to streams. Water effects should be least with alternative 2 (non-motorized), slightly greater with alternative 3 (semi-motorized), greater with alternative 1 (no action), and greatest with alternative 4 (motorized).

#### Vegetation Management Effects on Water Resources

Loss of vegetative cover would negatively effect water resources by increasing sedimentation, increasing solar radiation, and decreasing woody debris. Timber harvests would not be authorized within 200 feet of live water (BLM 2001). Alternative 1 (no action) and alternative 2 (proposed action) seek to improve the vegetation resources which should produce long-term benefits for the water resources. Many vegetation management activities would result in a short-term reduction in vegetative cover, damaging water resources; but as healthy vegetation recovers so should the water resources, ultimately resulting in beneficial effects to the water resources. Alternative 1 provides for vegetation management although it does not encourage management activities; alternative 2 proposes an active management program to restore natural range of variability. Alternative 2 would include practices such as reducing juniper encroachment which should increase water flows, a beneficial effect.

Water resources would continue to deteriorate with alternative 3 (natural processes). Without an active vegetation management program, short-term negative effective effects to water resources from vegetation removal would be eliminated, however the long-term beneficial effects of vegetation treatment would also be eliminated. Ponderosa pine and juniper encroachment would continue, further decreasing water flows and available

water.

#### **4.9 Effects on Wildlife Resources**

Livestock grazing, mineral development, recreation, and vegetation management all have direct, indirect, and cumulative effects on the wildlife resources.

##### Livestock Grazing Effects on Wildlife Resources

All streams and riparian habitats within the BHMA have been rated as non-functional, in part due to the lack of bank stabilizing vegetation. With the present management (alternative 1), livestock grazing is a contributing factor to the lack of cottonwood and willow regeneration within the riparian areas. The lack of regeneration would likely continue with alternative 1. More than 80% of all wildlife species utilize riparian areas sometime in their life cycle, with non-functioning riparian habitat; there would be an expected reduction in numbers of species and periods of use.

Alternative 2 (deferred rotation) proposes that management practices would be undertaken to improve the functioning condition of all drainages and riparian areas within the BHMA. The goal would be to rate the entire riparian habitat as functional at risk or better within a 10 year period. The following are suggested livestock management actions for improving riparian habitat: herding, fencing, rest periods, salting, and water development.

Alternative 3 (no grazing) would provide the greatest benefit to the riparian habitat and greatest number of wildlife species. Riparian vegetation would recover into productive habitats supporting healthy and diverse wildlife populations. However habitat for certain species, such as mountain plovers, that benefit from livestock grazing may decline.

##### Mineral Development Effects on Wildlife Resources

Mineral development may have direct, indirect, and cumulative effects on the wildlife resources. Surface disturbance such as road, pipeline, and well pad construction may result in direct habitat loss. Vehicle movement, noise, and other activities will likely cause disruption and displacement of wildlife and interference in wildlife activities. Much of the displacement is expected to be short-term, during construction and drilling; it is anticipated that many wildlife species will return and resume normal behavior following the construction/drilling phase although at reduced population levels. Water produced as a consequence of mineral production may provide a limited amount of wetland/aquatic habitat for waterfowl and other wetland and aquatic wildlife species. Any proposed mineral development would undergo a detailed environmental analysis, in which effects to wildlife would be analyzed. Environmental consequences from mineral development upon wildlife would be similar in alternative 1 (no action) and alternative 2 (proposed action), and least with alternative 3 (minerals management plan).

##### Recreation Effects on Wildlife Resources

Construction of recreation facilities such as trailheads, campgrounds, roads, and an education facility would be a direct loss of wildlife habitat. The presence of these facilities and their associated recreation activities will likely displace wildlife from an

even greater area. Wildlife displacement is likely to increase as recreation levels increase and as motorized access increases.

Alternative 1 (no action) does not provide for recreation facility construction, there should be not be any additional direct habitat loss. Motor vehicle use will be authorized on existing roads without seasonal restrictions, resulting in displacement of wildlife from roadside habitats.

Alternative 2 (non motorized) should have the least effect on wildlife resources as recreational motor vehicle use is prohibited and recreation facility development is limited to two perimeter trailheads and an education facility.

Alternative 3 (semi-motorized) authorized three trailheads, dispersed developed campsites, and an education facility resulting in more direct habitat loss than either alternatives 1 or 2. Displacement caused by motor vehicle activity would be less than alternative 1 but greater than alternative 2. Alternative 3 provides for seasonal motorized use of existing roads.

Alternative 4 (motorized developed) would have the greatest effects on the wildlife resources as it provides for the most development and motor vehicle use. Alternative 4 includes a developed campground, OHV trail, and authorized motor vehicle use on all existing roads without seasonal restrictions.

#### Vegetation Management Effects on Wildlife Resources

Vegetative treatments result in direct loss of wildlife habitat. Activities associated with the treatments are also likely to displace wildlife. Displaced wildlife is expected to return following management activities to undisturbed habitats. Habitat suitability is expected to recover as the vegetation recovers. Biodiversity and species composition changes as habitat conditions change. Species favoring early seral conditions should increase as shrubland and forest cover are reduced, while late seral species should decline. As the shrub and forest vegetation returns late seral wildlife species should also.

Alternative 1 (no action) provides for vegetation management activities. Vegetation treatments are likely to favor early seral wildlife species. The level of management activities are not expected to be great with this alternative. A significant loss of habitat for late seral species is not anticipated.

Alternative 2 (proposed action) provides for an active vegetation management program. It is likely to have the greatest effects on the vegetation resources and therefore wildlife habitat and populations. The goal of this alternative is to maintain the historic vegetative conditions, with a diversity of structural and age classes. This alternative ultimately should provide for the greatest wildlife diversity.

Alternative 3 emphasizes natural processes, vegetative treatments shall not be proposed and fire suppression activities shall be limited. This alternative would favor late seral wildlife species to the detriment of early and mid seral species. Risk of catastrophic

wildfire would increase as vegetation communities age, possibly resulting in a large fire setting back the ecological process.