

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### **OVERVIEW**

This chapter presents the environmental consequences of the five alternatives described in Chapter 2 (Alternatives) to the resources detailed in Chapter 3 (Affected Environment). The impacts of each alternative are portrayed separately, and compared with the baseline conditions given in Chapter 3, with the exception of socio-economic impacts. Since the analysis of economic impacts is highly dependent upon model selection, those impacts are presented along with an analysis of the modeling methods used.

Alternative A would continue existing management. Alternative B would modify livestock management, but with no reductions in stocking levels or permitted active use. Alternative C, the Management Preferred Alternative, would make allotment specific changes to allotments which fail to meet one or more Rangeland Health Standards (hereafter referred to as Standards). Alternative D would suspend active grazing on allotments which fail to meet either of the upland health Standards. Alternative E would suspend active grazing on all allotments which fail to meet Standards, both upland and riparian.

Impacts were assessed on a landscape scale. Many of the allotment specific proposals involve discrete actions, with site specific impacts (see Appendix 1 for details), but the majority of those specific, localized actions are future proposals, and would not be implemented as a result of this proposed planning level determination. Many of those proposals, such as fences or water developments, were carried forward into this analysis to determine the gross level impacts of differing strategies of range management. They would not be approved as part of this decision process, and would require further site specific analysis if and when their implementation is proposed.

None of the impacts analyzed in this EIS rise to the level of significance unless specifically stated.

For this analysis, BLM staff and interdisciplinary team collaborators have used existing data, current methodologies, and professional judgment. Mitigation measures, such as the proposed design requirements for future range improvements were incorporated into the analysis.

There is a considerable redundancy in this section. Many impacts were similar across alternatives or across allotments. Rather than forcing the reader to cross reference impacts, it was decided to repeat them for the sake of continuity and readability.

#### **ANALYSIS ASSUMPTIONS AND GUIDELINES**

Short term impacts and direct impacts are used synonymously and refer to impacts that are immediate or would occur in a short time frame (generally five years or less) following implementing EIS decisions.

Long term impacts and indirect impacts are used synonymously and refer to impacts that would occur in long time frame (generally more than five years) following implementing EIS decisions.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

All management actions would be in accordance with applicable laws, regulation, policy, and guidance.

#### **GENERAL EFFECTS EXPERIENCED UNDER ALL ALTERNATIVES**

##### **CULTURAL RESOURCES**

Livestock and grazing related improvements can have adverse effects on cultural sites through several different methods. The direct impacts of cattle on sites generally results from hoof action on artifacts, features, and cultural sediments, the creation of trails through sites, destruction of standing walls at architectural sites, and abrasion to rock art panels. Indirect impacts such as increased erosion and deflation result from trail creation and use as well as the degradation of the vegetative cover. Stock-related range improvements can also impact sites. Impacts can be direct (e.g. the construction of a corral on an archaeological site) or indirect (e.g. the placement of a salt lick or water trough in an area that will concentrate stock use at cultural sites).

The effects of livestock on archaeological sites have been documented. Osborn et al. (1987) note and quantify the damage to both ceramic and lithic artifacts, finding that ceramics suffer worse than do lithics from trampling activities. They also note displacement of artifacts. A following paper (Osborn and Hartley) details similar conclusions noting artifact breakage, displacement, and changes in artifact visibility. Gifford-Gonzales et al (1985) also tracked vertical and horizontal artifact displacement as a result of trampling. Roney (1977) established a control plot and introduced obsidian “artifacts” and documented both major and minor damage as well as horizontal displacement. He also noted that the cattle-induced edge damage could easily be mistaken for cultural modification, while Binford (1981) makes a similar observation concerning bone artifacts and trampling. Broadhead (1999) also noted artifact movement within only two weeks of monitoring a constructed “archaeological” site. Gann (1988) looked at the effects of cattle and grazing activities on surface artifacts, and found that the resulting breakage and displacement alters the interpretation of sites by increasing the sherd count and decreasing the ability of an archaeologist to identify the ceramic style. He directly connected cattle impacts by noting a negative correlation in ceramic sherd size and proximity to areas where cattle frequent. Gann also notes that cattle are drawn to certain browse species common on archaeological sites, hastening erosion at these sites.

The most common observation in studies conducted by the above researchers is that lithic and ceramic artifacts are broken and modified through trampling, and that artifacts are displaced both horizontally and vertically within the site. In a review of grazing related impacts to archaeological sites, Cinnamon (1986) lists impacts noted at several National Park administered areas throughout the Southwest. These include trampling, rubbing on and damage to/destruction of standing historic and prehistoric sites, erosion, and changes in historic vegetation. All of the forms of impacts described above have been observed locally. The rare standing masonry walls of open pueblo-era sites within the EIS area are found at locations that are inaccessible to cattle. Direct local observation has disclosed impacts to rock art sites, where cattle fecal material has been found spattered across rock art panels at some sites and where abrasion is erasing both pictographs and petroglyphs at other sites.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### ***Alcoves and Rock Shelters***

Unfortunately, the visibility of these settings makes them relatively obvious and the well-preserved condition of these sites makes them a target for looters. The protection from the elements offered by these settings also draws livestock, thus making shelters and overhangs a focus of livestock use and increasing the levels of stock-related impacts. Recent monitoring by archaeologists has documented extensive livestock use of rock shelters on the Kaiparowits Plateau and elsewhere, including at least one archaeological site where more than 50 cm (20") of cattle dung covers the floor of the shelter.

#### ***Architectural Sites***

These sites are susceptible to a wide variety of impacts, as previously described above, and are especially prone to damage from looters due to their high visibility and from the impacts of cattle on standing walls and rubble mounds.

#### ***Historic Sites***

These sites are found across the project area, and are generally subject to the same impacts as prehistoric sites. Most historic sites are open, but alcoves and shelters were used as well.

#### ***Open sites***

Sites in this category may be subject to, and susceptible to, the widest variety of impacts. Natural weathering and erosion begin acting on these sites as soon as they are created. Prehistoric sites in this category are often the least obvious sites and consequently are the most prone to accidental disturbance by man.

#### ***Rock Art***

While natural weathering and impacts from livestock take a toll on sites of this type, vandalism is by far the most serious threat.

#### **BIOLOGICAL SOIL CRUST**

While it is acknowledged that livestock impact crusts, evaluating the nature of that impact is more problematic. There are two schools of thought on the relationship between crusts and rangeland productivity. The first cites studies which confirm the ability of biological crusts to prevent erosion, increase nutrients, and increase water retention. From this perspective, the safeguarding of crusts is necessary to soil formation and retention, and the prevention of disturbance is necessary. The second school of thought notes studies which show that biological crusts suppress plant germination and decrease water retention. They accept that crusts decreased erosion, but cite evidence that erosion is eventually mitigated through plant establishment. It has even been suggested that degraded rangelands have been replaced by biological crusts, through the process of desertification. Less water retention and reduced vegetation equate to long term loss of range productivity. From this perspective, livestock impacts on crust mimic that of natural herbivory, and as such aid in the restoration of rangelands by introducing sites where water is retained, and plants can become established.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### RECREATION

#### *Competition for Use of Space*

Competition for use of space is the most common conflict between backcountry recreationists and livestock. For recreationists, this conflict can result from either the immediate presence of livestock, or in their absence, the physical effects of livestock activity (especially additive effects). Competition for use of space occurs most often in desert canyons, particularly riparian canyons, where both recreationists and livestock tend to focus their activities. The majority of backcountry recreationists use riparian canyons (as well as desert washes) as their main routes of travel. In addition to the increased potential for water and cooler green environment, desert canyons provide relatively convenient routes of travel. Use competition decreased in the Escalante River corridor after its closure to livestock in 1994; however, with increased recreation use in side canyons, tributaries and box canyons, conflict between recreationists and livestock is increasing.

One example of competition for use of space is locating a suitable backcountry campsite. In some popular recreation areas (The Gulch, Lower Hackberry Canyon, Upper Paria River) the cumulative effects of grazing activity (soil compaction, manure build-up, loss of vegetation) have made it difficult to locate a campsite that has not been impacted by livestock activity. This is particularly true for backcountry users trying to find shelter beneath a shade tree (cottonwood or juniper) where the ground is often times compacted and littered with cow manure. Livestock seek these locations as well for resting or bedding areas. In many cases, it is necessary to clear the ground of manure in order to pitch a tent or lay out a sleeping bag.

Another example of competition for use of space results when backcountry users and livestock have encounters on the trail. Livestock behavior can vary considerably during these encounters ranging from quiet curiosity to a frightened run. The range of behavior seems to largely depend on the topography and availability of avenues of escape. Human behavior can play a part as well, and can either exacerbate or decrease the conflict. In general, the gentler the terrain and the more open the route of travel, the more calm livestock behave when encountering backcountry recreationists. Under these circumstances, livestock have many options for avoiding human contact. In contrast, encounters in canyon environments can result in the unintentional herding of livestock by hikers and equestrians. This is particularly true for steep-walled and narrow canyons where livestock have few options for escaping human contact. Such situations could conflict with the values and expectations of backcountry recreationists.

The competition of the use of space could increase stress levels for both backcountry recreationists and livestock and also could increase the risk of an injury. For example, instead of enjoying a trip through a scenic narrow canyon (a major recreational attraction for the area of concern), hikers and equestrians must instead focus on how to get around livestock. The recreational experience could be depreciated by having to hike with livestock and/or manure in a canyon. Those seeking solitude or the opportunity to observe wildlife could have their experience depreciated as well. Some hikers, concerned for their safety, could be displaced and choose to recreate elsewhere.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Competition for Use of Water Resources

Although water is a relatively scarce resource, competition for physical access to water is generally not an issue. The primary issue is the impacts that occur when livestock pollute the water source with their manure.

An additional issue is the sediment that gets stirred up by livestock walking through and standing in water sources. This behavior makes it difficult for those hikers who use a water filter to purify their water, as filters are quickly clogged by suspended sediment. While these conflicts occur most often at small, isolated springs, they can be an issue as well along extended water courses, as backcountry recreationists seek undisturbed portions of stream flow (absent of manure, and turbidity) to filter their water.

### Reduced Natural Appearing/Aesthetically Pleasing Environment

Some backcountry recreationists, particularly those seeking a primitive and natural recreation experience, have a conflict with the immediate presence of livestock and the physical effects of their activity.

Some specific examples of the physical effects of livestock grazing activity (direct and indirect) that decrease the overall naturalness of the environment, and which can adversely affect the recreation experience include:

#### Multiple Trailing and Other Surface Impacts

As livestock go about the pursuit of food and water, multiple trails are created. Some hillside trails can be quite prominent and form an unnatural terraced appearance. Livestock create multiple trails along and adjacent to riparian areas as well in their ongoing search for food and water. These effects are particularly noticeable in areas that are repeatedly grazed year after year. Even though some of these effects can be produced by wildlife (deer, elk, big horn sheep, etc.), they differ in character and intensity and are an intrinsic part of the natural environment.

#### Deceased Livestock

The Gulch Outstanding Natural Area and Buckskin Gulch (Paria Canyon-Vermilion Cliffs Wilderness Area) are both popular recreation use areas that have repeated incidences of dead livestock along the hiking corridor. In The Gulch, livestock sometimes die in the watercourse, contaminating the water downstream.

#### Range Improvement Projects

The presence of range improvement projects (RIPs), such as corrals, loading chutes, barbed wire fencing, developed springs (plumbing/metal ring tanks), historic range camps, and stock ponds can contribute to a decreased natural appearance and aesthetically pleasing recreation environment. Encountering range improvement projects is more likely to be an issue for backcountry recreationists seeking a primitive recreation experience, than for frontcountry recreationists who are oftentimes vehicle sight-seeing. On the other hand, some recreationists, especially those interested in western culture, could appreciate RIPs.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Barbed wire fences and gates can be particularly problematic for both range and recreation management. This is true for both frontcountry and backcountry settings. In frontcountry settings, there are many locations where barbed wire fences and gates intersect roads. Many of these barbed wire gates are difficult to open/close, especially for the inexperienced user. Opening/closing these gates requires pulling/stretching the gate across the road between two anchor posts. Securing the gate is accomplished by placing a loop, or wrap of wire, around one of the anchor posts while maintaining constant tension. Sometimes the effort can be quite challenging. The result is that some visitors are unable to open some gates and are forced to change their plans. At other times, they are able to open a gate but not able to close it. This is problematic for livestock operations as well as recreationists.

Much of the above explanation applies to backcountry settings as well. An example is a backcountry recreationists (hiker or equestrian), who while hiking or riding, encounters a barbed wire fence. Depending on the physical ability of the user, crossing barbed wire can prove to be a challenge, and in some cases, can even result in injury. Fencing restricts travel on horseback to gated routes. Some fences have been vandalized by users who sometimes resort to cutting several strands of wire or even an entire section of fence to accommodate easy passage. The same applies to difficult to open/close barbed wire gates, which are occasionally installed in the short sections of drift fence across desert canyons and washes. In many cases, the gates are simply left open by users which is problematic for livestock management.

#### Range Management Activity

Some recreational users enjoy observing range management activity, such as feeding, herding, or cattle roundups. These activities are an integral part of western culture and have been chronicled in or have provided a central role for Western films. For some (particularly foreign visitors), being able to observe this type of activity first-hand is a lifetime highlight. Much of this activity takes place in frontcountry settings and along backcountry transportation routes.

On the other hand, some recreationists do not appreciate range management activity when it intrudes into the backcountry setting. Many backcountry users actively seek out primitive recreation experiences in order to escape the sights, sounds, and activities of daily human commerce.

### **ALTERNATIVE A – NO ACTION**

#### **LIVESTOCK GRAZING**

There would be no change in the amount of livestock grazing use authorized as compared to current active use and no change in resource conditions. No allotments would be closed to livestock grazing. There would be no direct or indirect impacts to Livestock Grazing because there will be no change in current Livestock Grazing management.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Changes to existing management would be limited to those short-term adjustments commonly associated with on-going allotment administration such as requests for change of season of use, modification to pasture rotation use, voluntary non-use, transfers and temporary non-renewable use.

### *Rangeland Health Standards*

Nine allotments would continue to fail to meet Rangeland Health Standards: Collet, Death Hollow, Ford Well, Soda, Mollies Nipple, Rock Creek-Mudholes, School Section, Upper Paria, and Vermilion. With rangeland projects considered on a case-by-case basis and while specific localized management changes would be proposed in response to the results of the Standards evaluations, it is uncertain whether these lands would make progress towards meeting Standards. The determination that an allotment was not meeting Standards was made by addressing the overall condition of the allotment, not small, site specific, failures. Without corrective management actions, some additional allotments which were evaluated as meeting Standards, even though specific areas within them did not, would likely fail to meet Standards in future assessments.

Compliance with the BLM's range management regulations, which require a response by the next grazing seasons to Evaluations and Determinations that find Standards are not being met due to existing grazing management, would not occur.

### *Allotment Specific Consequences*

#### Circle Cliffs

Under the No Action Alternative no changes would be made to remedy the conflict between hikers and livestock. The season of use (Nov. 1-March 31) could still overlap the heavy use period for hikers (March 15-Nov.1). There would be no additional impacts to permittees on the Circle Cliffs Allotment.

#### Clark Bench

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. Trend would remain static to upward on the four monitored trend locations. The allotment has the potential to fail the riparian Standard at Calf Spring should the permittee decide to resume grazing at the allowed level of active use. Recommendations for future changes to prevent damage to Calf Spring would come through meetings with permittees and the BLM.

#### Collet

(Uplands and Riparian did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment should continue to fail to meet the Standards for both upland and riparian areas. Recommendations for future changes would come through meetings with permittees and the BLM.

#### Coyote

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment

## CHAPTER 4 ENVIRONMENTAL IMPACTS

should continue to fail to meet the Standards for upland areas. Failed seedings would eventually be restored, but as a low priority. Recommendations for future changes would come through meetings with permittees and the BLM.

Trend would remain downward on the winter use pastures, leaving an overall downward trend on the ten monitoring sites.

The allotment would continue to fail Standards on four of the seventeen Rangeland Health Indicator sites.

### Death Hollow

(Riparian did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. Until the springs are fenced and the road is altered from its current course through Wolverine Spring, this allotment should continue to fail to meet the Standards for riparian areas. With some cattle remaining into mid-May, and without additional fencing to keep cattle from high recreational use areas on the allotment, conflicts between livestock and recreational uses would continue in Little Death Hollow and on Wolverine Creek. Recommendations for future changes would come through meetings with permittees and the BLM.

Trend on this allotment is downward. However, it is drought, not livestock that is causing the decline in desirable species (see Appendix 1).

### Ford Well

(Riparian did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment should continue to fail to meet the Standard for riparian areas. Recommendations for future changes would come through meetings with permittees and the BLM.

### Soda

(Uplands and Riparian did not meet)

No major change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment should continue to fail to meet the Standards for riparian areas, but some improvement is expected toward reaching upland Standards. Recommendations for future changes would come through meetings with permittees and the BLM.

Currently trend is monitored at seven locations and appears to be static to slightly upward.

### King Bench

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates, or resource management from current conditions. No other range related issues are present since The Gulch is rated at PFC and all upland sites that pasture are meeting the standards.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Lake

No major change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. While recommendations for future changes would come through meetings with permittees, the BLM, and GCNRA.

Trend in this allotment is based on four photo plot sites. The allotment is static to slightly upward overall, and should continue upward.

### Last Chance

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, grazing dates or resource management from current conditions. Management changes must be done through individual environmental assessments and resulting decisions (such as fencing individual riparian areas that are impacted by livestock). Trend is down because of severe drought (loss of seeded species).

### Mollies Nipple

(Uplands and Riparian did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment should continue to fail to meet the Standards for both upland and riparian areas. Recommendations for future changes would come through meetings with permittees and the BLM.

Trend would continue to be downward under this alternative.

### Rock Creek-Mudholes

(Riparian did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions but would be reauthorized based upon the past permit. Removal of the wild cattle from this allotment has improved conditions and trend appears to be upward. Recommendations for future changes would come through meetings with permittees, the BLM, and GCNRA.

Trend within the allotment is monitored at seven different locations. Based on the most recent trend information, trend appears to be static to slightly upward. Under current management trend is expected to continue upward.

### School Section

(Uplands did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment failed to meet the Standards for upland areas. Recommendations for future changes would come through meetings with permittees and the BLM.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Under this alternative, the long-term trend would continue to decline in 352 acres of the old seeding. The other sites that make up the remainder of the vegetative site on the allotment would remain in a static to upward trend.

### Upper Paria

(Uplands and Riparian did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment may continue to fail Standards for upland and riparian areas under this alternative. Recommendations for future changes would come through meetings with permittees and the BLM.

Trend would remain static under this alternative.

### Vermilion

(Uplands and Riparian did not meet)

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions. The allotment may continue to fail Standards for both upland and riparian areas under this alternative. Recommendations for future changes would come through meetings with permittees and the BLM.

Trend on this allotment is static, and would continue static.

### Willow Gulch

No change is anticipated from this alternative, as there is no immediate change in grazing preference, dates or resource management from current conditions.

The Lower Calf Creek Falls Pasture would remain closed to grazing maintaining the 1964 decision.

Of the six upland sites rated, all six met Standards, while the one riparian reach rated as “Proper Functioning Condition”. It is expected that impacts from this alternative would not diminish the resource and it would continue to meet Standards in the future. Overall trend would be upward or static depending on the ecological site.

## VEGETATION

There will be no direct impacts to vegetation as a result of this alternative. Indirect impacts are described for each plant community below.

### *Aspen*

Under the No Action alternative, aspen stands would continue to regenerate, based on 2007 analysis.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### ***Evergreen forest***

Evergreen forest plant communities currently receive light use and minimal impacts from livestock grazing. These impacts would likely continue under the No Action alternative. Potential for indirect negative impacts may occur from increased livestock use as adjacent plant communities reach capacity and grazing is shifted onto Evergreen Forest communities.

### ***Oak woodland***

Impacts of the No Action alternative may include an eventual degradation in the health of this plant community or a potential site conversion to Pinyon-juniper woodland. These impacts would be the result of indirect impacts on adjacent plant communities. If range conditions continue to deteriorate under this alternative, grazing pressure in adjacent Sagebrush-grasslands and Pinyon-juniper woodlands may favor an increase in juniper recruitment. Juniper expansion from these communities may reach into Oak Woodland, particularly if competition is reduced from grazing pressure. Progress would not be made towards achieving DPC for Oak woodlands.

### ***Pinyon-juniper woodland***

Impacts on Pinyon-juniper communities would include continued degradation to understory vegetation that would result in a loss of grass and forb components and an increase in the amount of dead and decadent shrubs. In areas where late spring grazing regimes are present, replacement of cool season grasses with warm season grasses could continue. This plant community may also receive indirect impacts as a result of reduced forage in adjacent Sagebrush-grasslands. Pinyon-juniper woodlands typically experience light grazing but as resources are diminished in adjacent Sagebrush-grasslands, Pinyon-juniper woodlands could receive an increase in use and subsequent reductions in cover and desirable species. Progress would not be made towards achieving DPC for Pinyon-juniper woodlands.

### ***Ponderosa pine/Douglas-fir***

Under the No Action alternative, Ponderosa Pine/Douglas-fir communities would receive marginal impacts. Because this is a relatively uncommon community type with limited grazing pressure, no direct impacts are expected. Indirect impacts may occur if adjacent cover types reach carrying capacity and grazing pressure is shifted onto Ponderosa pine/Douglas-fir communities.

### ***Blackbrush***

Impacts on Blackbrush communities under the No Action alternative may include further degradation with respect to understory cover and shrub diversity. Other current impacts that would continue include exotic species invasion, replacement of cool season grasses with warm season grasses. Continued grazing pressure may cause an increase in blackbrush density and a reduction of understory species, making the community more susceptible to weed invasion. No provisions would be made for achieving DPC.

### ***Desert shrub***

Under the No Action alternative, Desert shrub communities would likely continue with currently observed trends towards increased cover of exotic species and shifts in species composition. Although the Desert shrub type contains many different assemblages of plant species with differing responses to grazing, some general impacts can be expected. Many of the impacts are

## CHAPTER 4 ENVIRONMENTAL IMPACTS

long-term in nature and include a decrease in overall shrub and grass cover (particularly of palatable species such as bud sagewort, fourwing saltbush, and winterfat). Many of the Desert shrub communities in the Monument are at a threshold state where continued impacts from grazing may cause a shift in biotic integrity from functioning to Non-Functioning. No progress would be made toward achieving DPC for this community type.

### *Grassland and Meadow*

The No Action alternative would primarily impact Grassland and Meadow communities that are functioning at risk or failing to meet Standards. Prolonged grazing without changes in management would continue current problems at these sites such as invasion of exotics, shifts in species composition, and increases in bare ground. Subject to elevation, climate, and soils, grasslands may be susceptible to conversion to mixed Desert shrub, Sagebrush, or Pinyon-juniper grasslands. Continued grazing pressure within these shrub-grasslands can result in a decrease in grass composition, or invasion by annual grass species. Disturbed grassland sites may become overtaken by cheatgrass, red brome, or other annual exotic grasses or forbs. As the results of the biotic indicators in the Rangeland Health Assessments show, these effects have been seen on the Monument. No progress would be made toward achieving DPC for Grassland and Meadow communities.

### *Mountain shrub*

Impacts associated with the No Action alternative to Mountain shrub communities are not expected to be substantial. Because of the relative scarcity of this cover type in the Monument, it does not receive much grazing pressure. All sites sampled for rangeland health were functioning normally and would likely continue to function normally unless indirect influences from adjacent plant communities occurred.

### *Sagebrush-grassland*

The No Action alternative would likely have the greatest impact to the Sagebrush-grassland community type. While Sagebrush-grasslands are composed of several different types of sagebrush, some general impacts associated with continued grazing can be noted. Continued levels of grazing may reduce the vigor and reproductive capability of edible shrubs (such as Fourwing saltbush) while favoring less palatable species like rubber rabbitbrush, big sagebrush, and broom snakeweed. A decrease in grasses may occur and this, coupled with an increase in shrubs, may facilitate pinyon and juniper invasion. This occurs through an increase in the cover of nurse shrubs necessary for woodland establishment. On some soil types and topographic positions, increased Pinyon and Juniper densities in Sagebrush-grasslands can result in decreased understory cover and species richness, and make these sites more vulnerable to soil loss from erosion (West and Young 2000).

### *Seedings*

Under the No Action alternative, seedings may continue to experience downward trends with only temporary closures following rehabilitation measures. Many of the seedings have experienced recent mortalities in seeded species, particularly with crested wheatgrass, and if not rested or rehabilitated may become dominated by exotic species. With the loss of forage species in seedings, grazing pressure may be increased on shrub species or on adjacent plant communities.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### ***Wetlands/Riparian***

Although a relatively small component of the Monument, riparian cover types would receive continued impacts under the No Action alternative. Many riparian areas would continue to have water developments inside the riparian zone which would continue to negatively impact vegetation through concentrated use and trampling. Erosion control measures would not be implemented where needed resulting in the draining of riparian areas and loss of wetland vegetation. Canyons would continue to receive concentrated use which would degrade riparian vegetation. Under this alternative no rest would be given to riparian vegetation in several pastures resulting in little improvement to riparian vegetation. With no improvements in native riparian communities, exotic species would remain and continue to spread. Densities of Russian olive and Tamarisk may reach uncontrollable levels in many reaches. Impacts described here would be both direct and indirect.

#### **THREATENED, ENDANGERED AND SENSITIVE PLANT SPECIES**

Many of the special status species found in the Monument are edaphic endemics that are restricted to sparsely vegetated sites with specialized soil or bedrock characteristics. These are often harsh sites that provide little forage for livestock and are frequently inaccessible because of steep slopes. Because of these habitat features, most special status plant species receive little to no impacts from livestock grazing. Potential does exist for indirect negative impacts as a result of habitat degradation from invasive weed species from adjacent habitats and loss of pollinators that rely on the health of the surrounding vegetation. Indirect impacts are the most likely influences on special status plant populations under the No action alternative.

Current threats to the Kodachrome bladderpod are mainly related to off-road vehicle use but trampling by livestock is a possibility. No provisions would be made for protecting this species under the No Action alternative. The population status would remain the same or potentially decline. Approximately 599 acres of habitat are occupied by the Kodachrome bladderpod in the Dry Valley, Upper Hackberry and Upper Paria allotments. The population size and condition would remain the same or decrease as a result of ongoing threats.

Ute ladies' tresses has a restricted distribution (King Bench Allotment, Deer Creek) in the planning area and is managed in a manner that generally encourages the growth of the species. Winter grazing benefits this species by removing competing plant cover. Approximately 49 acres of riparian habitat is occupied by Ute ladies' tresses. Under the No Action alternative, current grazing practices would continue, which would maintain the population at its' current levels.

Jone's cycladenia would remain unchanged. Several sites are known of this species within the planning area. The site occupies approximately 36 acres of steep, remote habitat in the Moody allotment that is inaccessible to livestock. No change to this population is anticipated under this alternative.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### RIPIARIAN AND WATER RESOURCES

#### *Watershed Health*

Grazing management would not be modified, except on a site-specific basis. Degraded hydrologic conditions in dominant plant communities would remain static or continue to degrade as vegetative and soils resources continue to be impacted by livestock grazing. Cover of shrubs, grasses, and litter would remain depressed, resulting in increased runoff. Plant communities with relatively high infiltration rates, such as aspen, oak woodlands, grasslands, and Sagebrush-grasslands, would be susceptible to conversion to communities with lower infiltration rates. Seedings would continue to deteriorate and would be vulnerable to high rates of runoff. Upland hydrologic conditions governing infiltration and runoff would not improve in the six allotments (for 473,323 acres or 21% of the planning area) not meeting Standard 1.

#### *Riparian Proper Functioning Condition*

Under this alternative, BLM's policies regarding riparian areas would still be carried out, therefore we would anticipate that riparian restoration would occur resulting in positive direct and indirect impacts to riparian communities.

#### *Water Quality*

Current trends in upland and riparian areas would continue, and some upland areas would continue to deliver runoff and sediment to streams. Because the primary sources of total dissolved solids (TDS) are marine shales ('badlands') that are naturally highly erosive and receive light grazing pressure, grazing would continue to have negligible or minor indirect or direct impacts on TDS and salinity.

Using tools contained in the Riparian Toolbox, offsite water and shutoff valves would reduce the magnitude and duration of dewatering which may reduce water temperatures in some spring-fed streams.

### SOILS

The soils resource would improve the least under Alternative A of any of the alternatives and the direct and indirect impacts as discussed below would continue. Livestock management would continue at the present authorized use levels with minimal, if any, changes to grazing permit terms and conditions. Currently closed areas would remain closed to livestock grazing, but no additional closures would be proposed. The current conditions on most allotments exhibit less vegetative diversity, particularly grasses and forbs, than would be expected for native rangelands. This contributes to a deficiency in the amount of litter and an increase in the percent of bare ground. A lack of litter increases overland flow exacerbating erosion. Authorized use at this level is not expected to result in the increased protective cover of residual vegetation and litter resulting in reduced areas of bare soil.

Soil health including micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, litter accumulation, organic matter, woody material accumulation most likely would not be enhanced.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Management activities would retain the existing emphasis on avoiding and/or mitigating detrimental compaction, wind and water erosion.

Existing and proposed uses would receive standard monitoring to detect any unacceptable soil erosion and compaction.

Soil disturbance would be minimized during management activities including vegetation management projects (i.e., mechanical harvest of Pinyon-juniper, seed bed preparation, and drilling seed), but no new measures would be instituted for soil protection. Surface disturbance that would cause loss of litter and the organic matter layer would be avoided on a site specific basis.

Under the “No Action Alternative” there would be no strategy for ensuring that eroding land rehabilitation would be a priority, with less of an emphasis on improving conditions in areas where there is a lack of ground cover, gullies, rills, and sheet erosion.

Current requirements do not necessitate that management ignited fire (prescribed fire) be low intensity fire that would only result in light soil heating, preventing undesirable chemical and physical alteration of the soil, including hydrophobic soils.

#### **NOXIOUS WEEDS AND NON-NATIVE PLANTS**

An indirect impact would occur because this alternative makes no major changes in grazing intensity or location, there will likely be a gradual increase in noxious and/or exotic species spread. This negative impact may rise to the level of significance if noxious weeds and non-native plant levels are not controlled.

Currently closed allotments would not experience any livestock dispersed increase in noxious and/or exotic species.

#### **WILDLIFE**

In this alternative, current livestock grazing practices and management strategies would continue. Direct and indirect impacts are described below for specific species.

##### ***Impacts on Migratory/Special Status Bird Species of Concern***

The utilization standards (either 50% or 60%) established in the Management Framework Plans would be continued. These standards would maintain cover and a seed source from grass and grasslike species. Continuation of existing management would maintain or benefit bird species populations which respond well to the current (human impact altered) plant communities. Bird species which have been negatively impacted by historical plant community changes will continue to experience those negative impacts.

Monitoring data has verified that several of the rangeland seedings within the planning area are failing rangeland health standards. Seeding restoration is ongoing, and would continue under this alternative, but as a low priority. The lack of surface cover would have a positive impact on

## CHAPTER 4 ENVIRONMENTAL IMPACTS

birds that prefer that habitat, but those which require cover would continue to avoid these areas. Birds which require structural diversity would continue to avoid seedings.

On allotments with repeated growing season grazing use, ground nesting birds and nests would be subject to potential livestock trampling. Many ground nesting birds are migratory.

Repeated growing season grazing within specific plant communities, such as aspen, would continue to have impacts. Recurrent growing season use results in the selective, repetitive removal of palatable plant species, with a resultant modification in the overall composition of the plant community, and in some cases, a loss of protective cover. Specific examples include; a reduced understory of forbs in Pinyon-juniper woodlands, a reduction of perennial grasses in Sagebrush-grassland communities, a lack of juvenile recruitment in Aspen stands, or a change in structure in Mountain shrub communities.

Most changes to community composition have already occurred, as a result of over a century of livestock use. Impacts are most notable, and best understood, within the two communities where grass is a dominant component, specifically the Sagebrush-grassland and Grassland Meadow communities (10% of planning area). On a regional scale, historical herbivory has been identified as having a negative impact on Sage grouse and Sage sparrow. There has been a loss of understory grass and forb cover at nesting sites, leading to an increased susceptibility to predation. These impacts would continue under this alternative.

Within the Pinyon-juniper community, changes in community structure may have had a negative impact on Virginia Warbler, Black-throated Grey Warbler and Grey Vireo, since these birds require open woodlands with a shrub understory. Many of these woodlands have become closed canopy and lack an understory. This alternative would not modify that condition. (It should be noted that fire regime changes and invasive annuals are additional causal factors within this community, and both have postulated ties with grazing.) The lack of structural variety has also assisted other species, specifically the Pinyon Jay, which prefers large contiguous stands of mature trees.

On June 28, 2007 the Bald Eagle was removed from the list of Threatened and Endangered species but will continue to be regulated by the National Bald Eagle Management Guidelines, The Bald and Golden Eagle Protection Act, and The Migratory Bird Treaty Act. Impacts to this species are minimal with some impacts being increased food source in the form of carrion from dead cattle and in the loss of some cover for ground dwelling prey species. Recruitment of potential roosting trees may be affected by grazing practices in riparian areas.

Under this alternative the recovery of some riparian areas may be suppressed due to growing season use by livestock. This would retard establishment of woody species, and would continue negative impacts on riparian dwelling bird species which need structural diversity, such as Blue Grosbeak or Common Yellowthroat. As with other impacts under this alternative, most of the change has already occurred.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### *Impacts on Bats*

Under this alternative there would be little to no change on bat roosting or foraging habitat in all habitats, or on water availability. Impacts on the overall composition of the plant community such as reduced understory of forbs and perennial grasses results in limited habitat for the insect prey community and the overall quality of bat foraging habitat. Suppressed recovery of riparian communities, a lack of juvenile recruitment in Aspen stands, and limited structure in Mountain shrub communities limit the availability of roosting habitat for riparian and tree-roosting bat species.

**Table 4-1 Summary of Impacts on Bats**

<b>HABITAT TYPE</b>	Non-riparian, Roosting	Non-riparian, Foraging	Riparian, Roosting	Riparian, Foraging	Open water, Foraging & Drinking
<b>BAT SPECIES</b>	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Western red bat	Western red bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat, Western red bat
<b>IMPACTS</b>	Little to no change in impacts on bat roosting habitat in cliff, cave, non-riparian tree and multiple habitats.	No change from existing impacts expected.	No change from existing impacts expected.	No change from existing impacts expected.	No change from existing impacts expected. Current water availability to bat species for drinking should remain unchanged.

### *Impacts on Game Species*

#### Desert Bighorn Sheep

Under this alternative, ninety three percent (1,512,509 acres) of suitable Desert Bighorn habitat would continue to be grazed under existing terms and conditions. Impacts on Bighorns would continue, in the form of competition for grass, and competition for water. The later is of concern since Bighorn sheep tend to avoid water sources when livestock are present. Seven percent of Bighorn habitat would continue to be unavailable for livestock use, and would have no potential for livestock related conflicts.

#### Mule Deer

No changes in impacts on Mule Deer are expected under this alternative. Mule deer compete with livestock for browse, especially during the winter season, and that competition would continue. Livestock prefer grasses and forbs, but during winter, when both lack nutritional value, will shift their consumption to woodier species. Improved livestock management, specifically actions which shift livestock use from the growing season to dormant seasons may have an impact by increasing livestock browse use.

#### Pronghorn

No change in impacts on pronghorn are anticipated under this alternative. All suitable pronghorn habitat would continue to be grazed by livestock under current management. Competition for forbs during the early growing season would continue.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Sage Grouse

Impacts on Sage grouse would remain unchanged under this alternative. Impacts on occupied habitat would remain unchanged under all alternatives. Sage grouse currently occupy habitat on Black Rock and Pine Point allotment, and both allotments meet existing utilization standards, show good trend, and meet Rangeland Health Standards.

Impact on historical, but unoccupied, habitat would continue. Those impacts are primarily on brood rearing habitat. Sage grouse brooding habitat normally consists of areas of dense cover (which reduces predation), and near riparian zones (which provides food in the form of forbs and insects). Where currently lacking, understory cover would not increase under this alternative. Riparian areas with low or lost functionality would continue to provide poor brood rearing habitat.

### ***Impacts on Fish and Aquatic Species***

Under this alternative grazing management would continue largely unchanged and there would be no provisions to prevent consecutive spring season of use by livestock in riparian or upland areas. Herbaceous utilization standards would remain at 50 to 60 percent of current year's growth. Utilization on woody riparian species would not be lowered to 40 percent of current year's leader growth. Riparian areas would continue to be subject to livestock grazing during spring and summer. These conditions could impact the long-term recovery and health of riparian habitats with resultant impacts on fish and aquatic species which depend on them.

### ***Impacts on Threatened and Endangered Wildlife Species***

#### Mexican Spotted Owl

Habitat conditions in Mexican Spotted Owl critical habitat would remain unchanged. The three grazing guidelines in the Recovery Plan are being followed, and would continue to be followed under this Alternative, with the proviso that few riparian restoration projects have been identified for implementation of the riparian recovery guideline. Currently nine percent of the Mexican Spotted Owl habitat within the planning area is not used by livestock, and that would be continued.

#### Southwestern Willow Flycatcher

No change in Southwestern Willow Flycatcher habitat would occur under this alternative. Currently forty seven percent of Southwestern Willow Flycatcher habitat is open to livestock grazing, and fifty three percent is closed. Livestock would have continued access to riparian areas on the Paria River segments of their habitat, so little willow (or other shrub sized species) recovery would occur. (The Escalante River portions of Southwestern Willow Flycatcher suitable habitat are closed to grazing, and would have no changes in impacts.) Cottonwood Allotment, which contains most of the suitable habitat identified in the Recovery Plan, is currently grazed during the growing season, which means that the selective reduction of preferential browse would continue, with a continued and gradual net loss of willows and other shrub and tree species within riparian areas. Since these flycatchers depend on a dense riparian habitat of shrubs and trees, there would be no improvement in Southwestern Willow Flycatcher habitat or numbers under this alternative.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Existing utilization standards for current year's growth of grasses and shrubs would be continued under this alternative. While these standards would not increase available habitat, they would prevent new damage to them in that livestock browsing on riparian shrubs would be terminated prior to reducing shrub mass. The existing utilization standards are higher than those proposed under Alternatives C through E within suitable habitat, so there would be less habitat protection under this alternative.

#### **Cultural Resources**

Cultural resources would be managed under existing guidelines, and without the proposed Cultural Resources Protocol (Appendix 3) under the no action alternative. Site specific impacts on cultural sites would be mitigated when identified, with individual protective measures designed for each locale. While no new grazing is anticipated under this alternative, and with no redistribution of grazing intensity, existing impacts on cultural sites from indirect impacts (such as erosion) would continue. Additional direct impacts (such as trampling or rubbing of structures) would continue, but no new or cumulative effects are anticipated, since this alternative continues an existing use at an existing level of use. Under this alternative no cultural resource specific, grazing-related monitoring and research program would be initiated, so this alternative offers less protection to cultural site than the action alternatives.

#### **Recreation**

Conflicts between recreational users and livestock would remain as they are for the short-term, and would likely worsen over the long-term, as recreational use increases while resource conditions decline under the no action alternative.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### ALTERNATIVE B

#### LIVESTOCK GRAZING

Implementing Alternative B would result in limited changes in authorized livestock grazing. No allotments would be closed to livestock grazing. Initially 76,507 AUMs would be authorized. The impacts would be both direct (short-term) or indirect (long-term) based upon the allotment descriptions found below.

Retention of the Phipps Pasture as a forage reserve would leave the status of the area unchanged.

Closure of the Antone Flat (currently unallotted) and Little Bowns Bench (currently a forage reserve) allotments and the Wolverine Pasture (currently a forage reserve) would have no impact as these areas are not used for livestock grazing and no AUMs are authorized within them.

For the remaining 73 allotments that meet Standards, changes to existing management would be minimal as they would be limited to those short-term adjustments commonly associated with on-going allotment administration such as requests for change of season of use, modification to pasture rotation use, voluntary non-use, transfers and temporary non-renewable use.

#### *Allotment Specific Consequences*

##### Circle Cliffs

Under this alternative livestock would be prevented from using the Upper Gulch Pasture of the Circle Cliffs Allotment after March 15. This would alleviate much of the conflict in the Upper Gulch. It would, however, require a change in management of the rest of the allotment. Cutting short the period of time that the Upper Gulch Pasture could be used would require changes to stocking rates and rotational schedules for the rest of the allotment. The changes resulting from altering the Upper Gulch Pasture may impact the permittees ability to properly use the rest of the allotment, since it would require the 15 days in the Upper Gulch Pasture to be made up in some other pasture of the allotment. This issue, compounded with the failed reseedings and increased elk use, may require future changes to stocking rates. A thorough allotment evaluation, which involves production measurements, may need to be completed. If an evaluation is necessary, and if changes to stocking rate are deemed necessary, reductions to stocking rates may be swallowed up in relinquishments on allotments nearby, should there be any offered.

##### Clark Bench

Livestock numbers would increase, but the season of use would be shortened by 30 days in the spring, resulting in no change to AUMs. Shortening the season of use by one month would improve the long-term trend on all four trends studies by increasing the number and percent cover of perennial grasses in each of the studies. The trend would improve because the perennials would be able to set seed every year as long as there is sufficient soil moisture remaining once livestock are removed from the allotment. The shortened season of use would allow for improved riparian stability on the dike at the Calf Spring impoundment as a result of enhanced vegetative cover. This would also move the functioning rating towards Proper Functioning Condition.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Establishing the Dive Pasture would reduce the utilization in the heavier used areas in Clark Bench because cattle would not be staying in the Clark Bench Pasture the entire season. The new pasture would improve cattle distribution especially in the new pasture by keeping the cattle in Dive longer than under current management.

### Collet

(Uplands and Riparian did not meet)

Under this alternative rangeland conditions would be improved as compared to the “no action” alternative. While livestock numbers would not change, distribution would change due to fencing, water developments, and restoration projects. The exclusion of livestock from Right Hand Collet Canyon would help restore the riparian areas there through rest, but would result in a modified livestock rotation, since only two pastures would then be available for grazing. The spring rest requirement (GRAZ-2), along with the revised rotation would increase the upland rating for the allotment. Further improvement would result after the installation of a gap fence to create three pastures. Since the installation of these gap and exclusion fences is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental impacts assessment, funding, and construction of these projects recognition of on the ground gains would be slow. Once in place, riparian and upland areas would progress toward meeting Standards with a net increase in desirable species, litter, and soil retention; however, exotic and undesirable species would continue to be present.

### Coyote

Under this alternative there would be no permanent AUM reduction, temporary non-use of 588 AUMs would be effective during restoration. Restoration activities would address the problems on Sand Gulch and Five Mile Pastures by increasing the percent cover and reducing the amount of overland flows within the old seedings. This would result in reduced soil erosion and more forage production in these two pastures. Long-term trend in these pastures would improve through increased number and density of perennial grasses once the new seeded plant species become established. The trend in the winter pastures would remain downward until recovery from the effects of the drought has been realized.

Permittees would be impacted by not being able to use 588 AUMs while these pastures are rested resulting in a short-term, significant, negative impact. In the long-term there would be a positive impact because there would be more forage available than is currently available. Currently the pastures receive infrequent use. After restoration is completed permittees would be able to use them at least once a year under a pasture rotation, which would also reduce grazing pressure on the pastures within the allotment which do not require restoration.

### Death Hollow

(Riparian did not meet)

Livestock numbers would increase, but the season of use would be shortened by six weeks in the spring, resulting in no change to AUMs. Under this alternative cattle-recreational user conflicts would be diminished as compared to the “no action” alternative since cattle use would end on March 31 instead of the May 15. This alternative would not change livestock active preference. In order to achieve riparian Proper Functioning Condition, shared water exclosures would be constructed to allow for better protection of riparian resources, spring fences would be

## CHAPTER 4 ENVIRONMENTAL IMPACTS

developed. It is anticipated that this would reduce erosion and increase desirable vegetative cover, community, and litter throughout the allotment. Since the installation of structural improvements, such as fences, is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan.

Currently grazing is authorized from November 1<sup>st</sup> through May 15th. Grazing would end approximately six weeks sooner, the off date being March 31<sup>st</sup>, which would reduce grazing pressure on perennial grasses during the early growing season. The rest would also assist in the recovery of riparian areas which are not proposed for enclosures.

### Ford Well

(Riparian did not meet)

The authorized active use on the allotment would remain the same as in Alternative A. Ford Well and Old Corral Springs are located on the allotment and was rated as “Functioning At Risk”, which led to the allotment failing to meet Standards. This alternative would propose the reconstruction of a structural range improvement in order to achieve PFC and to meet the Standards. Spring protection fences would be constructed or improved, which would allow the riparian area to enlarge to its potential, reduce the hoof action and trailing of cattle in the riparian area, reduce cattle use on and improve the riparian vegetation composition, age class distribution, vigor, and percent cover.

### Soda

(Uplands and Riparian did not meet)

Under this alternative rangeland conditions would be improved as compared to the “no action” alternative. While livestock numbers would not change, distribution would change due to fencing, water developments, and restoration projects. Once in place, riparian and upland areas would progress toward meeting standards. Combining Fortymile Ridge Allotment and Soda Allotment would still be considered, as would the development of a revised rotation strategy to incorporate the pastures gained from Soda Allotment.

Water developments would be constructed to allow for better protection of riparian and upland resources. It is anticipated that this would reduce erosion and increase desirable vegetative cover, community, and litter throughout the allotment. Riparian areas which do not meet Standards should improve with a net increase in desirable species, litter, and soil retention, however, exotic and undesirable species would continue to be present. Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental assessment, funding, and construction of these projects, recognition of on the ground gains would be slow.

Long-term trend would continue to be static to slightly upward.

### King Bench

No change in impacts is anticipated from this alternative, as there is no immediate change in grazing preference, dates, or resource management from current conditions. No other range related issues are present since The Gulch is rated at PFC, and most upland sites in that pasture are meeting the standards.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Lake

This alternative would not change livestock numbers, but livestock distribution and use periods would change. Fences would be constructed to protect springs and reaches allowing for better protection of riparian resources. Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental assessment, funding, and construction of these project, on the ground gains would be slow, but once in place, riparian areas would progress toward PFC with a net increase in desirable species, litter, and soil retention.

Trend in the Lake Allotment is based on four photo plot sites. The allotment is static to slightly upward overall, and with the changes in livestock distribution and structural range improvements, trend should continue upward.

### Last Chance

Impacts would be the same as analyzed in Alternative A

### Mollies Nipple

(Uplands and Riparian did not meet)

The authorized active use would remain at 3,862 AUMs in this Alternative. This is the same as in the No Action Alternative.

The permitted season of use would remain 12 months with approximately 30 days being spent on private ground at Nipple Ranch and deferring use on the transition pastures by using two in the fall and two in the spring and alternating the sequence on a yearly basis. This would allow rest during the growing season for both warm and cool season forage species. This would change how the livestock operator rotates his cattle through the different pastures on the allotment. Two of the five transition pastures, Jenny Clay, Blue Spring, Telegraph, Mine Spring and Rockhouse Pastures would be rested every year during the growing season April and May, and two would be used in the fall approximately October and November.

The change in the season of use would benefit the cool season grasses by providing these plants periodic rest during the critical growing period which occurs during the months of April and May. This change would also improve the vigor of the perennial grass species. The grass species, especially the cool season grasses, would increase in number and percent cover as a result of this change.

Restoration of the old seedings and the areas of sagebrush die off in the Rockhouse and Mine Spring Pastures would increase the amount of forage for livestock as compared to what is currently available in these degraded areas. Restoration activities, once successfully completed, would restore the number and percent cover of cool season grasses. Resting the pastures where restoration actions are implemented would impact the pasture rotation for a minimum of two and possibly up to five years. The length of the rest period would depend on when the new seedings meet restoration objectives.

The combination of season of use change and restoration work would allow the allotment to start making progress toward meeting Standards. The combination of both actions would increase the

## CHAPTER 4 ENVIRONMENTAL IMPACTS

number and percent cover of perennial grasses, increase ground cover, reduce overland flow by water, and reduce plant mortality. Restoration would not immediately increase biological crusts.

The trend would improve first due to the deferred rest these pasture would receive during the critical growing period for grass species and secondly due to restoration activities in the Rockhouse, Mine Spring, Blue Spring, Jenny Clay and Telegraph Pastures, which would increase the number and percent cover of perennial grass species in these pastures.

Spring protection fences or redesigning of the water developments would increase the percent cover of the riparian vegetation, improve vigor, diversify age-classes and reduce or eliminate altogether, hoof action and trailing of livestock. Once the protection fences are constructed cattle would not be a contributing factor to not meeting standards.

The proposed Buckskin Gulch fence would eliminate the recreational/livestock conflict in lower Buckskin Gulch. There would be no decrease in active use from the construction of the fence. Restricting livestock use in Buckskin Gulch would assist in moving this area towards meeting Standards.

Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental assessment, funding, and construction of this project, on the ground gains would be slow.

### Rock Creek-Mudholes

(Riparian did not meet)

There would be no change in active use, grazing would be reauthorized at current levels. Fencing and restoration of riparian sites would be a priority. It is anticipated that this would reduce erosion and increase desirable vegetative cover, community, and litter throughout the allotment. This would be verified by monitoring. Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Once in place, riparian areas would progress toward PFC, however exotic and undesirable species would continue to be present.

Trend within the allotment will improve under this alternative.

### School Section

(Uplands did not meet)

Under this alternative rangeland conditions would be improved as compared to the “no action” alternative. While livestock active use, number of livestock or season of use would not change, Rangeland Health would improve upon completion of the seeding restoration activities planned for in this alternative. Restoration activities would be completed as funding becomes available. Considering the amount of time required for the environmental assessment, funding, and implementation of the restoration activities on the ground gains would be slow until the activities are completed. Upon completion of the restoration activities there would be a decrease in undesirable species such as Russian thistle, cheatgrass and other annuals and increase of perennial grasses.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

The long-term trend would improve upon completion of restoration activities especially in the 352 acres of the old seeding. The other sites that make up the remainder of the vegetative site on the allotment would remain in a static to upward trend.

### Upper Paria

(Uplands and Riparian did not meet)

Under this alternative rangeland conditions would be improved as compared to the “no action” alternative, which would result from temporary reduction of cattle numbers, temporary changes in season of use, and adaptable rotation strategies. An active Grazing Association oversees this allotment and one of the impacts from this alternative would be the nurturing of trust and a working relationship between the BLM and grazing permit holders. This grazing association has demonstrated a willingness to work with the BLM for the protection and enhancement of resources in the past and it would be beneficial to both parties and the resource to continue this relationship.

Rehabilitation actions would result in an increase in hydrological function and desirable species. As resource goals are met, the grazing levels would be restored in direct relationship to sustainable levels of available forage. Once a balance is achieved, proper stocking rates would be identified on a more permanent basis that satisfies both resource objectives and the economic sustainability of the permittees. Restoration and revised livestock management, combined with continued involvement of grazing association members in adjusting annual stocking rates and utilization levels for the allotment/pastures would achieve satisfactory progress toward meeting Standards during the life of this plan. The other upland sites that are not located in seedings would also benefit from this course of action as the amount of cattle on the ground during the grazing season would relate directly to available forage on a yearly basis. This would greatly reduce overuse of desirable species while giving perennial grasses a chance to produce seed, build, and store the necessary carbohydrates for plant survival and production reserves. Increased litter would aid in dispersing overland flow and decrease erosion in areas determined to have poor hydrological function.

Riparian sites impacted by grazing would also show improvement under the above course of action. However, the major factor behind three reaches of Willis Creek, one reach of Henrieville Creek and one reach of Little Creek ranking as “Non-Functional” were diversions and ditches, and these areas would most likely not reach PFC since these impacts are beyond the authority of BLM to control. Private water use also impacted several riparian sites rated “Functioning At Risk” such as Willis Creek, Heward Canyon, and Sheep Creek; however through a combination of structural improvements and management methods discussed above stream bank vegetative cover, plant vigor, and stream morphology would improve under this alternative.

Overall trend would be upward or static depending on the ecological site. Mid and late seral species would most likely increase, represented by recruitment of perennial cool-season grasses in upland sites.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### *Vermilion*

(Uplands and Riparian did not meet)

The active use on the allotment would remain at 2,849 AUMs. The season of use would be changed approximately April 15<sup>th</sup> through May 20<sup>th</sup> and then from June 1<sup>st</sup> through February 28<sup>th</sup>.

Changing the season of use so that cattle are not authorized during the active growing period for grass species would have a beneficial impact to the cool season grasses, especially in the seedings located in Fossil Wash, Seaman Wash, Government Reservoir and the three RCA Pastures. The cool season grasses in these pastures would be allowed to set seed every year in each of the pastures instead of being grazed every year in some pastures and other every other year in others.

Restoration activities proposed for this alternative would address the Rangeland Indicators that were not met on the allotment. The soil erosion problem would be corrected with the seeding of perennial grasses and the initiation of erosion control structures and activities. These actions would reduce the gulying and rills formation, overland water flow, infiltration, and bare ground, while increasing perennial grass cover and correcting low annual production, litter and reproductive potential. Restoration activities would improve Rangeland Health by allowing the water retention to increase, resulting in an increase in the ground cover percentage by perennial grasses. Erosion control activities would slow the flow of water across the landscape decreasing soil loss. The pastures would not be closed until restoration is funded, and would continue to fail the soil and biotic Standard until restoration work is approved.

Restoration activities would impact the livestock operator in that after reseeding, pastures would not be available for grazing for a minimum of two years and possibly more. This closure would require a change in pasture rotation while the season of use for the allotment would be shortened until all of the restoration objectives are met for the restoration efforts.

Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental assessment, funding, and construction of these project, on the ground gains would be slow.

Growing season rest would result in a slightly upward trend.

### *Willow Gulch*

Same as Alternative A.

## VEGETATION

There will be no direct impacts to vegetation as a result of this alternative. Indirect impacts are described for each plant community below.

### *Aspen*

Under Alternative B, aspen stands would continue to regenerate, based on 2007 analysis and slowly progress towards DPC standards.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### ***Evergreen forest***

Evergreen forest plant communities currently receive light use and minimal impacts from livestock grazing. These impacts would likely continue under Alternative B. Potential for indirect impacts may occur as adjacent plant communities reach capacity and grazing is shifted onto Evergreen forest communities.

#### ***Oak woodland***

Changes in distribution as a result of range developments and growing season rests would assist this community in reaching DPC parameters. Many of the Oak woodland communities in the Monument are functioning and would continue to function under this alternative with improvements in overall health occurring over time. Oak woodlands would receive a lower priority for monitoring under this alternative and changes in community structure or invasion by juniper may go undetected.

#### ***Pinyon-juniper woodland***

Impacts on Pinyon-juniper woodlands would include slight to moderate improvements in understory species cover and diversity. With no changes in stocking rates, these improvements would likely occur slowly, with incremental changes over time. Progress would be made towards achieving DPC for this community. The specific criteria outlined in the DPC for Pinyon-juniper woodlands would create higher priorities for restoration activities in this cover type. A more diverse age structure and greater diversity of understory species would be achieved and maintained over time with this alternative. The timeframe for achieving results would not be accelerated but gradual improvements would occur over time.

#### ***Ponderosa pine/Douglas-fir***

Under Alternative B, Ponderosa Pine/Douglas-fir communities would receive marginal impacts. Because this is a relatively uncommon community type with limited grazing pressure, no substantial impacts are expected. Slight improvements to community health may occur as a result of growing season rest requirements implemented in the “Management common to all” measures. Indirect impacts may occur if adjacent cover types reach carrying capacity and grazing pressure is shifted onto Ponderosa pine/Douglas-fir communities. This cover type would likely receive a lower priority for monitoring and shifts in community composition may go undetected.

#### ***Blackbrush***

Under Alternative B, Blackbrush communities would experience gradual improvements to community health and may slowly progress towards achieving DPC. Blackbrush communities are not particularly resilient and improvements to vegetation cover and diversity may be slow at best under this alternative. Growing season rest would allow some of the native species to recover but complete recovery and reaching DPC objectives may not be possible without more substantial modifications to livestock management. Sites that were determined to have a moderate departure from the reference area have the best chance to show improvements to soil erosion, and species composition. Shifts in composition from cool season grasses to warm season grasses may be irretrievable without season use modifications. Sites that are not functioning would be prioritized for monitoring under this alternative but overall improvements in this plant community are expected to be slow.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### ***Desert shrub***

Under Alternative B, desert shrub communities would show some gradual improvements in overall vegetation cover and biological soil crust cover. Changes in species composition may be longer term in nature under this alternative. These communities would not likely be prioritized for restoration under this alternative and would not likely receive the inputs necessary to cause a shift in species composition. Progress towards DPC would be gradual. Soil loss and erosion have been identified as impacts on this community and changes in distribution and growing season rest would result in improvements over time to these factors which would be a positive impact. Desert shrub communities often occur in dry low elevation sites, often with saline soils, and as such are naturally slower to recover from disturbance than other communities. With this alternative, changes would also occur slowly because most of the desert shrub communities would not receive high priority for monitoring. As a result, sites that are at a threshold state may not receive corrective measures soon enough to adjust management.

#### ***Grassland and Meadow***

Grassland and Meadow communities would benefit from the improved distribution and growing season rest measures associated with Alternative B. Improvements to this community would include a long-term increase in total vegetation cover and subsequent decrease in the amount of bare ground. Reduced surface resistance to erosion is a concern in some grassland sites and growing season rest would allow increases in vegetation cover and litter to improve these conditions. Under this alternative, changes in species composition (increased diversity and frequency of desirable and appropriate species) may not be detectable for many years unless the community is prioritized for more substantial changes in management or restoration.

#### ***Mountain shrub***

Impacts associated with Alternative B to Mountain shrub communities are not expected to be substantial. Because of the relative scarcity of this cover type in the Monument, it does not receive much grazing pressure. All sites sampled for rangeland health were functioning normally and would likely continue to function normally unless indirect influences from adjacent plant communities occurred.

#### ***Sagebrush-grassland***

Alternative B would bring improved conditions to a large number of acres of Sagebrush-grassland. As with other community types, the changes would be gradual with initial increases in total vegetation cover and decreases in bare ground. Longer term changes may be expected for shifts in species composition and overall diversity. The competitiveness of native grasses against invaders such as cheatgrass may be increased slightly with changes associated with range improvements. Sagebrush-grassland sites would receive higher prioritization for monitoring under this alternative which may generate restoration plans or more substantial changes to management in order to reach DPC. Livestock management changes under this alternative would not prevent or control the spread of juniper in Sagebrush-grasslands but monitoring may identify areas to prioritize for treatment. Specific seral stage percentages outlined in the DPC would not be achieved in a timely fashion with grazing season rest and changes in distribution as the sole measures for improving community health.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### ***Seedings***

Under Alternative B, seedings that do not meet standards or have experienced plant mortalities would continue to be grazed until restoration activities are initiated. While this may provide some measure of weed control, soil conditions would continue to deteriorate which would ultimately reduce chances for successful restoration. Important post restoration provisions for achieving success criteria, adjusting stocking rates to reflect forage available, and generating a general management plan are not provided under this alternative. Restored seedings would therefore have limited chances for long-term persistence under this alternative. Seedings would make slow progress toward achieving and maintaining DPC.

#### ***Wetlands/Riparian***

The proposed fences around riparian areas and improvements to water developments would result in immediate increases in the total vegetation cover with subsequent increases in the amount of litter, diversification of age classes of woody species, and potential expansion of riparian zones to match site potential. Changes in species composition and structure for herbaceous species may be observed in the short-term with more moderate to longer term changes to woody species composition. Where they exist, exotic species such as tamarisk and Russian olive would continue to be strong competitors with native tree and shrub species without proactive management and control of these plants.

#### **THREATENED, ENDANGERED AND SENSITIVE PLANT SPECIES**

Many of the special status species found in the Monument are edaphic endemics that are restricted to sparsely vegetated sites with specialized soil or bedrock characteristics. These are often harsh sites that provide little forage for livestock and are frequently inaccessible because of steep slopes. Because of these habitat features, most special status plant species receive little to no direct impacts from livestock grazing. Potential does exist for negative, indirect impacts as a result of habitat degradation from invasive weed species from adjacent habitats and loss of pollinators that rely on the health of the surrounding vegetation.

Under this alternative, a positive impact would occur as a result of improved habitat conditions associated with rangeland improvements may ensure the health of adjacent special status plant populations over the long-term. Indirect impacts are the most likely influences on special status plant populations under Alternative B.

Threats to Kodachrome bladderpod are mainly related to off-road vehicle use but trampling by livestock is a possibility. Impacts on Kodachrome bladderpod would be reduced as a result of the language in VEG-5 (Chapter 2) which prevents trampling through placement of salt blocks, supplements, and water away from Kodachrome bladderpod populations. This species occupies approximately 600 acres within the Dry Valley, Upper Hackberry, and Upper Paria allotments. Under this alternative, roughly 585 acres of the occupied habitat (98% of population) would remain unchanged and approximately 14 acres of habitat (2% of population) would experience improvements as a result of changes in grazing management (timing of use). Under this alternative, Kodachrome bladderpod populations would remain the same or show improvements in size and extent.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Ute ladies' tresses have a restricted distribution (King Bench Allotment, Deer Creek) in the planning area and are managed in a manner that generally encourages the growth of the species. Winter grazing benefits this species by removing competing plant cover. Approximately 49 acres of riparian habitat is occupied by Ute ladies' tresses. Under Alternative B, current grazing practices would continue where this population is located, which would maintain the population at its' current levels.

Under Alternative B, Jone's cycladenia would remain unchanged. Several sites are known of this species within the planning area. The site occupies approximately 36 acres of steep, remote habitat in the Moody allotment that is inaccessible to livestock. No change to this population is anticipated under this alternative.

#### **RIPARIAN AND WATER RESOURCES**

##### ***Watershed Health***

The net effect of the proposed grazing management changes in allotments not meeting the Riparian and/or Upland Standards would be a slight to moderate reduction in the severity of impacts on upland hydrologic processes. Slight to moderate improvements in understory cover would occur in dominant vegetation types, causing commensurate reductions in runoff. These impacts would occur slowly, since grazing would continue in degraded allotments and there would be minimal net reductions in use, although the initiation of growing season rest would cause some immediate improvements. Continued grazing pressure would cause already degraded seedings to deteriorate further and be vulnerable to high rates of runoff. Monitoring may not be adequate to identify and respond to changes in plant communities that are undergoing conversion to less hydrologically desirable communities or are reaching threshold states. The design and location of restoration projects would likely focus on habitat improvement, and any watershed benefits would be coincidental.

In the long-term, upland hydrologic conditions governing infiltration and runoff would improve slightly too moderately in the six allotments (473,323 acres or 21% of the planning area) not meeting Standard 1. Excessive runoff from uplands would continue in the short-term, and to a lesser degree, in the long-term.

##### ***Riparian Proper Functioning Condition***

The Riparian Toolbox would be implemented on a site specific basis at riparian areas that are not attaining or trending towards Proper Functioning Condition. Emphasis would be placed on reducing livestock impacts on riparian areas through the use of range improvements, such as enclosure fences and off-stream water developments. Active erosion control and treatment of invasive exotic species would occur, but not on a widespread or systematic basis.

Riparian systems on all allotments would benefit from the initiation of growing season rest every other year. Bank stability would increase as a result of less frequent trampling and increased vegetation cover, and sediment delivery from adjacent uplands to stream channels would decrease as a result of enhanced sediment capture by vegetation.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Retrofitting existing water developments to reduce dewatering would increase the extent, diversity, and vigor of native riparian plants in the short-term, and would improve stream channel conditions in the long-term (via increased bank stability and large wood recruitment).

Management changes in allotments failing Upland Standards would cause slight benefits in riparian areas, as five of the six allotments failing Standards 1 and/or 3 also fail Standard 2. Long-term reductions in runoff from uplands would cause reduced rates of headcutting and channel widening, thereby allowing for maintenance and establishment of riparian communities. Depending on how rotations are scheduled and season of use is changed, utilization of herbaceous and woody riparian vegetation could be either decreased or increased. Riparian areas in functioning condition are more likely to respond positively to rest-rotation grazing, whereas the condition of areas that are functioning-at-risk or non-functional may remain static, slightly improve, or degrade.

Under this alternative (as well as Alternatives C, D, and E) maintenance of new and existing riparian fences would be critical to meeting riparian objectives. When constructed and maintained, these fences would reduce herbivory and trampling (the most common causes of riparian degradation in lentic systems), and would also slow the rate of headcut development and migration.

Riparian areas in allotments where temporary or permanent changes in grazing management are to be implemented immediately (Collet, Mollies Nipple, and Vermilion) would begin improving quickly, although installation of fences would be required to ensure sustained long-term recovery. Management changes in allotments failing only the riparian Standard would improve riparian areas incrementally over the life of the plan, since the fences emphasized in this alternative would only be constructed as funding allows.

Erosion control projects would avert reductions in the extent or functionality of a limited number of riparian areas. The benefits of these projects would be greatest in functioning-at-risk systems where fences are repaired or installed to control grazing and trampling.

Riparian vegetation treatments to remove invasive exotics would occur on a limited basis. If successful, these treatments would increase recruitment of willow and cottonwood. They would thereby maintain or restore important ecological (e.g., habitat) and physical (e.g., large wood recruitment and bank stability) functions.

### ***Water Quality***

In the short-term, areas vulnerable to erosion would continue to receive livestock use, however because of management changes runoff and erosion from degraded allotments would be reduced. Because the primary sources of total dissolved solids (TDS) are marine shales (“badlands”) that are naturally highly erosive and receive light grazing pressure, grazing would continue to have a negligible or minor impact on TDS and salinity. Limited implementation of erosion control projects could be used in streams and meadows to reduce the downstream transport of saline soils derived from eroding uplands.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Livestock use around springs would be reduced as a result of range improvements and growing season rest.

Reducing the magnitude and duration of dewatering would improve water temperatures in some spring-fed streams. Livestock grazing would continue to affect woody riparian species that provide stream shading, although impacts would be reduced relative to current conditions as a result of repair and installation of fences. Changes in season of use could affect stream shading. Channel incision and widening (and attendant increases in solar radiation inputs and water temperature) would continue, although recovery of riparian vegetation, as well as a limited program of erosion control, would allow channels to stabilize over time.

#### **SOILS**

The goal of this alternative is to make progress towards Standards using current range management techniques, with minimal stocking adjustments. Grazing management would be modified only as necessary to begin the process of making progress towards meeting Standards in areas not now meeting Standards and to meet the goals and objectives of the land use plan. The current conditions on most allotments exhibit less vegetative diversity, particularly grasses and forbs, than would be expected for native rangelands. This contributes to a deficiency in the amount of litter and an increase in the percent of bare ground. A lack of litter increases overland flow exacerbating erosion. The undefined time frame towards achieving Standards in this alternative makes it the least favorable, with exception of Alternative A, for the improvement and maintenance of the soils resource.

Management would encourage the growth of species with high root production and a mix of species with different rooting depths and patterns increasing micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, erosion prevention, organic matter, and resilience to compaction. Management would maintain near-surface roots, plant litter, and vegetation to reduce the susceptibility of soils to compaction by helping to cushion impacts.

Soil health including micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, litter accumulation, organic matter, woody material accumulation would be maintained.

Management activities would avoid and/or mitigate detrimental compaction, wind and water erosion. Existing and proposed uses would be constantly monitored to detect any unacceptable soil erosion and compaction.

Soil disturbance would be minimized during management activities including rangeland improvement projects (i.e. mechanical harvest of Pinyon-juniper, seed bed preparation, and drilling seed). When possible, only designated trails and roads would be used. Surface disturbance that would cause loss of litter and the organic matter layer would be avoided. Where appropriate, eroding land would be rehabilitated with an emphasis on improving conditions in areas where there is a lack of ground cover, gullies, rills, and sheet erosion.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### NOXIOUS WEEDS AND NON-NATIVE PLANTS

Since this alternative makes no major changes in grazing intensity or location, there will likely be a gradual increase in Noxious and/or invasive species spread. This negative impact may rise to the level of significance if noxious weeds and non-native plant levels are not controlled.

Successful restoration and vegetation treatment projects aimed at improving vegetation health and cover would result in a decrease in noxious and invasive plant species. Soil disturbance due to fence building and pipeline extension has potential to increase weed spread but, the improvements would result in localized impacts. Replacing water catchments won't create new disturbances but, will evenly disperse livestock which will likely increase the distribution of Noxious and/or invasive species. Rest and an improved rotation would reduce Noxious and/or invasive plant species dispersal by livestock. The overall result would be a positive, indirect impact.

### WILDLIFE

In this alternative, limited changes to livestock grazing practices and management strategies would occur. Direct and indirect impacts are described below for specific species.

#### *Impacts on Migratory/Special Status Bird Species of Concern*

This alternative would correct problems identified by monitoring through active livestock management. Emphasis would be placed on improving distribution and timing of livestock use, along with the construction of range improvements necessary to provide better control and distribution.

Seeding restoration (0.25% of planning area) would be a high priority. With the proposed plan level requirements for species selection in restoration (VM-9 through 12), the restored seedings would have a greater diversity of plant types and species, and would include native species. This change would have a positive impact on birds, since the failed seedings usually consist of monotypic stands of introduced grass species. Restoration would result in greater plant variety and an increase in habitat diversity, with a positive impact on grassland dependent bird species; especially in locations which currently have little surface cover as a result of seeding failure. There would be an increase in desirable habitat for ground nesting migratory birds which require nesting or protective cover. The small number of bird species which require exposed ground, such as horned larks or killdeer, would be impacted by restoration actions.

Season of use changes, growing season rest (GRAZ-2) and improved livestock distribution from fences and revised pasture rotations, would result in changes in vegetative composition. Livestock engage in selective herbivory, and improved management would change vegetative composition through the recovery of species which are selectively grazed or browsed. This recovery would increase habitat niches for bird species, and would reduce the impacts of grazing on those bird species which have been negatively impacted by past grazing practices. The rate of recovery would vary by vegetation type, with rapid response in forb or grass dominated types (especially in early seral vegetation dominated by annuals), and less response in late seral types such as Blackbrush or Pinyon-juniper.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Upland areas which have experienced a loss of biological diversity or loss of soil productivity would show little or no recovery. Some sagebrush-grasslands, and many pinyon-juniper woodlands fall into this category. Other plant communities, such as blackbrush, which have been invaded by annuals, would also see little change under this alternative. In both cases, bird species numbers and diversity would remain low.

Growing season rest would reduce trampling impacts on migratory ground nesting birds, since the growing season overlaps the nesting season.

Range improvements which protect riparian areas, either through exclusion or by redirecting livestock, would improve the structure and density of riparian vegetation, and benefit riparian dependent species. The net increase in water availability from new range improvements would also have a positive impact on bird species.

**Table 4-2 Impacts on Birds by Habitat Type**

Habitat Type (% land)	Bird Species	Impacts
<ul style="list-style-type: none"> <li>● Aspen (0.02 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Williamson's sapsucker</li> </ul>	Growing season rest, along with new rotation, would aid the reproduction and regeneration of these stands by reducing the grazing of aspen sprouts and seedlings.
<ul style="list-style-type: none"> <li>● Pinyon-Juniper (41.7 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black-throated gray warbler</li> <li>● Gray vireo</li> <li>● Pinyon jay</li> <li>● Virginia's warbler</li> </ul>	Pinyon-Juniper habitats in unsatisfactory condition would likely remain so with slight improvement. Food sources (seeds and insects) for birds would remain diminished as a result.
<ul style="list-style-type: none"> <li>● Ponderosa Pine-Douglas Fir (1.1 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Flammulated owl</li> <li>● Grace's warbler</li> <li>● Lewis's woodpecker</li> <li>● Northern goshawk</li> </ul>	Current impacts from season of use and grazing intensity would continue.
<ul style="list-style-type: none"> <li>● Desert Shrub (7.20 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Brewer's sparrow</li> <li>● Sage sparrow</li> <li>● Sage grouse</li> </ul>	Habitats that are failing Standards would show improvement over 20 years. Degraded sagebrush areas would not be recovered, but the recovery of some grasses and forbs is expected in Sagebrush-grasslands.
<ul style="list-style-type: none"> <li>● Grassland &amp; Meadow (1.7 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black rosy-finch</li> <li>● Burrowing owl</li> <li>● Ferruginous hawk</li> <li>● Northern harrier</li> <li>● Short-eared owl</li> <li>● Swainson's hawk</li> </ul>	Areas would make progress towards meeting the habitat Standards. Current impacts on bird habitats would continue in most areas.
<ul style="list-style-type: none"> <li>● Riparian (0.51 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Blue grosbeak</li> <li>● Broad-tailed hummingbird</li> <li>● Common Yellowthroat</li> <li>● Lucy's warbler</li> <li>● Peregrine falcon</li> <li>● Prairie falcon</li> <li>● Yellow-billed cuckoo</li> <li>● Bald eagle</li> </ul>	Riparian areas currently not meeting Standards or are in a downward trend would see modest change over the next 10 to 20 years. Livestock management would only be minimally altered under this alternative. Riparian dependent bird habitats would see the least positive change.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### *Impacts on Bats*

Under this alternative there would be little to no change on non-riparian bat roosting habitat. Improvements should be seen in non-riparian and riparian foraging habitat. Increased vegetative ground cover would result in an increased diversity of understory plant and insect prey species in both non-riparian and riparian foraging habitats resulting in the development of better quality foraging habitats over time. Reduced grazing pressure should also increase the recovery of riparian communities, resulting in the development of better quality roosting habitat (i.e. large cottonwood trees) over time. Range improvement design standards would increase the availability of water for bats in existing water locations.

**Table 4-3 Summary of Impacts on Bats**

<b>HABITAT TYPE</b>	Non-riparian, Roosting	Non-riparian, Foraging	Riparian, Roosting	Riparian, Foraging	Open water, Foraging & Drinking
<b>BAT SPECIES</b>	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Western red bat	Western red bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat, Western red bat
<b>IMPACTS</b>	Little to no impacts on bat roosting habitat in cliff, cave, non-riparian tree, and multiple habitats.	Minor changes to stocking rates and exclusionary range improvements would result in less grazing pressure in foraging habitats. Increased vegetative ground cover results in increased diversity of understory plant and insect prey species in foraging habitat. Most current impacts would see slow positive change over 20 years.	Exclusionary range improvements could result in less grazing pressure in riparian or roosting habitat, resulting in development of better quality roosting habitat (i.e. large cottonwood trees) over time.	Exclusionary range improvements could result in less grazing pressure in riparian foraging habitat, resulting in development of better quality foraging habitat over time. This would include more diverse riparian vegetation that would support a greater diversity of insect prey	Range improvement design standards would increase the availability of water through the installation of "wildlife friendly" water improvements.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### *Impacts on Game Species*

#### Desert Bighorn Sheep

Only thirty six percent (585,816 acres) of suitable Desert Bighorn habitat would be retained in existing management under this alternative. This means under this alternative conflicts for forage and water, between livestock and Bighorns, would be reduced over sixty four percent of the planning area. Fifty five percent (896,468 acres) of suitable habitat would receive improved management, mainly in the form of growing season rest, and improved distribution. These changes would improve Bighorn habitat by increasing the amount of available forage, mainly in the form of grass. It would also reduce the presence of livestock, with a positive benefit to Bighorns in that they avoid water sources with livestock. Eight percent (125,630 acres) would not be open to grazing, and would experience no competition for use.

The seeding restoration activities proposed under this alternative would have a positive impact on Bighorns by providing additional forage in the form of grass. Structural improvements, in the form of water developments would provide additional sources of water for Bighorns, and improve livestock distribution (and fewer livestock-Bighorn conflicts at water sources).

#### Mule Deer

Sixty percent (26,226 acres) of Critical Mule Deer winter habitat would have modified livestock management under this alternative. Since the majority of change in management consists of growing season rest, there would be little change in impact in winter use areas. Better livestock distribution would provide more forage, with a proportional reduction in incidental winter browsing, which would benefit Mule Deer.

This alternative also proposes new range improvements. Water developments would increase habitat availability to Mule Deer, which would be a positive impact, but better livestock distribution would come at the cost of more fencing, and fences have a potential to impede deer movements.

#### Pronghorn

All suitable Pronghorn habitat would continue to be available to livestock under this alternative, but impacts on Pronghorn would be reduced through changes in grazing management. Growing season rest would be required (GRAZ-2). This rest period would make forbs available for consumption early in the season, when Pronghorn prefer them over shrubs. Spring forb availability is also critical to fawn rearing success, since lactating antelope use forbs heavily.

Structural range improvements are proposed under this alternative. New water developments would increase the availability of browse for Pronghorns by increasing their distribution. Fences are also proposed, and they may impact Pronghorn since they impede movement.

#### Sage Grouse

As was noted in the No Action alternative, impacts on occupied Sage grouse habitat are identical under all alternatives.

Under this alternative, impacts would improve 53% of potential habitat (953,173 acres) as a result of changes in livestock management. Habitat improvement is probable on another seven

## CHAPTER 4 ENVIRONMENTAL IMPACTS

percent (132,238 acres) as a result of removing livestock impacts. Changes in management consist of growing season rest, and improved distribution. The growing season rest would have the strongest impact, since it would prevent the removal of cover (through consumption) during the nesting and early brood rearing season. There also would be no competition between livestock and Sage grouse for forbs during the period when Sage grouse consume forbs. Growing season rest, along with improved distribution, would assist in riparian recovery, which would be beneficial to Sage grouse. Sage grouse nests and young would be susceptible to trampling impacts upon the resumption of grazing.

### ***Impacts on Fish and Aquatic Species***

Under this alternative rangeland conditions would essentially be the same as under Alternative A. Some minor changes in livestock grazing could be done to bring range and riparian conditions within regulatory compliance over a 20 year time period. However, current levels of livestock use would continue to be authorized under this alternative. There would be no special criteria applied to riparian area use by livestock. This would result in the slowest rate of recovery in riparian areas not currently meeting Standards or with a downward trend. Consequently, habitat conditions for fish and aquatic species in degraded areas would show the least amount of recovery over time as compared to actions taken under Alternatives C, D, and E. Fish and aquatic species would benefit from exclusionary riparian fencing and water developments proposed under this alternative in certain limited areas.

### ***Impacts on Threatened and Endangered Wildlife Species***

#### ***Mexican Spotted Owl***

Changes in grazing management would impact almost half (49%) of the Mexican Spotted Owl Critical Habitat within the planning area under this alternative. These changes consist primarily of growing season rest, or a changed livestock rotation scheme. Both approaches would increase plant vigor, especially with grasses and forbs, which should have a positive impact on rodent and small animal populations, which in turn increases the prey population available to Mexican Spotted Owls.

The active use of the “riparian toolbox” in riparian restoration would improve the conditions of riparian areas. The Recovery Plan guidelines include “implement management strategies that will restore good conditions to degraded riparian habitat as soon as possible”.

#### ***Southwestern Willow Flycatcher***

Under this alternative, range improvements and growing season rest would encourage riparian recovery. Of the forty seven percent of Southwestern Willow Flycatcher existing and potential habitat open to grazing, ninety four percent would be subject to improved management, including growing season rest. Along with this, utilization standards would be imposed on allotments with suitable habitat for Southwestern Willow Flycatcher. The net impact of these measures would be improvement in habitat and possible increased bird numbers.

Within Cottonwood Allotment, range improvements are proposed that would attract livestock away from riparian areas suitable for Southwestern Willow Flycatcher use. While this proposal would aid in the recovery of woody species, the recovery would not be total since livestock would still have access to those areas. Growing season rest would also be initiated on the

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

allotment, and at a minimum, livestock use would be removed from flycatcher habitat during the willow growing season. Again, this would encourage the recovery of species such as willows, which would increase the suitability of riparian habitat for Southwestern Willow Flycatcher use.

Utilization standards on shrubs within Southwestern Willow Flycatcher habitat would remain at 40%, affording the same level of protection as in the No Action alternative. (Under this Alternative, utilization standards are only applied in Southwestern Willow Flycatcher habitat.)

#### **CULTURAL RESOURCES**

The implementation of the Cultural Resources Protocol (see Appendix 3) is common to all action alternatives. Under this and other action alternatives grazing related impacts on cultural resource sites would be identified on a site-specific basis, and appropriate mitigation measures would be implemented as necessary. In addition, the cultural resources research and monitoring component of the Protocol would provide the opportunity for in-depth research into grazing related impacts on cultural resource sites, use of appropriate mitigation measures, and the effectiveness of these measures, as well as provide for cultural resource inventory in areas where grazing related impacts are likely but the site density and character is unknown. This component is important in that research and monitoring regarding grazing related impacts would lead to a better understanding of the situation, and eventually better and more effective management practices.

This alternative emphasizes reduction of range impacts through the use of range improvements such as fencing, water developments, and forage restoration to lessen stock concentrations and increase overall stock dispersal. Although modern range management practices are generally designed to direct livestock away from sensitive resources, for cultural resources this could be a double-edged sword; while lessening impacts on sites where stock have traditionally concentrated, it will encourage stock dispersal into areas that have seen little stock use (and consequently little grazing related impacts on cultural resource sites). This underscores the necessity for cultural resource inventories in areas that have not seen such inventories and cannot be accurately archaeologically characterized, a need addressed in the Cultural Resources Protocol. This alternative would require the construction of numerous range improvements, adding to the potential for new disturbances at documented and undocumented cultural resource sites.

All the action alternatives are designed to achieve the same end rangeland health goals, it is more a question of by which methods these goals are achieved and the timeframe in which these goals are achieved through the various alternatives. Alternative B is considered the least dramatic in range management changes, and would take the longest to achieve the desired results. Cultural resource sites, under this alternative, would remain unprotected by vegetation recovery for longer than in the following action alternatives.

This alternative would provide only a relatively small amount of immediate protection for cultural resource sites, in addition to those outlined in the Cultural Resources Protocol which is common to all alternatives. For the most part, ongoing grazing related impacts on cultural resource sites would continue, with only a slight reduction in grazing pressures as a result of

## CHAPTER 4 ENVIRONMENTAL IMPACTS

minimal AUM reductions. Implementation of the cultural resources Protocol will provide more protection in the long run, but immediate relief from grazing related impacts on cultural resource sites would be less under this alternative than under the other action alternatives.

### RECREATION

Some conflicts between recreational use and livestock grazing would be reduced, while others would likely remain the same or increase under this alternative.

Recreational access problems relating to range developments (access through fences) would be reduced by incorporating the proposed “Standard Requirements and Design Restrictions on Range Improvements” (see *Standard Operating Procedures* [SOPs], Appendix 10). Additional requirements providing for recreational foot and horse access through fences would further reduce conflicts.

Changes in Seasons of Use under this alternative would reduce the overlap between the high recreational use season (mid-March through June, and September through November) and a grazing season in certain allotments.

The Upper Gulch Pasture of Circle Cliffs Allotment would be grazed only spring or fall of every other year. In years when spring grazing would occur, the season of use would end no later than March 15, which is also the typical start of the spring high recreational use season. Conflicts relating to competition for space in the Upper Gulch would be greatly reduced under this alternative.

The season of use for livestock grazing in Clark Bench Allotment would be cut back by one month in the spring, with the end of the grazing season being March 31 rather than April 30. Conflicts with recreational use would be reduced during the highest recreational use period of the spring under this alternative. Any individual pasture would be grazed at most every other year, either spring or fall, further reducing conflicts in off-grazing years. Additionally, by the creation of The Dive Pasture, there would be reduced livestock use of the Paria Canyon-Vermillion Cliffs Wilderness, further reducing opportunities for conflict on the allotment.

Death Hollow Allotment would have a season of use with less overlap onto the high recreational use season. Some livestock grazing has been authorized from April 1 through May 15; under this alternative all livestock grazing would end no later than March 31. Furthermore, fencing livestock out of the head of the narrows of Little Death Hollow would eliminate problems with hikers inadvertently herding livestock into the narrows. This would eliminate most recreational conflicts in this allotment.

The creation of Buckskin Pasture in Mollies Nipple Allotment would largely resolve recreational conflicts at the head of the narrows of Buckskin Gulch. The pasture would be utilized by livestock during December, January and February. These are low recreational use times, so level of conflict would be low.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Since this alternative emphasizes the use of range improvements (fencing, water developments and seedings), there would be an overall reduction of “natural appearing” landscapes. Recreational users expecting natural appearing landscapes would be negatively impacted. Impacts would be greatest in popular hiking areas, particularly among hikers who had experienced a place before range developments went in. Impacts on individual recreational users would be high, even in lightly visited areas, in landscapes to which they have developed an attachment. Due to the localized scope of this impact it does rise to the level of significance.

This alternative does not address many areas where conflict is high or has high potential. Conflicts arising from confrontations between livestock and recreational users in narrow canyons are not addressed in this alternative, other than in Buckskin Gulch (Mollie’s Nipple Allotment) and the head of Little Death Hollow (Death Hollow Allotment). The Gulch in King Bench Allotment, the Paria River in Cottonwood Allotment, Devil’s Garden in Upper Cattle Allotment, Horse Canyon Spring area of Big Bowns Bench Allotment, the slot canyons in Dry Fork of Coyote Gulch in Lower Cattle Allotment, and the narrows of Lick Wash all either have high levels of conflict, or have a potential for high levels of conflict if grazing is returned to areas where grazing has been temporarily suspended or has been in non-use. Conflict in these areas would likely increase as recreational use increases.

#### **ALTERNATIVE C – MANAGEMENT PREFERRED**

##### **LIVESTOCK GRAZING**

Temporary suspensions of livestock grazing in all or portions of three allotments (Coyote, Mollie’s Nipple, and Vermilion) would make 1,927 AUMs unavailable. These suspensions, while temporary, would require adjustments to grazing operations in these allotments, primarily the closure of pastures during rest and restoration (impacts more specifically described below). In order to adjust, permittees would be forced to reduce livestock numbers, feed livestock off-site and/or procure replacement pastures. The schedule of restoration activities and lifting of the temporary suspensions are dependent on funding available and successful establishment of desirable species.

Adjustments to livestock grazing practices in the remaining six allotments that did not meet Standards would have minimal impacts on overall grazing authorizations. There would be allotment specific adjustments to implement season of use modifications, to limit consecutive year grazing use during the spring growing season and to implement modified pasture rotations.

Retention of the Phipps Pasture as a forage reserve would leave the status of the area unchanged.

Closure of the Antone Flat (currently unallotted) and Little Bowns Bench (currently a forage reserve) allotments and the Wolverine Pasture (currently a forage reserve) would have no impact as these areas are not used for livestock grazing and no AUMs are authorized within them.

For the remaining allotments that meet Standards, changes to existing management would be minimal as they would be limited to those short-term adjustments commonly associated with on-

## CHAPTER 4 ENVIRONMENTAL IMPACTS

going allotment administration such as requests for change of season of use, modification to pasture rotation use, voluntary non-use, transfers and temporary non-renewable use.

The impacts identified under Alternative C would be both direct (short-term) or indirect (long-term) based upon the allotment descriptions found below.

### *Allotment Specific Consequences*

#### Circle Cliffs

Same as Alternative B.

#### Clark Bench

Same as Alternative B.

#### Collet

(Uplands and Riparian did not meet)

Under this alternative rangeland conditions would be improved as compared to the “no action” alternative. While livestock numbers would not change, distribution would change due to fencing, water developments, and restoration projects. The exclusion of livestock from Right Hand Collet Canyon would help restore the riparian areas there through rest, but would result in a modified livestock rotation, since only two pastures would then be available for grazing. The spring rest requirement (GRAZ-2), along with the revised rotation would increase the upland rating for the allotment. Further improvement would result after the installation of a gap fence to create three pastures. Since the installation of these gap and exclusion fences is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental impacts assessment, funding, and construction of these projects recognition of on the ground gains would be slow. Once in place, riparian and upland areas would progress toward meeting Standards with a net increase in desirable species, litter, and soil retention however exotic and undesirable species would continue to be present.

#### Coyote

The total preference would remain the same for the allotment, but 588 AUMs (29%) of active use would be temporarily suspended for seeding restoration, reducing the useable AUMs from 2044 to 1,456 AUMs until all restoration is completed in the Five Mile and Sand Gulch Pastures. Restoration of the vegetative community would result in the establishment of perennial grasses, resulting in higher vegetative cover and lower erosion. The temporary suspension of 588 AUMs is expected to last approximately 5 to 10 years.

The restoration activities would reduce the available AUMs for the short-term but in the long-term there would be more forage for livestock than is currently available in these two pastures. Restoration success and seed species selection would determine future forage availability and how many of the suspended AUMs would be restored from suspension.

Reducing active use on the allotment, along with restoring the plant community on two pastures, would result in a static or upward trend on the allotment as a result of the increase in the number of perennial grass species and percent cover. Restoration would also reduce overland flow of water and reduce soil erosion in these two pastures.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

The restoration activities would move the Five Mile and Sand Gulch Pasture toward meeting Standards.

The temporary reduction of active use has a short-term potential for a significant negative impact on the livestock operations, including economic value, belonging to the permittee. In the long-term, forage conditions should improve resulting in a positive impact.

### Death Hollow

(Riparian did not meet)

This alternative is similar to Alternative B in that it would not change active preference, but livestock distribution would change as a result of fencing cattle out of riparian areas and improving water developments. A higher priority would be given to riparian on this allotment as compared to Alternatives A or B. In order to achieve riparian Proper Functioning Condition, shared water exclosures would be constructed to allow for better protection of riparian resources, spring fences would be developed. It is anticipated that this would reduce erosion and increase desirable vegetative cover, community, and litter throughout the allotment. Fences are also proposed to restrict livestock access to Little Death Hollow and Wolverine Creek Narrows to reduce impacts on recreational use. Since the installation of structural improvements, such as fences, is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Current trend on this allotment is slightly downward, and that because of the past drought (see Appendix 1 for allotment details).

Grazing would be reauthorized at the current level, however grazing duration would change. Currently grazing is allowed from November 1<sup>st</sup> through May 15<sup>th</sup>. Grazing would end approximately six weeks sooner providing an off date of March 31<sup>st</sup>, which would reduce grazing pressure on perennial grasses during the early growing season.

### Ford Well

(Riparian did not meet)

The active use on the allotment would remain unchanged. Ford Well spring was rated as “functioning at risk” with a downward trend, which led to the allotment failing to meet Standards. This alternative proposes the reconstruction of a structural range improvement in order to achieve PFC and to meet the Standards. To do this, the existing spring protection fence would be reconstructed, which would allow the riparian area to enlarge to its potential, reduce the hoof action and trailing of cattle in the riparian area, reduce cattle use on and improve the riparian vegetation composition, age class distribution, vigor, and percent cover. The protection fence would eliminate livestock as one of the contributing factors as to why the riparian area is not meeting Standards.

### Soda

(Uplands and Riparian did not meet)

This alternative would not change livestock active use. Combining the Fortymile Ridge Allotment and Soda Allotment would result in moving the Soda Allotment towards meeting upland standards. Methods from the “riparian toolbox” would be used to achieve or continue to achieve riparian standards.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Water developments would be constructed to allow for better protection of riparian and upland resources. It is anticipated that this would reduce erosion and increase desirable vegetative cover, community, and litter throughout the allotment. Riparian areas which do not meet Standards should improve with a net increase in desirable species, litter, and soil retention; however, exotic and undesirable species would continue to be present. Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental assessment, funding, and construction of these projects, recognition of on the ground gains would be slow.

Trend on the Soda allotment is monitored at seven locations. Long-term trend appears to be static to slightly upward and would continue.

### *King Bench*

This alternative addresses the livestock conflict with hikers in The Gulch. It would involve dividing the current King Bench Pasture into two pastures; namely, Deer Creek Pasture and King Bench Pasture (King Bench Pasture would include The Gulch), bringing the total to three pastures, the third being the existing Horse Canyon Pasture. This alternative would ensure that livestock could not use The Gulch after February 28<sup>th</sup>. Livestock distribution is not a concern with respect to meeting Standards, but it is because of the before mentioned conflict. This proposal would require that cattle use the area in a proposed Deer Creek Pasture more than they currently do under the existing two pasture system. The three pasture system would also reduce the number of days that cattle would be in the Gulch which would reduce the conflicts between recreation and livestock grazing in The Gulch. An important consideration would be the grazing pressure added to Deer Creek and the Proposed Deer Creek Pasture. Deer Creek has been identified as having heavy recreational use, nearly as heavy as the Gulch. Increasing livestock in the proposed Deer Creek Pasture would increase the conflict between livestock and hikers along Deer Creek, and could possibly affect riparian functioning condition along Deer Creek. Also, the proposed Deer Creek Pasture would concentrate cattle on the Burr Trail increasing the possibility of livestock related vehicle accidents and complaints by users of the Burr Trail. Another consideration to creating the Deer Creek Pasture and adding improvements to King Bench is that it would involve constructing more fencing and water improvements in the vicinity of The Gulch, which is currently in a WSA, in addition to it being an Outstanding Natural Area. Maintenance and construction of the fences poses other problems as well. Since most of the drainages in the Monument are subject to annual intense flash floods, improvements, if possible, must be engineered properly. Maintenance would have to be completed frequently, and maintenance responsibility has not been discussed for these proposals. This proposal would negatively impact the operator, in the long-term since more effort must be exerted to move cattle and keep cattle in a third pasture. Also, if any maintenance of the proposed improvements should fall upon the operator, then additional long-term, negative impacts would occur accordingly.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Lake

Impacts would be the same as analyzed in Alternative B.

### Last Chance

Impacts would be the same as analyzed in Alternative B.

### Mollies Nipple

(Uplands and Riparian did not meet)

The active use on the Mollie Nipples allotment would be temporarily reduced from 3,862 to 3,307 AUMs, a 15% reduction of 555 AUMs. Upon completion of seeding restoration, and achieving Standards, the allotment has a potential of 3,862 AUMs, but the final quantity may change, subject to the determination of a new allotment evaluation.

The deferred season of use in the Jenny Clay, Blue Spring, Telegraph, Mine Spring, and Rock House pastures would give the forage species periodic rest from livestock grazing during the critical growing period. It would also improve the vigor of the perennial grasses and shrub species. Nipple Pasture would be split into two separate pastures, and a deferred rest rotation system implemented

The temporary non-use, initiating a deferred rest on transition, and the divided Nipple Pasture would benefit perennial grasses and allow for their recovery. Restoration work would restore failed seedings. These changes would move the allotment toward meeting Standards.

The deferred rest system of grazing in the Jenny Clay, Blue Spring, Rockhouse, Mine Spring, and Telegraph pastures while restoration is completed would impact the pasture rotation on the allotment, in that two of the four pastures would not be included in the rotation for at least two growing seasons. The deferment and rest of the two treated pastures would improve the trend slightly in the direction of a static trend instead of the current downward trend. The reseeded would result in a stronger trend recovery. The existing perennial grasses on these pastures would be healthier than under Alternative A or B, but their current condition prevents full recovery without physical intervention.

Once all objectives of the restoration activities are met in the treated pastures, active use would be restored on reassessment. More forage would be available for livestock upon completion of the restoration than is available presently, however, re-assessment would be completed to determine if the historical level of 3,862 AUMs could be achieved since that level was determined using healthy crested wheatgrass seedings. The restored seedings would be a mixture of grass species, including natives, and may not produce as much forage as the old monotypic crested wheatgrass seedings.

Restoration activities would allow Blue Spring, Telegraph, Mine Spring, Jenny Clay and Rockhouse pastures to move in the direction of meeting Standards and would increase ground cover of perennial shrubs and forbs annual production and litter. They would decrease overland flows, pedestalling, litter movement, and plant mortality on the restoration areas.

Nipple Pasture would be split into two separate pastures, and a deferred rest rotation system implemented. This would have a beneficial impact to the perennial grasses in the pasture, since

## CHAPTER 4 ENVIRONMENTAL IMPACTS

it would improve cattle distribution throughout the existing Nipple Pasture by forcing cattle to use areas such as Wildcat Ridge and Deer Trail. Perennial grasses would be able to set seed each year which would increase the number and percent cover in the pasture. The deferred rotation in Nipple Pasture would also ensure that the cool season and warm season grasses would not be grazed the same time period in two consecutive years. This would improve long-term trend for perennial grass in the summer pastures. In order to fully implement a two pasture rotation in the Mollie Nipples allotment additional water locations would be needed in the pasture. The trend in the Nipple Pasture would improve sooner in Alternative C then it would under either Alternative A or B.

The long-term trend on the allotment would be moving in an upward direction within 5 to 10 years. The completion of the restoration activities in the seeded pastures and also the construction of the fences proposed would result in an upward trend on perennial grasses.

The proposed spring protection fences or redesigning of the water developments would increase the percent cover of the riparian vegetation, improve vigor, diversify age-classes and reduce or eliminate altogether, hoof action and trailing of livestock. Once the protection fences are constructed cattle would no longer be a contributing factor to not meeting standards. The riparian areas would be able to attain Proper Function Condition within 5 years after construction of the fences.

The proposed Buckskin Gulch fence would eliminate the recreational/livestock conflict in lower Buckskin Gulch. There would be no decrease in active use from the construction of the drift and spring protection fences. Restricting livestock use in Buckskin Gulch would assist in moving this area towards meeting Standards. This fence would also eliminate direct livestock use at the seep in Buckskin Gulch allowing it to attain or move toward PFC.

Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental impact assessment, funding, and construction of this project on the ground gains would be slow at best.

The temporary reduction of active use has a short-term potential for a significant negative impact on the livestock operations, including economic value, belonging to the permittee. In the long-term, forage conditions should improve resulting in a positive impact.

### Rock Creek-Mudholes (Same as Alternative B)

(Riparian did not meet)

Impacts would be the same as analyzed in Alternative B.

### School Section

(Uplands did not meet)

Impacts would be the same as analyzed in Alternative B.

### Upper Paria

(Uplands did not meet)

Impacts would be the same as analyzed in Alternative B.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Vermilion

(Uplands and Riparian did not meet)

The total preference would remain the same for the allotment, but 784 AUMs (28%) of active use would be temporarily suspended for seeding restoration, reducing the useable AUMs from 2,849 to 2,065 AUMs. Upon completion of seeding restoration, and achieving Standards, the allotment has a potential of 2,849 AUMs, but the final may change, subject to the determination of a new allotment evaluation.

The season of use would be changed to April 16<sup>th</sup> through May 20<sup>th</sup> and then from June 1<sup>st</sup> through February 28<sup>th</sup>.

The modified deferred rest pasture rotation in the Government Reservoir, Fossil Wash, Old Paria, RCA, 1, RCA 2, RCA 3, Petrified Hollow, Seamen Wash and Clark Ranch pastures would give the forage species periodic rest from livestock grazing during the critical growing period. It would also improve the vigor of the perennial grasses and shrub species.

The temporary suspension of AUMs, initiating a deferred rest pasture rotation and dividing the Nephi Pasture would benefit perennial grasses and allow for recovery. Restoration work would restore failed seedings. These changes would move the allotment toward meeting Standards.

The modified deferred rest system of grazing in the Fossil Wash, RCA 1, and 3, Government Reservoir, Old Paria, Petrified Hollow, and Clark Ranch pastures while restoration is completed would impact the pasture rotation on the allotment, in that two of the seven pasture would not be available to be graze at any one time when restoration activities are initiated.

Once objective of the restoration activities are met in the treated pastures, active use would be restored on reassessment. More forage would be available for livestock upon completion of the restoration than is available presently, however, reassessment would be completed to determine if the historical level of 2,852 AUMS could be achieved since that level was determined using healthy crested wheatgrass seedings. The restored seeding would be a mixture of grass species, including natives, and may not produce as much forage as the old monotypic crested wheatgrass seedings.

The modified deferred rest grazing system would improve the trend slightly in a static to upward direction, instead of the current trend of static to downward. The reseedings would result in a stronger trend recovery. The existing grasses in the treated pastures would be healthier than under the existing grazing season and system, but the current condition of these pastures prevents full recovery without physical intervention.

Unlike Alternative B, this alternative proposed subdividing Nephi Pasture into three pastures, along with creating a three pasture rotation would improve cattle distribution within that pasture. Cattle would not congregated around the existing water locations but be dispersed throughout each of the new pastures. Future water developments in Nephi Pasture would ensure the implementation of the pasture rotation, improve cattle distribution and also encourage cattle to disperse away from the existing water location.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

There are five springs located in the Nephi Pasture. Two of these springs have been rate as Non-Functioning and one has been rated as “functioning at risk. Future range improvements, which include fences, and additional water development would improve the riparian-wetland plant vigor, increase ground cover, reduce hoof action, encourage wood species recruitment, and improve the age class distribution of riparian vegetation, under this alternative.

Utilization of forage by livestock would be less in the areas closer to the springs on Nephi pasture because a three pasture rotation on Nephi Pasture on Nephi Pasture improves cattle distribution.

Long-term trend should improve to upward on all of the allotment within 5 to 10 year from the implantation of this alternative. There would be an increase of cool season grasses in the seeded pastures due to restoration and growing season rest during the months of March, April and May. The reduction in the active use would also contribute toward improving trend.

Pasture restoration, a stocking rate reduction, along with improved distribution and growing season rest would result in improved rangeland health. Standards would be met under this alternative in a 5 to 10 year time period.

The temporary reduction of active use has a short-term potential for a significant negative impact on the livestock operations, including economic value, belonging to the permittee. In the long-term, forage conditions should improve resulting in a positive impact.

### *Willow Gulch*

Same as Alternative A.

## VEGETATION

There will be no direct impacts to vegetation as a result of this alternative. Indirect impacts are described for each plant community below.

### *Aspen*

Based on 2007 analysis, aspen communities would slowly progress towards DPC standards through growing season rest and improved distribution. Fencing aspen stands to allow regeneration would continue to improve.

### *Evergreen forest*

Evergreen forest plant communities currently receive light use and minimal impacts from livestock grazing. These impacts would likely continue under Alternative C. Potential for indirect impacts may occur as adjacent plant communities reach capacity and grazing is shifted onto Evergreen forest communities.

### *Oak woodland*

Changes in distribution as a result of range developments and growing season rests would assist this community in reaching DPC parameters. Many of the Oak woodland communities in the Monument are functioning and would continue to function under this alternative with

## CHAPTER 4 ENVIRONMENTAL IMPACTS

improvements in overall health occurring over time. Although Oak woodlands would receive a lower priority for intensive monitoring under this alternative, regular monitoring would occur to verify that sites are functioning normally.

### ***Pinyon-juniper Woodland***

Impacts on Pinyon-juniper woodlands would include slight to moderate improvements in understory species cover and diversity. A more diverse age structure and greater diversity of understory species would be achieved and maintained over time with this alternative, particularly in areas where use was traditionally high. For areas that received light or no use, some decreases in plant cover and diversity may be expected with this alternative, since efforts to better spread livestock use across a given pasture or allotment through range improvements would increase use of areas not previously impacted. In general, progress would be made towards achieving DPC for this community. The specific criteria outlined in the DPC for Pinyon-juniper woodlands would create higher priorities for restoration activities in this cover type. The emphasis on research oriented restoration under this alternative would benefit the community type overall and help guide restoration of Pinyon-juniper woodlands throughout the Monument. The rate for achieving results would be more accelerated than in Alternatives A and B as a result of timeframes established for achieving restoration success and pre-restoration monitoring protocols and success criteria.

### ***Ponderosa pine/Douglas-fir***

Under Alternative C, Ponderosa Pine/Douglas-fir communities would receive marginal impacts because this is a relatively uncommon community type with limited grazing pressure. Slight improvements to community health may occur as a result of growing season rest requirements implemented in the “Management common to all” measures. Indirect impacts may occur if adjacent cover types reach carrying capacity and grazing pressure is shifted onto Ponderosa pine/Douglas-fir communities. Although this cover type would likely receive a lower priority for intensive monitoring, routine monitoring would be conducted to ensure that sites are properly functioning.

### ***Blackbrush***

Blackbrush communities would experience gradual improvements to community health and may slowly progress towards achieving DPC. Blackbrush communities are generally not particularly resilient and improvements to vegetation cover and diversity may be slow at best under any alternative. Growing season rest would allow some of the native species to recover but complete recovery and reaching DPC objectives may not be possible without more substantial modifications to livestock management. Sites that were determined to be functioning at risk have the best chance to show improvements to soil erosion and species composition. Shifts in composition from cool season grasses to warm season grasses may be irreversible without season of use modifications. Sites that are Non-Functioning would be prioritized for intensive monitoring under this alternative but overall improvements in this plant community are expected to be slow at best.

### ***Desert Shrub***

Under Alternative C Desert shrub communities would show some moderate improvements in overall vegetation cover and biological soil crust cover. Changes in species composition may be

## CHAPTER 4 ENVIRONMENTAL IMPACTS

longer term in nature. Changes in distribution associated with range improvements would increase vegetation cover in areas heavily used but may result in decreases in areas that are currently lightly used. This may cause some sites that are at threshold conditions to deteriorate and may reduce functioning at otherwise intact sites. Overall reductions in AUMs may mitigate this impact in some allotments. Progress towards DPC would be accelerated under this alternative. Soil loss and erosion have been identified as impacts on this community and changes in distribution and growing season rest would result in localized improvements over time to these factors. Desert shrub communities typically occur in dry low elevation sites, often with saline soils, and as such are naturally slower to recover from disturbance than other communities. With this and all alternatives, degradations can occur rapidly if not closely monitored and improvements would occur slowly.

### *Grassland and Meadow*

Grassland and Meadow communities would benefit from the improved distribution and growing season rest measures associated with Alternative C. Improvements to this community would include a long-term increase in total vegetation cover and subsequent decrease in the amount of bare ground. Changes in distribution associated with range improvements may cause reductions in vegetation cover and possible species composition shifts in areas that previously received light use. This would result in improvements to areas that typically received relatively heavy use. Stipulations for monitoring would help document any detrimental impacts on grasslands. Reduced surface resistance to erosion is a concern in some grassland sites and growing season rest would allow increases in vegetation cover and litter to improve these conditions. Under this alternative, changes in species composition (increased diversity and frequency of desirable and appropriate species) may not be detectable for many years unless the community is prioritized for more substantial changes in management or restoration.

### *Mountain shrub*

Impacts associated with Alternative C to Mountain shrub communities are not expected to be substantial. Because of the relative scarcity of this cover type in the Monument, it does not receive much grazing pressure. All sites sampled for rangeland health were functioning normally and would likely continue to function normally.

### *Sagebrush-grassland*

Alternative C would bring improved conditions to a large number of acres of Sagebrush-grassland. As with other community types, the changes would be gradual with initial increases in total vegetation cover and decreases in bare ground. Longer term changes may be expected for shifts in species composition and overall diversity. The competitiveness of native grasses against invaders such as cheatgrass would be increased with seasonal rest. Sagebrush-grassland sites would be receive higher prioritization for monitoring under this alternative and would have a greater potential for reaching DPC. Livestock management changes under this alternative would not prevent or control the spread of juniper in Sagebrush-grasslands but monitoring may identify areas to prioritize for treatment. Changes in community structure would be identified much earlier with the monitoring criteria under this alternative. Therefore, sites that are at or near threshold states for recovery would receive modifications to grazing or restoration efforts at a stage where restoration is most effective.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### ***Seedings***

Under Alternative C, seedings that do not meet Standards could experience grazing on a case by case basis as per monitoring and assessments by specialists. This would ensure that standards for plant cover and composition set in the DPC for seedings are achieved. In some seedings where weeds are an issue, weeds may gain a stronger foothold when grazing pressure is removed. While removing grazing prior to restoration would stabilize soils, competition with exotic species would increase for seeded species. Seedings would make slow to moderate progress toward achieving and maintaining DPC.

#### ***Wetlands/Riparian***

The proposed fences around riparian areas and improvements to water developments would result in immediate increases in the total vegetation cover with subsequent increases in the amount of litter, diversification of age classes of woody species, and potential expansion of riparian zones to match site potential. Changes in species composition and structure for herbaceous species may be observed in the short-term with more moderate to longer term changes to woody species composition. Where they exist, exotic species such as tamarisk and Russian olive would continue to be strong competitors with native tree and shrub species without proactive management and control of these plants. Alternative C emphasizes restoration and research activities in riparian areas which would lead to substantial improvements in native species cover and overall extent in many degraded riparian areas.

#### **THREATENED, ENDANGERED AND SENSITIVE PLANT SPECIES**

Many of the special status species found in the Monument are edaphic endemics that are restricted to sparsely vegetated sites with specialized soil or bedrock characteristics. These are often harsh sites that provide little forage for livestock and are frequently inaccessible because of steep slopes. Because of these habitat features, most special status plant species receive little to no direct impacts from livestock grazing. With improved distribution of livestock, grazing impacts may occur closer to special status species than previously occurred. Potential does exist for indirect impacts as a result of habitat degradation from invasive weed species from adjacent habitats and loss of pollinators that rely on the health of the surrounding vegetation. In general, the focus on restoration and research under this alternative would indirectly improve habitat conditions for special status plants. Therefore, indirect impacts are the most likely influences on special status plant populations under Alternative C.

Threats to Kodachrome bladderpod are mainly related to off-road vehicle use but trampling by livestock is a possibility. Impacts on Kodachrome bladderpod would be reduced as a result of the language in VEG-5 (Chapter 2) which prevents trampling through placement of salt blocks, supplements, and water away from Kodachrome bladderpod populations. This species occupies approximately 600 acres within the Dry Valley, Upper Hackberry, and Upper Paria allotments. Under this alternative, roughly 585 acres of the occupied habitat (98% of population) would remain unchanged and approximately 14 acres of habitat (2% of population) would experience improvements as a result of changes in grazing management (timing of use). Under this alternative, Kodachrome bladderpod populations would remain the same or show improvements in size and extent.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Ute ladies' tresses has a restricted distribution (King Bench Allotment, Deer Creek) in the planning area and is managed in a manner that generally encourages the growth of the species. Winter grazing benefits this species by removing competing plant cover. Approximately 49 acres of riparian habitat is occupied by Ute ladies' tresses. Under Alternative C, current grazing practices would continue where this population is located, which would maintain the population at its' current levels.

Under Alternative C, Jone's cycladenia would remain unchanged. One site is known of this species within the planning area. The site occupies approximately 36 acres of steep, remote habitat in the Moody allotment that is inaccessible to livestock. No change to this population is anticipated under this alternative.

#### **RIPARIAN AND WATER RESOURCES**

##### ***Watershed Health***

Management changes on five of the five of the six allotments not meeting one or both of the upland Standards would include using rest, rotational grazing systems, changes in season of use, and temporary and permanent stocking adjustments. The net effect of the proposed changes would be a moderate reduction in the severity of impacts on upland hydrologic processes. Moderate improvements in understory cover would occur in seedings and dominant vegetation types, causing commensurate reductions in runoff.

Beneficial impacts would occur more quickly under this alternative than under Alternative B, because use would be reduced immediately in certain areas, but over a much smaller area than under Alternatives D and E. Certainty of achieving objectives would be increased relative to Alternative B, because of monitoring and associated changes in livestock management. In addition, increased monitoring and prioritization of Sagebrush-grassland and Pinyon-juniper plant communities would increase the effectiveness of management actions designed to restore desired vegetation conditions, thereby potentially benefiting hydrologic conditions as well.

In the long-term, upland hydrologic conditions governing infiltration and runoff would improve moderately in the five allotments not meeting Standard 1. Excessive runoff from uplands would continue in the short-term, and to a certain degree (less than Alternatives A and B, more than Alternatives D and E), in the long-term. Beneficial impacts would be strongest in areas where grazing is suspended, where restoration occurs, and where proposed grazing management strategies are successful.

##### ***Riparian Proper Functioning Condition***

This alternative places a priority on restoring rangeland and riparian condition while providing research opportunities in restoration and monitoring. The Riparian Toolbox emphasizes repair and installation of range improvements (fences and water developments), but also accommodates modification of grazing management to meet riparian objectives. Active erosion control and treatment of invasive exotic species would be prioritized, but would occur on a limited basis and would not be the preferred method of restoring degraded riparian areas.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Retrofitting existing water developments to reduce dewatering would increase the extent, diversity, and vigor of native riparian plants in many riparian areas in the short-term, and would improve stream channel conditions in the long-term by increasing bank stability and large wood recruitment. If constructed and maintained, fences (proposed in many allotments) and off-stream waters would reduce herbivory and trampling in riparian areas, and would also slow the rate of headcut development and migration. Under this alternative (as well as Alternatives B, D and E), maintenance of new and existing riparian fences would be critical to meeting riparian objectives.

Riparian systems on all allotments would benefit from the initiation of growing season rest every other year. Bank stability would increase as a result of less frequent trampling and increased vegetation cover, and sediment delivery from adjacent uplands to stream channels would decrease as a result of enhanced sediment capture by vegetation.

Management changes in allotments failing upland Standards would cause slight benefits in riparian areas, as five of the nine allotments failing Standards 1 and/or 3 also fail the riparian standard. Long-term reductions in runoff from uplands, coupled with the eventual repair or installation of range improvements, would cause reduced rates of headcutting and channel widening, thereby allowing for maintenance and establishment of riparian communities. Changing seasons of use to provide rest from grazing during spring would benefit both upland and riparian plant communities by allowing periods of re-growth prior to summer storms. Riparian areas in functioning condition are more likely to respond positively to rest-rotation grazing, whereas the condition of areas that are functioning-at-risk or non-functional may remain static, or improve slightly.

Management changes on three allotments failing only the riparian Standard (as well as in certain other allotments where the riparian standard is met but there are areas of concern) would emphasize improved range management and enclosure fences, as well as creation of off-stream water sources. Management changes would include reducing use of pastures with degraded riparian areas, suspending or eliminating grazing, changing the season of use to minimize impacts on desired riparian vegetation, and, potentially, allocating relinquished AUMs to watershed resources.

Management changes in allotments failing the riparian Standard would benefit some areas immediately, while other areas would improve incrementally over the life of the plan, since range improvements would only be constructed as funding allows. Riparian areas in allotments where temporary or permanent changes in grazing management are to be implemented immediately would begin improving more quickly, although installation of fences would be required to ensure sustained long-term recovery. Monitoring and associated requirements for remedial action would ensure that progress is made towards reducing livestock impacts on riparian areas.

Erosion control projects would avert reductions in the extent or functionality of a limited number of riparian areas. The benefits of these projects would be greatest in functioning-at-risk systems where fences are repaired or installed to control grazing and trampling. Headcuts are a common cause of riparian areas not achieving or trending towards PFC, and failure to prioritize and

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

address headcuts in a timely manner would reduce the likelihood of recovering systems that are functional-at-risk.

Riparian vegetation treatments to remove invasive exotics would occur on a limited basis, although over a broader area than under Alternative B. These treatments could increase recruitment of willow and cottonwood and would thereby maintain or restore important ecological (e.g., habitat) and physical (e.g., large wood recruitment and bank stability) functions.

#### ***Water Quality***

In the short-term, many areas vulnerable to livestock-induced erosion would continue to receive livestock use, although livestock management in these areas would change as described in Chapter 2. Because of upland management changes runoff and erosion from degraded allotments would be reduced. Because the primary sources of total dissolved solids (TDS) are marine shales ('badlands') that are naturally highly erosive and receive light grazing pressure, grazing would continue to have a negligible or minor impact on TDS and salinity. Limited implementation of erosion control projects could be used in streams and meadows to reduce the downstream transport of saline soils derived from eroding uplands.

Livestock use around springs would be reduced as a result of range improvements and growing season rest. Riparian protections would be a higher priority under this alternative than under Alternative B.

Reducing the magnitude and duration of dewatering would improve water temperatures in some spring-fed streams. Livestock grazing would continue to affect woody riparian species that provide stream shading, although impacts would be reduced relative to current conditions as a result of improved grazing management and repair and installation of fences. Channel incision and widening (and attendant increases in solar radiation inputs and water temperature) would continue, although recovery of riparian vegetation, as well as a limited program of erosion control, would allow channels to stabilize over time. Under this alternative, increased priority on riparian restoration and use of monitoring-based triggers to ensure movement towards PFC would result in quicker and more widespread reductions in livestock-related stream heating.

#### **SOILS**

The soils resource would improve more readily under Alternative C than Alternative A and B and less than Alternatives D and E. Rangeland Health Standards would be achieved by allotment specific modification of grazing management with minimal grazing suspensions and adjustments. This would make progress towards improving soil health slower than Alternatives D and E.

Forage made available through a voluntary relinquishment could be made available to other qualified applicants, used to mitigate conditions in allotments not meeting Standards through a transfer of use, reallocated for other resource needs, or considered for placement in forage banks. This would aid in increasing protective cover of residual vegetation and litter resulting in reduced areas of bare soil.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Management would encourage the growth of species with high root production and a mix of species with different rooting depths and patterns increasing micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, erosion prevention, organic matter, and resilience to compaction. Management would maintain near-surface roots, plant litter, and vegetation to reduce the susceptibility of soils to compaction by helping to cushion impacts.

Vegetation composition and diversity would maintain or increase soil organic matter making the soil more resistant to compaction.

The protective cover of plants and litter would decrease amount of bare soil and increase soil aggregate stability, organic matter, and water infiltration.

Soil health, including; micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, litter accumulation, organic matter, and woody material accumulation would be maintained.

Management activities would avoid and/or mitigate detrimental compaction, wind and water erosion.

Soil disturbance would be minimized during management activities including rangeland improvement projects (i.e. mechanical harvest of Pinyon-juniper, seed bed preparation, and drilling seed). When possible, only designated trails and roads would be used. Surface disturbance that would cause loss of litter and the organic matter layer would be avoided.

Where appropriate, eroding land would be rehabilitated by improving ground cover thereby reducing gullies, rills, and sheet erosion.

Detrimental impacts on soils would be avoided or mitigated with an emphasis on soils with a high risk of degradation. Vegetative manipulation and soil disturbing projects would be appropriate for the soil series within the project area to ensure success of the project.

#### **NOXIOUS WEEDS AND NON-NATIVE PLANTS**

One allotment would not experience any livestock dispersed Noxious and/or invasive plant species.

With temporary non-use or suspension of livestock grazing in all or portions of three allotments for restoration efforts would decrease the spread of Noxious and/or invasive plant species by livestock. Successful restoration and vegetation treatment projects aimed at improving vegetation health and cover would result in a decrease in Noxious and invasive plant species. Soil disturbance due to fence building, pipeline extension, and developing water catchments has potential to increase weed spread but, the improvements would result in localized impacts. Water catchments will evenly disperse livestock which will likely increase the distribution of invasive species.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### WILDLIFE

#### *Impacts on Migratory/Special Status Bird Species of Concern*

Alternative C, places an emphasis on a mix of active and passive modifications to livestock grazing management. Active changes would include vegetation restoration, season of use changes, growing season rest, and the installation of range improvements. Passive modifications would include reductions in stocking rate (through AUM changes or pasture/allotment changes), along with long-term rest in several small areas.

This alternative places an emphasis on rehabilitating failed seedings, along with requirements (VM 9 through 12) for a more diverse seed mix. The failed seedings were usually single species stands of non-native grasses. Restoration would result in greater plant variety and an increase in habitat diversity, with a positive impact on grassland dependent bird species; especially in locations which currently have little surface cover as a result of seeding failure. There would be an increase in desirable habitat for ground nesting migratory birds which require nesting or protective cover. The small number of bird species which require exposed ground, such as horned larks or killdeer, would be negatively impacted by restoration actions.

Season of use changes, growing season rest (GRAZ-2) and improved livestock distribution would result in changes in vegetative composition. Livestock engage in selective herbivory, and improved management would change vegetative composition through the recovery of species which are selectively grazed or browsed. This recovery would increase habitat niches for bird species, and would reduce the impacts of grazing on those bird species which have been negatively impacted. The rate of recovery would vary by vegetation type, with rapid response in forb or grass dominated types (especially early seral vegetation dominated by annuals), and less response in late seral types such as Blackbrush or Pinyon-juniper.

Upland areas which have experienced a loss of biological diversity or loss of soil productivity, would show little or no recovery. Some Sagebrush-grasslands, and many Pinyon-juniper woodlands fall into this category. Other plant communities, such as Blackbrush, which have been invaded by annuals would also see little change under this alternative. In both cases, bird species numbers and diversity would remain low.

This alternative proposes pasture rest which would assist in the recovery of shorter lived, rapidly reproducing, plant species, such as grasses and forbs. This would result in an increase in structural diversity and cover. Strongest recovery (and positive impacts on bird species) is expected in communities which normally have a high percentage of grasses and forbs, such as the Grassland-meadow community.

The spring growing season for range vegetation overlaps the nesting season of migratory birds. Growing season rest would reduce trampling and nest disturbance impacts on migratory birds that nest on the ground and near the ground in shrubs and trees.

Range improvements which protect riparian areas, either through exclusion or by redirecting livestock, would improve the structure and density of riparian vegetation with a positive impact

## CHAPTER 4 ENVIRONMENTAL IMPACTS

on riparian dependent species. The net increase in water availability from new range improvements would also benefit bird species.

**Table 4-4 Impacts on Birds by Habitat Type**

Habitat Type (% land)	Bird Species	Impacts
<ul style="list-style-type: none"> <li>● Aspen (0.02 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Williamson's sapsucker</li> </ul>	Changes in season of use and grazing intensity would have long-term benefits to natural regeneration of aspen stands.
<ul style="list-style-type: none"> <li>● Pinyon-Juniper (41.7 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black-throated gray warbler</li> <li>● Gray vireo</li> <li>● Pinyon jay</li> <li>● Virginia's warbler</li> </ul>	Slight positive change in Pinyon-Juniper habitats over 20 years due to improvements in livestock distribution and season of use patterns. Pinyon and Junipers may increase since encroachment into shrublands would receive little treatment. This could positively affect Pinyon-Juniper dependent bird species.
<ul style="list-style-type: none"> <li>● Ponderosa Pine-Douglas Fir (1.1 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Flammulated owl</li> <li>● Grace's warbler</li> <li>● Lewis's woodpecker</li> <li>● Northern goshawk</li> </ul>	Benefits to nesting and foraging birds would result from changes to season of use by livestock in areas with small stands of mature trees, especially old snags.
<ul style="list-style-type: none"> <li>● Desert Shrub (7.20 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Brewer's sparrow</li> <li>● Sage sparrow</li> <li>● Sage grouse</li> </ul>	Progress in condition class would be slow. Some desert shrub and sagebrush areas would be restored which would benefit neotropical bird migrants using these areas. Long-term grazing pressures would not decrease appreciably, but better management would reduce concentrated impacts.
<ul style="list-style-type: none"> <li>● Grassland &amp; Meadow (1.7 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black rosy-finch</li> <li>● Burrowing owl</li> <li>● Ferruginous hawk</li> <li>● Northern harrier</li> <li>● Short-eared owl</li> <li>● Swainson's hawk</li> </ul>	Growing season rest would bring positive response from grasses and forbs. Minor changes to stocking rates in important breeding bird areas would have a positive impact. Emphasis on range improvements could result in less grazing pressure in sagebrush and grassland areas. Most current negative impacts would see slow positive change over 20 years.
<ul style="list-style-type: none"> <li>● Riparian (0.51 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Blue grosbeak</li> <li>● Broad-tailed hummingbird</li> <li>● Common Yellowthroat</li> <li>● Lucy's warbler</li> <li>● Peregrine falcon</li> <li>● Prairie falcon</li> <li>● Yellow-billed cuckoo</li> <li>● Bald eagle</li> </ul>	Exclusionary fences around riparian areas would benefit bird habitats. Spring rest would modify current negative riparian impacts and aid habitat recovery rates.

### **Impacts on Bats**

Under this alternative there would again be little to no change on non-riparian bat roosting habitat. More intensive monitoring of livestock use could result in more rapid recovery of understory plant communities, and riparian recovery. More rapid recovery should be seen in non-riparian and riparian foraging habitat. Increased vegetative ground cover would result in an increased diversity of understory plant and insect prey species in both non-riparian and riparian foraging habitats resulting in the development of better quality foraging habitats over time. Reduced grazing pressure should also increase the recovery of riparian communities, resulting in the development of better quality roosting habitat (i.e. large cottonwood trees) over time. Range improvement design standards would increase the availability of water for bats in existing waters, as well as the development of new water locations.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

**Table 4-5 Summary of Impacts on Bats**

<b>HABITAT TYPE</b>	Non-riparian, Roosting	Non-riparian, Foraging	Riparian, Roosting	Riparian, Foraging	Open water, Foraging & Drinking
<b>BAT SPECIES</b>	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Western red bat	Western red bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat, Western red bat
<b>IMPACTS</b>	Little to no impacts on bat roosting habitat in cliff, cave, non-riparian tree, and multiple habitats.	Rest and moderate reductions in active livestock use would benefit recovery of foraging habitat for sensitive bats. More intensive monitoring could result in additional changes to livestock management aiding in more rapid recovery of understory plant and insect prey species.	High priority for annual riparian monitoring, and management change requirement after failure to move towards PFC within four years leads to improved riparian roosting habitat.	High priority for annual riparian monitoring, and management change requirement after failure to move towards PFC within four years leads to improved riparian roosting habitat.	Range improvement design standards would increase the availability of water through the installation of "wildlife friendly" water improvements. This alternative also proposed the creation of new water developments, with positive impacts on these species.

### ***Impacts on Game Species***

#### ***Desert Bighorn Sheep***

Under this alternative, only thirty percent (486,969 acres) of Desert Bighorn suitable habitat would continue with existing management. On thirty two percent (514,151 acres), grazing management would be modified by requiring growing season rest and improved distribution. This would reduce competition between livestock and Bighorns for forage. Livestock stocking levels would be reduced on twenty eight percent (463,534 acres), again with a positive impact through reduced forage competition. Livestock conflicts would not occur on ten percent (166,049 acres) since they would not be authorized for livestock use.

The seeding restoration activities proposed under this alternative would have a positive impact on suitable Bighorn habitat by restoring forage, but in areas which receive little Bighorn use. Structural improvements, in the form of water developments would provide additional sources of water for Bighorns, and improve livestock distribution (and fewer livestock-Bighorn conflicts at water sources). Some of the riparian protective enclosure may have a negative impact to Bighorns, but this would be subject to enclosure design.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Mule Deer

Fifty nine percent (25,701 acres) of Critical Mule Deer winter habitat would receive reduced livestock stocking under this alternative. This would have a positive impact on Mule Deer in the form of reduced competition for browse in winter use areas. Along with the stocking changes, there would also be changes in livestock distribution, which would provide more forage, with a proportional reduction in incidental winter browsing. This would also be a positive impact on Mule Deer.

This alternative also proposes new range improvements. Water developments would increase habitat availability to Mule Deer, which would be a positive impact, but better livestock distribution would come at the cost of more fencing, and fences have a potential to impede deer movements.

Restoration of rangeland seedings would reintroduce a forb component into areas which have lost most of their forbs. This would have a positive impact, since deer browse forbs.

### Pronghorn

The impacts on Pronghorn under Alternative C are identical to those in Alternative B. All suitable Pronghorn habitat would continue to be available to livestock under this alternative, but negative impacts on Pronghorn would be reduced through changes in grazing management. Growing season rest would be required (GRAZ-2), with a positive impact. This rest period would make forbs available for consumption early in the season, when Pronghorn prefer them over shrubs. Spring forb availability is also critical to fawn rearing success, since lactating females use forbs heavily.

Structural range improvements are proposed under this alternative. New water developments would increase the availability of browse for Pronghorns by increasing their distribution. Fences are also proposed, and they may have a negative impact on Pronghorns since they impede Pronghorn movement.

### Sage Grouse

As was noted in the No Action alternative, impacts on occupied Sage grouse habitat are identical under all alternatives.

Under this alternative, there would be changes in livestock management consist of growing season rest, and improved distribution on thirty two percent (584,939 acres) of historical habitat. The growing season rest would have the strongest impact, since it would prevent the removal of cover (through consumption) during the nesting and early brood rearing season. There also would be no competition between livestock and Sage grouse for forbs during the period when Sage grouse consume forbs. Growing season rest, along with improved distribution, would assist in riparian recovery, which would have a positive impact on Sage grouse. An additional twenty two percent (388,681 acres) would receive reduced stocking along with improved management, with similar, but more pronounced, benefits. In most cases, the positive impact from growing season rest is not total, in that Sage grouse brood will still be susceptible to predation and trampling impacts upon the resumption of grazing, but to a lesser extent, since the highest risk of mortality occurs early in the season.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Eleven percent of historical habitat (191,097 acres) would have livestock impacts removed. While the positive impacts are similar to those from reduced stocking or growing season rest, there is an additional benefit in that trampling impacts will not take place. Dead or cured plant material will also remain in place, since winter livestock use would not occur, which would increase nesting cover, and further reduce the potential for predation.

### ***Impacts on Fish and Aquatic Species***

Access to the spring in Buckskin Gulch by livestock would have better control through the construction of a fence. Livestock use would be monitored and restricted as needed in the area between upper and lower Calf Creek Falls. These two projects would be of benefit to the aquatic systems in these areas. On several allotments, measures would be taken to lessen impacts on riparian areas by modifying season of use, pasture division fences, and fencing access to springs by livestock. All of these projects would have a positive affect on riparian resources. Progress toward meeting riparian health Standards would have a 20 year time line under this alternative.

### ***Impacts on Threatened and Endangered Wildlife Species***

#### ***Mexican Spotted Owl***

Under this alternative, livestock grazing would be removed from Mexican Spotted Owl Protected Activity Centers during breeding and nesting seasons. Changes in grazing management (31% of the Mexican Spotted Owl Critical Habitat within the planning area), along with stocking reductions (13% of area) and existing areas where livestock have been removed (9% of area) would benefit Mexican Spotted Owls.

Plant vigor, especially with grasses and forbs, should increase as a result of either the rest or seasonal removal of livestock. This improvement in plant health should have a positive impact on rodent and small animal populations, which in turn increases the prey population available to Mexican Spotted Owls.

The active use of the “riparian toolbox” in riparian restoration would improve the conditions of riparian areas. The Recovery Plan guidelines include “implement management strategies that will restore good conditions to degraded riparian habitat as soon as possible”.

#### ***Southwestern Willow Flycatcher***

Under this alternative, range improvements and growing season rest would encourage riparian recovery. Along with this, utilization standards would be imposed on allotments with suitable habitat for Southwestern Willow Flycatcher. Livestock use in allotments with potential or suitable Southwestern Willow Flycatcher habitat will be restricted to between September 1<sup>st</sup> and March 15<sup>th</sup>. The net impact of these measures would be a strong improvement in riparian habitat and an eventual increase in bird numbers.

Within Cottonwood Allotment (which contains most of the habitat addressed in the Recovery Plan), range improvements would exclude livestock from the Paria River. The Paria River and Cottonwood drainage portions of the allotment would be used a separate pasture dedicated to trailing and emergency use, and any use would be subject to the winter only restriction. Taken together these actions would remove all livestock related impacts in this allotment from the

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

stream corridor area, which would improve the suitability and extent of riparian habitat used by Southwestern Willow Flycatcher.

In addition to allotment specific changes on Cottonwood Allotment, and winter season grazing requirements on all other allotments with suitable habitat, stricter utilization standards would also be set on riparian plants, protecting plant recovery. Taken together, these measures would result in improved riparian habitat and benefits to Southwestern Willow Flycatcher.

#### **CULTURAL RESOURCES**

The implementation of the Cultural Resources Protocol (see Appendix 3) is common to all action alternatives. Under this alternative grazing related impacts on cultural resource sites would be identified on a site-specific basis, and appropriate mitigation measures would be implemented as necessary. In addition, the cultural resources research and monitoring component of the Protocol would provide the opportunity for in-depth research into grazing related impacts on cultural resource sites, use of appropriate mitigation measures, and the effectiveness of these measures, as well as provide for cultural resource inventory in areas where grazing related impacts are likely but the site density and character is unknown. This component is important in that research and monitoring regarding grazing related impacts would lead to a better understanding of the situation, and eventually better and more effective management practices.

This alternative emphasizes modifications to livestock management, such as changes in season of use and more rotations of livestock through pastures, plus range improvements where necessary. For cultural resources, this is an improvement over Alternative B in that less on-the-ground improvements will be needed to keep livestock from concentrating in certain areas, and vegetation will have an opportunity to re-establish (thus lessening erosion) through seasonal use changes.

Temporary closures and AUM suspensions would only benefit cultural resources in that the source of grazing related impacts would be, at least temporarily, lessened or removed. By allowing the recovery of vegetative cover, these temporary AUM reductions would have the effect of reducing erosion. Erosion, either directly or indirectly caused by grazing pressures at cultural resource sites, can be a major factor in the deterioration of these sites. Allowing the recovery of vegetation on these sites would generally slow the effects of erosion and help protect the sites. Livestock reductions would also benefit cultural resource research by providing a scientific control regarding grazing related impacts; the conditions and impacting agents at similar sites in similar settings could be directly compared between areas open to grazing and areas closed to grazing. Again, this would lead to better management practices in the future.

This alternative would provide for a greater amount of immediate relief from grazing related impacts on cultural resource sites than Alternative B, but less immediate protection than following Alternatives D and E. Although the action alternatives are designed to achieve the same end rangeland health goals, it is more a question of by which methods these goals are achieved in the various alternatives. Recovery of vegetation is an important factor in lessening overall impacts on cultural resource sites. In general, the faster an alternative leads to vegetative recovery, the better that alternative will be for cultural resources. This alternative would

## CHAPTER 4 ENVIRONMENTAL IMPACTS

promote vegetation recovery faster than Alternative B, but would lag behind when compared to the following Alternatives D and E.

### RECREATION

Most conflicts between recreational use and livestock grazing would be reduced or eliminated under this alternative.

Recreational access problems relating to range developments (access through fences) would be reduced by incorporating the proposed “Standard Requirements and Design Restrictions on Range Improvements” (see *Standard Operating Procedures* [SOPs], Appendix 10). Additional requirements providing for recreational foot and horse access through fences would further reduce conflicts.

Changes in Seasons of Use under this alternative would reduce the overlap between the high recreational use season (mid-March through June, and September through November) and a grazing season in certain allotments.

The Upper Gulch Pasture of Circle Cliffs Allotment would be grazed only spring or fall of every other year. In years when spring grazing would occur, the season of use would end no later than March 15, which is also the typical start of the spring high recreational use season. Conflicts relating to competition for space in the Upper Gulch would be greatly reduced under this alternative.

The season of use for livestock grazing in Clark Bench Allotment would be cut back by one month in the spring, with the end of the grazing season being March 31 rather than April 30. Conflicts with recreational use would be reduced during the highest recreational use period of the spring under this alternative. Any individual pasture would be grazed at most every other year, either spring or fall, further reducing conflicts in off-grazing years. Additionally, by the creation of The Dive Pasture, there would be reduced livestock use of the Paria Canyon-Vermilion Cliffs Wilderness, further reducing opportunities for conflict on the allotment.

Death Hollow Allotment would have a season of use with less overlap onto the high recreational use season. Some livestock grazing has been authorized from April 1 through May 15; under this alternative all livestock grazing would end no later than March 31. Furthermore, fencing livestock out of the head of the narrows of Little Death Hollow would eliminate problems with hikers inadvertently herding livestock into the narrows. This would eliminate most recreational conflicts in this allotment.

One of the locations of highest conflict between recreational use and livestock grazing is the portion of the King Bench Pasture of King Bench Allotment that contains The Gulch, which is a very popular destination for hikers, backpackers and equestrians. Most of The Gulch on this allotment is designated as an Outstanding Natural Area, and there is an expectation among recreational users that it should be an outstanding, natural-appearing landscape. Because The Gulch supplies the only reliable water for most of the pasture, the livestock tend to concentrate use in the canyon bottom, which is also where recreational use is concentrated. Under this alternative the season of authorized use would be reduced by one month in the spring, ending no

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

later than February 28<sup>th</sup>, rather than March 31<sup>st</sup>, and spring grazing would occur only every other year. This would greatly reduce conflicts relating to competition for space by eliminating the presence of livestock during the spring season of high recreational use. It would also improve the natural appearance of vegetation in the canyon by allowing for an extra month of un-grazed spring growth. However, this would only somewhat reduce conflicts relating to access to clean water, because while there would be no livestock present during the high recreational use season, there would still be relatively fresh livestock feces concentrated around the stream in years of spring grazing use, especially during the early part of the recreational season.

Since much of the forage in the pasture is on King Bench itself (above the canyon), development of water catchments and/or repair of the existing water development on the bench would provide the opportunity to keep livestock mostly out of the canyon except for trailing purposes. If water sources are successfully developed then most recreational conflicts with authorized livestock use would be eliminated.

The creation of a new “Deer Creek” Pasture in the King Bench Allotment would be necessary to achieve reduction of conflict in The Gulch. It is possible in this alternative that new conflicts could arise in Deer Creek. Monitoring for increasing conflict would be necessary. Mitigation measures would need to be taken if monitoring indicated an increase in conflict.

The exclusion of livestock from the slot canyons of Dry Fork of Coyote Gulch (Dry Fork Narrows, Peek-a-boo, Spooky and Brimstone) in Lower Cattle Allotment would eliminate recreational conflicts related to inadvertent herding of livestock and the resulting unpleasant confrontations in the constricted areas.

The creation of Buckskin Gulch Pasture in Mollies Nipple Allotment, and designating the portion of the pasture east of House Rock Valley Road as closed to livestock use in the high recreation season would eliminate conflicts with recreational use related to competition for water and space.

In Upper Cattle Allotment, the exclusion of livestock from the visitor facilities (parking, toilet and picnic area) and rock formations of Devil’s Garden would eliminate conflicts with recreational use in those areas.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### ALTERNATIVE D

#### LIVESTOCK GRAZING

Implementing Alternative D would result in the temporary suspension of livestock grazing in all or portions of seven allotments for restoration purposes and as a result of not meeting upland Rangeland Health Standards. Temporarily suspending livestock grazing in Collet, Soda, Mollies Nipple, School Section, Upper Paria, Vermilion allotments that do not meet upland Standards and portions of Coyote allotment would make 13,076 AUMs unavailable. These suspensions, while temporary, would require adjustments to grazing operations in these allotments (impacts more specifically described below). Adjustments for some livestock operators could be significant, as described in detail below, and may affect their ability to continue to operate. In order to adjust, permittees would be forced to reduce livestock numbers, feed livestock off-site and/or procure replacement pastures. The schedule of restoration activities and lifting of the temporary suspensions are dependent on funding available and successful establishment of desirable species. It would be unrealistic to expect that funding would be available to restore all allotments at the same time so the temporary suspension for some allotments could exceed five years.

Site specific riparian restoration of springs and reaches in Death Hollow, Ford Well, and Rock Creek-Mudholes allotments would have minimal impacts on overall grazing authorizations. With protection, recovery of these areas is expected to be fairly rapid. There would be allotment specific adjustments to implement season of use modifications to limit consecutive year grazing use during the spring growing season and to implement modified pasture rotations.

Closure of the Big Bowns Bench Allotment would eliminate 750 AUMs. This would have minimal impacts as this allotment has not been grazed since 1999 due to unfavorable conditions. Closure of the Antone Flat (currently unallotted) and Little Bowns Bench (currently a forage reserve) Allotments and the Wolverine Pasture (currently a forage reserve) would have no impact as these areas are not used for livestock grazing and no AUMs are authorized within them.

Retention of the Phipps Pasture as a forage reserve would leave the status of the area unchanged.

For the remaining allotments that meet Standards, changes to existing management would be minimal as they would be limited to those short-term adjustments commonly associated with on-going allotment administration such as requests for change of season of use, modification to pasture rotation use, voluntary non-use, transfers and temporary non-renewable use.

#### *Allotment Specific Consequences*

##### Circle Cliffs

The impacts would be the same as analyzed in Alternative B.

##### Clark Bench

The impacts would be the same as analyzed in Alternative B.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Collet

(Uplands and Riparian did not meet)

This alternative would implement temporary grazing suspension until Standards are met, with a reduction of 97 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. The negative impacts of the proposed reduction in this alternative would be more noticeable than in the preceding alternatives since the entire allotment would be rested until Standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community.

Trend in this allotment is not apparent. No long-term trend sites have been established. Monitoring data is lacking. Trend would be part of the priority data collected on the allotment, as well as Ecological Site Inventory and Proper functioning Condition information.

The temporary suspension of active use would have a significant negative impact on the permittee's livestock operations, and may have a negative impact on the permittee's finances. In the short-term this impact cannot be mitigated. In the long-term it is anticipated that rangeland health would be restored and grazing would return.

### Coyote

The impacts would be the same as analyzed in Alternative C.

### Death Hollow

(Riparian did not meet)

The impacts would be the same as analyzed in Alternative C.

### Ford Well

(Riparian did not meet)

The impacts would be the same as analyzed in Alternative C.

### Soda

(Uplands and Riparian did not meet)

This alternative would implement temporary grazing suspensions until Standards are met, with a reduction of 2,798 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. The negative impacts of this alternative would be more noticeable than in the preceding alternatives since the entire allotment would be rested until Standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts would be corrected through plant community restoration. The BLM would still consider combining the Fortymile Ridge Allotment with the Soda Allotment.

High priority would be placed on fences and water improvements to assist in the better distribution of livestock. Water developments would be constructed to allow for better protection of riparian and upland resources. Range improvements would reduce erosion and

## CHAPTER 4 ENVIRONMENTAL IMPACTS

increase desirable vegetative plant cover, community, and litter throughout the allotment by redistributing grazing impacts, and lessening grazing intensity. Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental assessment, funding, and construction of these projects, recognition of on the ground gains would be slow.

Trend on the Soda allotment is currently monitored at seven locations. Long-term trend appears to be static to slightly upward. With the total suspension of grazing trend should continue to be upward and part of the priority data collected on the allotment, as well as Ecological Site Inventory and Proper Functioning Condition information.

The temporary suspension of active use would have a significant negative impact on the permittee's livestock operations in the short-term, and may have a negative impact on the permittee's finances. In the long-term, proposed restoration actions would mitigate this impact.

### King Bench

The impacts would be the same as analyzed in Alternative C.

### Lake

The impacts would be the same as analyzed in Alternative B.

### Last Chance

The impacts would be the same as analyzed in Alternative A.

### Mollies Nipple

(Uplands and Riparian did not meet)

This alternative would implement temporary grazing suspensions until Standards are met, with a reduction of 3,862 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. Upon achieving Standards, and the resumption of grazing, the allotment has a potential of 3,862 AUMs, but the final quantity may change, subject to the determination of the new evaluation.

The impacts of this alternative would be more noticeable than in the preceding alternatives since the entire allotment would be rested until Standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts would be corrected through plant community restoration.

Once it has been determined that Standards are met, most active use would be restored. Restoration work would be required on Blue Spring, Telegraph, Mine Spring, Jenny Clay, and Rockhouse Pastures, and while more forage would be available for livestock upon completion of the restoration then it is possible that active use may still be less than historical level of 3,862 AUMs since that level was determined using healthy crested wheatgrass seedings. The restored seedings would be a mixture of grass species, including natives, and would not produce as much

## CHAPTER 4 ENVIRONMENTAL IMPACTS

forage as the old monotypic crested wheatgrass seedings. New analysis would take place to verify actual capacity.

After restoration activities are completed the long-term trend in the Blue Spring, Telegraph, Mine Spring, Jenny Clay and Rockhouse Pastures should be upward with an increase in the species that were seeded. The success of the restoration activities would depend on the timing and the amount of precipitation the area receives.

Upon resumption of grazing, the season of use would be shortened by two months or 61 days, with no grazing occurring in April and May. Removing cattle during this period would give the forage species periodic rest from livestock grazing during the critical growing period. It would also improve the vigor of the perennial grasses and shrub species. Shortening the season of use would maintain an upward trend in the pastures that are grazed in the spring of year, since these pastures would receive the periodic rest. This would allow the forage species to maintain their production and vigor resulting in an increase in the numbers and percent cover for perennial grasses and shrubs.

Nipple Pasture would be split into two separate pastures, and a deferred rest rotation system implemented. This would have a beneficial impact to the perennial grasses in the pasture, since it would improve cattle distribution throughout the existing Nipple Pasture by forcing cattle to use areas such as Wildcat Ridge and Deer Trail. Perennial grasses would be able to set seed each year which would increase the number and percent cover in the pasture. The deferred rotation in Nipple Pasture would also ensure that the cool season and warm season grasses would not be grazed the same time period in two consecutive years. This would improve long-term trend for perennial grass in the summer pastures. In order to fully implement a two pasture rotation in the Mollie Nipples allotment additional water locations would be needed in the pasture.

The riparian areas that were determined to not be meeting Standards would recover faster than upland sites from the grazing suspension. Once cattle are reauthorized on the allotment some of these riparian areas, would be fenced in order to protect these areas and to prevent livestock from being a contributing factor to not meeting Standards.

The proposed Buckskin Gulch fence would eliminate the recreational/livestock conflict in lower Buckskin Gulch. There would be no decrease in active use from the construction of the fence. Limiting the season of livestock use in Buckskin Gulch would assist in moving this area towards meeting Standards. This fence would also limit livestock use at the seep in Buckskin Gulch allowing it to attain or move toward PFC.

Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be phased in over the life of the plan. Considering the amount of time required for the environmental impact assessment, funding, and construction of this project on the ground gains would be slow at best

The temporary suspension of active use would have a short-term, significant negative impact on the permittee's livestock operations, and may have a negative impact on the permittee's finances. In the long-term, negative impacts would be mitigated by the actions described above.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Rock Creek-Mudholes

(Riparian did not meet)

The impacts would be the same as analyzed in Alternative B.

### School Section

(Uplands did not meet)

This alternative would implement temporary grazing suspensions until Standards are met, with a reduction of 102 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. The impacts of this alternative would be more noticeable than in the preceding alternatives since the entire allotment would be rested until Standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts would be corrected through plant community restoration.

The Rangeland Health Assessment identified 352 acres that were not meeting the Standards in a failed rangeland seeding. The reason for this determination was the lack of perennial grasses, and the dominance of exotic annual species throughout the seeding. Restoration of this seeding would enable it to meet the Standards.

Suspending active use would likely move the seeding in a positive direction but it is anticipated that Rangeland Health rating would remain the same without some kind of restoration activities to decrease the abundance of the exotic annual species.

Considering the amount of time required for the environmental assessment, funding, and implementation of the restoration activities on the ground gains would be slow until the actual activities are completed

Long-term trend would improve in the seeding upon the completion of restoration activities. It is anticipated that there would be a decrease in the percent cover of annual forbs and increase in perennial species upon completion of restoration species.

Once restoration is completed the new active use could be less than the current active use 102 AUMs. The amount of forage available for livestock would be less because the species that would be planted may produce less forage than the crested wheatgrass that was planted in the original seeding.

The temporary suspension of active use would have a short-term, significant negative impact on the permittee's livestock operations, and may have a negative impact on the permittee's finances. In the long-term, negative impacts would be mitigated by the actions described above.

### Upper Paria

(Uplands and Riparian did not meet)

This alternative would implement temporary grazing suspensions until Standards are met, with a reduction of 2,780 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. The impacts of this

## CHAPTER 4 ENVIRONMENTAL IMPACTS

alternative would be more noticeable than in the other alternatives since the entire allotment would be rested until standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts could be corrected through plant community restoration.

Riparian areas that currently do not meet Standards would rapidly progress toward recovery without grazing pressure but invasive and undesirable species would remain a problem. Litter, stream bank vegetative cover, plant vigor, and stream morphology would improve and soil loss would decrease. However, removal of livestock will not correct all of the identified riparian issues. The major factor behind three reaches of Willis Creek, one reach of Henrieville Creek and one reach of Little Creek ranking as “non-functional” were diversions and ditches, and these areas would most likely not reach PFC since these impacts cannot be mitigated because BLM does not have the authority to control the upstream diversions. Private water use also impacted several riparian sites rated “functioning at risk” such as Willis Creek, Heward Canyon, and Sheep Creek.

Upland sites would most likely move toward meeting Standards under this alternative; however the removal of cattle would not necessarily have a positive impact on all upland sites such as seedings. It is anticipated the ratings would remain the same in these areas without plant community restoration.

Other than the seedings discussed above overall trend would be upward or static depending on the ecological site. Without disturbance mid and late seral species would increase on most sites as they move toward potential natural community.

The temporary suspension of active use would have a short-term, significant negative impact on the permittee’s livestock operations, and may have a negative impact on the permittee’s finances. In the long-term, negative impacts would be mitigated by the actions described above.

### Vermilion

(Uplands and Riparian did not meet)

This alternative would implement temporary grazing suspensions until Standards are met, with a reduction of 2,849 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new allotment evaluation would need to be completed. Upon the achievement of Standards, and the resumption of grazing, the allotment has a potential for 2,849 AUMs, but the final quantity may change, subject to the determination of the new evaluation.

The impacts of this alternative would be more noticeable than in the preceding alternatives since the entire allotment would be rested until Standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts would be corrected through plant community restoration.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

In order to meet all Standards additional input such as restoration activities need to be completed. For example just removing cattle would not correct the soil erosion problem occurring in the Fossil Wash and Petrified Hollow Pastures. Restoration is proposed in order to control the rills, overland flows, gullying and other soils related problems, which will assist in meeting the soils Standard. Also, suspending livestock use would not reduce the problems with exotic weed species. Treatment and/or reseeding would reduce the amount of exotic species on the allotment.

Fossil Wash and RCA 1 Pastures will require restoration in order to return to meeting Standards. The reseeding effort would include actions to reduce soil erosion in the two pastures. Future authorized use would probably be less than the current active use of 2,849 AUMs, since the mix of species used in restoration produce less forage than the (failed) monotypic crested wheatgrass seedlings they replace.

Trend would move upward for the most part, especially in the Fossil Wash and RCA 1 after restoration. Trend may decline in pastures where sagebrush is replacing perennial grasses or where pinyon/juniper trees reestablish themselves in old seeded areas, where they out-compete shrubs and grasses.

Once cattle are authorized again there would be a requirement for growing season rest (GRAZ-2), which would keep the long-term trend at static to upward. Perennial grasses would be able to set seed each year rather than every other year in some pastures. As a result, there would be more grasses and a higher percent cover of perennial grasses on the allotment.

As a result of total rest, the riparian areas on the allotment that are not meeting the riparian Standard would meet it within five years. Protective fences would be built around riparian areas to eliminate livestock as one of the contributing causes to riparian areas not meeting Standards upon their reintroduction. The riparian areas around the spring that which did not meet the Standards would respond well to rest.

Implementing a pasture rotation would improve cattle distribution on Nephi Pasture. The areas that would benefit the most would be the areas that are ¼ to ½ miles from the current livestock watering locations in the pasture. The new water developments would also improve cattle distribution and reduce utilization of key species in those areas nearest to the existing watering locations. Utilization of key species would increase in areas where new water developments would be installed.

The temporary suspension of active use would have a short-term, significant negative impact on the permittee's livestock operations, and may have a negative impact on the permittee's finances. In the long-term, negative impacts would be mitigated by the actions described above.

### Willow Gulch

The impacts would be the same as analyzed in Alternative A.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### VEGETATION

#### *Aspen*

Under Alternative D, aspen stands would continue to regenerate, based on 2007 analysis.

#### *Evergreen Forest*

Evergreen forest plant communities currently receive light use and minimal impacts from livestock grazing and would likely continue under Alternative D. Potential for indirect negative impacts may occur as adjacent plant communities reach capacity and grazing is shifted onto Evergreen Forest communities.

#### *Oak woodland*

Changes in distribution as a result of range developments and growing season rests would assist this community in reaching DPC parameters. Many of the Oak woodland communities in the Monument are functioning and would continue to function under this alternative with improvements in overall health occurring over time. Although Oak woodlands would receive a lower priority for intensive monitoring under this alternative, regular monitoring would occur to verify that sites are functioning normally.

#### *Pinyon-juniper Woodland*

Impacts on Pinyon-juniper woodlands would include moderate improvements in understory species cover and diversity. A more diverse age structure and greater diversity of understory species would be achieved and maintained over time with this alternative, particularly in areas where use was traditionally high or where Standards are not being met. For areas that received light or no use, some decreases in plant cover and diversity may be expected with this alternative, since efforts to better spread livestock use across a given pasture or allotment through range improvements would increase use of areas not previously impacted. With the suspensions proposed in this alternative for allotments not meeting Standards, plant communities would more rapidly improve than for alternatives that propose changes in grazing management. Cool season grasses, a traditionally important component of Pinyon-juniper woodlands, would have an increased chance for recovery under this alternative. In general, progress would be made towards achieving DPC for this community. The specific criteria outlined in the DPC for Pinyon-juniper woodlands would create higher priorities for restoration activities in this cover type. The emphasis on research oriented restoration under this alternative would benefit the community type overall and help guide restoration of Pinyon-juniper woodlands throughout the Monument. The rate for achieving results would be more accelerated than in Alternatives A, B, and C as a result of timeframes established for achieving restoration success and pre-restoration monitoring protocols and success criteria. The persistence of the restored or improved sites would be enhanced with this alternative as a result of the new rangeland health evaluation proposed for each site and the adjusted use levels.

#### *Ponderosa pine/Douglas-fir*

Under Alternative D, Ponderosa Pine/Douglas-fir communities would receive marginal impacts. Because this is a relatively uncommon community type with limited grazing pressure, no substantial impacts are expected. Slight improvements to community health may occur as a result of growing season rest requirements implemented in the “Management common to all”

## CHAPTER 4 ENVIRONMENTAL IMPACTS

measures. Indirect negative impacts may occur if adjacent cover types reach carrying capacity and grazing pressure is shifted onto Ponderosa pine/Douglas-fir communities. Although this cover type would likely receive a lower priority for intensive monitoring, routine monitoring would be conducted to ensure that sites are properly functioning.

### ***Blackbrush***

Blackbrush communities would experience gradual improvements to community health and may slowly progress towards achieving DPC. Blackbrush communities are generally not particularly resilient and improvements to vegetation cover and diversity may be slow at best under any alternative. Growing season rest would allow some of the native species to recover but complete recovery and reaching DPC objectives may not be possible without more substantial modifications to livestock management. Sites that are not meeting Standards would be given rest until Standards are met which would greatly increase the chances of site recovery. Adjusted use levels and management of Blackbrush communities once Standards are met would provide a means to prevent further degradation. Sites that were determined to be functioning at risk have the best chance to show improvements to soil erosion and species composition. Shifts in composition from cool season grasses to warm season grasses may be irretrievable without long-term season of use modifications, as proposed. Sites that are Non-Functioning would be prioritized for intensive monitoring under this alternative but overall improvements in this plant community are expected to be slow at best. Site stabilization and overall increases in total cover are the most likely factors to improve.

### ***Desert shrub***

Under Alternative D, Desert shrub communities would show some moderate improvements in overall vegetation cover and biological soil crust cover. Changes in species composition may be longer term in nature. Changes in distribution associated with range improvements would increase vegetation cover in areas heavily used but may result in decreases in areas that are currently lightly used. This may cause some sites that are at threshold conditions to deteriorate and may reduce functioning at otherwise intact sites. Progress towards DPC would be accelerated under this alternative, relative to Alternatives A-C. Soil loss and erosion have been identified as impacts on this community and changes in distribution and growing season rest would result in localized improvements over time to these factors. Provisions for adjusting the level of use and general management proposed under this alternative would allow for longer term stability of soils in this community type. Adjustments to management would encourage the establishment and competitiveness of desired species in Desert shrub sites. Desert shrub communities typically occur in dry low elevation sites, often with saline soils, and as such are naturally slower to recover from disturbance than other communities. With this, and all alternatives, degradations can occur rapidly if not closely monitored and improvements would occur slowly.

### ***Grassland and Meadow***

Grassland and Meadow communities would benefit from the improved distribution and growing season rest measures associated with Alternative D. Improvements to this community would include a long-term increase in total vegetation cover and subsequent decrease in the amount of bare ground. Changes in livestock distribution associated with range improvements may cause reductions in vegetation cover and possible species composition shifts in areas that had

## CHAPTER 4 ENVIRONMENTAL IMPACTS

previously received light use. This would result in reduced grazing use in areas that typically received relatively heavy use. Monitoring would help document any detrimental impacts on grasslands. Reduced surface resistance to erosion is a concern in some grassland sites and growing season rest would allow increases in vegetation cover and litter to improve these conditions. For sites that do not meet Standards, more immediate improvements would be observed as a result of suspensions and subsequent adjustments to use levels and general management. Because soil stability is an issue in Grassland and Meadow communities, temporary grazing suspensions would allow the longer time needed to stabilize these sites and adjusted use levels would provide a means to prevent future degradations.

### *Mountain shrub*

Impacts associated with Alternative D to Mountain shrub communities are not expected to be substantial. Because of the relative scarcity of this cover type in the Monument, it does not receive much grazing pressure. All sites sampled for rangeland health were functioning normally and would likely continue to function normally.

### *Sagebrush-grassland*

Alternative D would bring improved conditions to a large number of acres of Sagebrush-grassland. As with other community types, the changes would be gradual with initial increases in total vegetation cover and decreases in bare ground. Longer term changes may be expected for shifts in species composition and overall diversity. These shifts in species competition would occur more rapidly under this alternative as a result of the temporary suspension for sites that do not meet Standards. The competitiveness of native grasses against invaders such as cheatgrass would be increased with seasonal rest and at sites where suspensions occur. The potential for increased cover of cool season grasses relative to warm season grasses would improve under this alternative, particularly for sites that undergo changes in growing season after meeting Standards. Sagebrush-grassland sites would receive higher prioritization for monitoring under this alternative and would have a greater potential for reaching DPC. Livestock management changes under this alternative would not prevent or control the spread of juniper in Sagebrush-grasslands but monitoring may identify areas to prioritize for treatment. Changes in community structure would be identified much earlier with the monitoring criteria under this alternative. Therefore, sites that are at or near threshold states for recovery would receive modifications to grazing or restoration efforts at a stage where restoration is most effective.

### *Seedings*

Under Alternative D, seedings that do not meet Standards or have experienced plant mortalities would not be grazed prior to restoration and grazing would only resume once post restoration success criteria are met. This would ensure that Standards for plant cover and composition set in the DPC for seedings are achieved. In some seedings where weeds are an issue, weeds may gain a stronger foothold when grazing pressure is removed. While removing grazing prior to restoration would stabilize soils, competition with exotic species would increase for seeded species. Seedings would make slow to moderate progress toward achieving and maintaining DPC. Adjustments to use levels and general management would provide a means for preventing widespread plant mortalities and site degradation during drought periods. With this alternative, seedings have a greater chance for long-term persistence.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### *Wetlands/Riparian*

The proposed fences around riparian areas and improvements to water developments would result in immediate increases in the total vegetation cover with subsequent increases in the amount of litter, diversification of age classes of woody species, and potential expansion of riparian zones to match site potential. Positive impacts would occur because, changes in species composition and structure for herbaceous species may be observed in the short-term with more moderate to longer term changes to woody species composition. Where they exist, exotic species such as tamarisk and Russian olive would continue to be strong competitors with native tree and shrub species without proactive management and control of these plants. Alternative D emphasizes restoration and research activities in riparian areas which would lead to substantial improvements in native species cover and overall extent in many degraded riparian areas. The proposed changes in use and management after failing sites meet Standards would result in increased long-term stability and health of riparian areas, relative to Alternatives A-C.

### **THREATENED, ENDANGERED AND SENSITIVE PLANT SPECIES**

Many of the special status species found in the Monument are edaphic endemics that are restricted to sparsely vegetated sites with specialized soil or bedrock characteristics. These are often harsh sites that provide little forage for livestock and are frequently inaccessible because of steep slopes. Because of these habitat features, most special status plant species receive little to no direct impacts from livestock grazing. With improved distribution of livestock, grazing impacts may occur closer to special status species than previously occurred resulting in a negative impact. Potential does exist for indirect negative impacts as a result of habitat degradation from invasive weed species from adjacent habitats and loss of pollinators that rely on the health of the surrounding vegetation. In general, the focus on restoration and research under this alternative would indirectly improve habitat conditions for special status plants. Threats to Kodachrome bladderpod are mainly related to off-road vehicle use but trampling by livestock is a possibility. Impacts on Kodachrome bladderpod would be reduced as a result of the language in VEG-5 (Chapter 2) which prevents trampling through placement of salt blocks, supplements, and water away from Kodachrome bladderpod populations. This species occupies approximately 600 acres within the Dry Valley, Upper Hackberry, and Upper Paria allotments. Under this alternative, roughly 585 acres of the occupied habitat (98% of population) would remain unchanged and approximately 0.5 acres of habitat (<1% of population) would experience improvements as a result of changes in grazing management. Under this alternative, Kodachrome bladderpod populations would generally remain the same or show improvements in size and extent.

Ute ladies' tresses has a restricted distribution (King Bench Allotment, Deer Creek) in the planning area and is managed in a manner that generally encourages the growth of the species. Winter grazing benefits this species by removing competing plant cover. Approximately 49 acres of riparian habitat is occupied by Ute ladies' tresses. Under Alternative D, current grazing practices would continue where this population is located, which would maintain the population at its' current levels.

Under Alternative D, Jone's cycladenia would remain unchanged. One site is known of this species within the planning area. The site occupies approximately 36 acres of steep, remote

## CHAPTER 4 ENVIRONMENTAL IMPACTS

habitat in the Moody allotment that is inaccessible to livestock. No change to this population is anticipated under this alternative.

### **RIPARIAN AND WATER RESOURCES**

#### ***Watershed Health***

Grazing would be suspended on the six allotments not meeting one or both of the upland Standards. Upon achieving Standards, allotment management strategies could include using rest, rotational grazing systems, changes in season of use, and permanent stocking adjustments. Grazing pressure on seedlings that do not meet Standards would be reduced. The net effect of the proposed changes would be a moderate reduction in the severity of impacts on upland hydrologic processes. Moderate improvements in understory cover would occur in dominant vegetation types, causing commensurate reductions in runoff. Improvements would begin immediately in a substantial portion of the planning area. Maintenance and restoration of hydrologically important vegetation, such as the perennial cool season grass component of the Pinyon-juniper and Sagebrush-grassland communities and the grassland and meadow community in general, would have a higher likelihood of success under this alternative.

Improvements would occur both more quickly and over a much broader area under this alternative than under Alternatives A, B, and C, because use would be reduced immediately throughout the most degraded allotments. Using suspensions rather than changes in management would also increase the certainty of achieving watershed management objectives. Increased research, monitoring, and prioritization of Sagebrush-grassland and Pinyon-juniper plant communities would increase the effectiveness of management actions designed to restore desired vegetation conditions, as well as the likelihood that hydrologic processes would be considered in the selection and design of treatment units. As a result, compared to Alternatives B and C, vegetation restoration projects would be more apt to improve watershed conditions as well as habitat conditions.

In the long-term, upland hydrologic conditions governing infiltration and runoff would improve moderately in the six allotments failing upland standards. Causes of excessive runoff from uplands would be addressed in the short-term, via suspension of grazing. Relative to Alternatives A, B, and C, this alternative has a higher likelihood of achieving long-term maintenance and restoration of upland hydrologic conditions. Beneficial impacts would be strongest in areas where grazing is suspended or relinquished, where restoration occurs, and where proposed grazing management strategies are successful.

#### ***Riparian Proper Functioning Condition***

Proposed actions and impacts associated with management of riparian areas and allotments that are failing the riparian Standard or are of concern due to riparian conditions are similar as under Alternative C. The primary difference between Alternatives C and D is in the management of allotments (and the riparian areas they encompass) that do not meet upland Standards.

Riparian vegetation communities would be a priority for restoration under this alternative. As with Alternative C, the toolbox emphasizes repair and installation of structural range improvements (fences and water developments), but also accommodates modification of grazing

## CHAPTER 4 ENVIRONMENTAL IMPACTS

management to meet riparian objectives. Active erosion control and treatment of invasive exotic species would occur on a limited basis.

Retrofitting existing water developments to reduce dewatering would increase the extent, diversity, and vigor of native riparian plants in many riparian areas in the short-term, and would improve stream channel conditions in the long-term by increasing bank stability and large wood recruitment. If constructed and maintained, fences (proposed in many allotments) and off-stream waters would reduce herbivory and trampling in riparian areas, and would also slow the rate of headcut development and migration. Under this alternative (as well as Alternatives B and C), maintenance of new and existing riparian fences would be critical to meeting riparian objectives.

Riparian systems on all allotments would benefit from the initiation of growing season rest every other year. Bank stability would increase as a result of less frequent trampling and increased vegetation cover, and sediment delivery from adjacent uplands to stream channels would decrease as a result of enhanced sediment capture by vegetation.

Immediate suspension of grazing in allotments failing upland Standards would cause short-term and long-term benefits in riparian areas, as five of the six allotments failing Standards 1 and/or 3 also fail the riparian standard. Short-term impacts in some lotic reaches would be slight, as ecological processes in certain areas have been affected by upland conditions that would take time to recover. Long-term reductions in runoff from uplands, coupled with the eventual repair or installation of range improvements, would cause reduced rates of headcutting and channel widening, thereby allowing for maintenance and establishment of riparian communities. Stream and wetland areas that are directly impacted by livestock grazing would benefit immediately from reduced grazing and trampling. Because grazing would be suspended until all Standards are met, there is a high likelihood that this alternative would allow riparian systems in these five allotments to achieve or trend towards PFC. Upon achieving Standards, grazing management would be designed to maintain desired riparian conditions.

Management changes on the three allotments failing only the riparian Standard (as well as in certain other allotments where the riparian standard is met but there are areas of concern) would be similar to Alternative C, and would emphasize improved range management and enclosure fences, as well as creation of off-stream water sources. Management changes would include reducing use of pastures with degraded riparian areas, changing the season of use to minimize livestock utilization impacts on desired riparian vegetation and, potentially, allocating relinquished AUMs to watershed resources. Reducing, eliminating, or reallocating use would reduce livestock utilization impacts on riparian systems; changing the season of use could either increase or decrease livestock utilization resulting positive or negative impacts, although design of the grazing strategy would consider riparian objectives.

As under Alternative C, management changes in allotments failing the riparian Standard would benefit some areas immediately, while other areas would improve incrementally over the life of the plan, since range improvements would only be constructed as funding allows. Riparian areas in allotments where temporary or permanent changes in grazing management are to be implemented immediately would begin improving more quickly, although installation of fences would be required to ensure sustained long-term recovery. Monitoring and associated

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

requirements for remedial action would ensure that progress is made towards reducing livestock impacts on riparian areas.

Erosion control projects would avert reductions in the extent or functionality of a limited number of riparian areas. The benefits of these projects would be greatest in Functioning-At-Risk systems where fences are repaired or installed to control grazing and trampling. Headcuts are a common cause of riparian areas not achieving PFC. Failure to prioritize and address headcuts in a timely manner would reduce the likelihood of recovering systems that are Functional-At-Risk.

The extent of riparian vegetation treatments to remove invasive exotics would be similar to Alternative C. These treatments could increase recruitment of willow and cottonwood and would thereby maintain or restore important ecological (e.g., habitat) and physical (e.g., large wood recruitment and bank stability) functions.

#### ***Water Quality***

In the short-term, areas vulnerable to erosion would continue to receive livestock use, however because of management changes runoff and erosion from degraded allotments would be reduced. Because the primary sources of total dissolved solids (TDS) are marine shales ('badlands') that are naturally highly erosive and receive light grazing pressure, grazing would continue to have a negligible or minor impact on TDS and salinity. Limited implementation of erosion control projects could be used in streams and meadows to reduce the downstream transport of saline soils derived from eroding uplands.

Livestock use around spring-fed streams would be reduced as a result of range improvements, growing season rest, and use suspension in the nine allotments that fail the upland or riparian Standard.

Reducing the magnitude and duration of dewatering would improve water temperatures conditions in some springs. Livestock grazing would continue to affect woody riparian species that provide stream shading, although impacts would be reduced relative to current conditions (as well as Alternatives B and C) as a result of improved grazing management, repair and installation of fences, and suspension of use in eight allotments that fail the upland and riparian Standards. Channel incision and widening (and attendant increases in solar radiation inputs and water temperature) would continue, although recovery of riparian vegetation, as well as a limited program of erosion control, would allow channels to stabilize over time.

#### **SOILS**

Alternative D would improve and maintain the health of the soils resource more readily than any of the other alternatives, except E, due in part to the initial reduction in AUMs to 62,279. Livestock grazing would be suspended in allotments which did not meet upland Rangeland Health Standards. This suspension is expected to result in the second to the greatest increase, of any of the alternatives, in the protective cover of residual vegetation and litter resulting in reduced areas of bare soil.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Management conditions would encourage the growth of species with high root production and a mix of species with different rooting depths and patterns increasing micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, erosion prevention, organic matter, and resilience to compaction. An increase in near-surface roots, plant litter, and vegetation would reduce the susceptibility of soils to compaction by helping to cushion impacts.

Soil disturbance would be minimized during management activities including rangeland improvement projects (i.e. mechanical harvest of Pinyon-juniper, seed bed preparation, and drilling seed). When possible, only designated trails and roads would be used. Surface disturbance that would cause loss of litter and the organic matter layer would be avoided.

Where appropriate, eroding land would be rehabilitated with an emphasis on improving conditions in areas where there is a lack of ground cover, gullies, rills, and sheet erosion.

Detrimental impacts on soils would be avoided or mitigated with an emphasis on soils with a high risk of degradation. Vegetative manipulation and soil disturbing projects would be appropriate for the soil series within the project area to ensure success of the project.

#### **NOXIOUS WEEDS AND NON-NATIVE PLANTS**

Under this alternative there would be no further livestock spread of Noxious and/or invasive plant species in the three closed allotments and one pasture. The remaining six suspended allotments would have a reduced spread of Noxious and or invasive plant species since adjustments to livestock management would reduce grazing intensity, along with reducing disturbance during the growing season.

Successful restoration and vegetation treatment projects aimed at improving vegetation health and cover would result in a decrease in Noxious and/or invasive plant species. Soil disturbance due to fence building and pipeline extension has potential to increase weed spread but would be limited to the immediate area of the action. Replacing water catchments won't create new disturbances but, will evenly disperse livestock which will likely increase the distribution of invasive species.

#### **WILDLIFE**

##### ***Impacts on Migratory/Special Status Bird Species of Concern***

Under Alternative D, there would be more emphasis on passive changes to livestock grazing management, in that more allotments (specifically those which fail the upland Standard) would receive rest. The active management proposed in Alternative C, (vegetation restoration, season of use changes, growing season rest, and the installation of range improvements) would also be proposed under this alternative.

This alternative continues an emphasis on rehabilitating failed seedings, along with requirements (VM 9 through 12) for a more diverse seed mix. The failed seedings were usually monotypic stands of non-native grasses. Restoration would result in greater plant variety and an increase in habitat diversity, with a positive impact on grassland dependent bird species; especially in

## CHAPTER 4 ENVIRONMENTAL IMPACTS

locations which currently have little surface cover as a result of seeding failure. There would be an increase in desirable habitat for ground nesting migratory birds which require nesting or protective cover. The small number of bird species which require exposed ground, such as horned larks or killdeer, would be negatively impacted for the long-term by restoration actions.

Season of use changes, growing season rest (GRAZ-2) and improved livestock distribution would result in changes in vegetative composition. Livestock engage in selective herbivory, and improved management would change vegetative composition through the recovery of species which are selectively grazed or browsed. This recovery would increase habitat niches for bird species, and would reduce the impacts of grazing on those bird species which have been negatively impacted by past grazing practices. The rate of recovery would vary by vegetation type, with rapid response in forb or grass dominated types (especially early seral vegetation dominated by annuals), and less response in late seral types such as Blackbrush or Pinyon-juniper.

This alternative proposes long-term rest on allotments which fail to meet either soils or biological diversity standards. Suspending grazing would assist in the recovery of shorter lived and rapidly reproducing species, such as grasses and forbs, resulting in an increase in structural diversity and cover. In comparison to seasonal rest, long-term rest would show better recovery of longer lived, and slower to reproduce species, such as woody shrubs. Strongest recovery is expected in communities which normally have a high percentage of grasses and forbs, such as the Grassland-meadow community. Fair recovery is expected in shrub dominated communities, such as Mountain Shrub or Oak Woodlands. Upland areas which have experienced a loss of soil productivity would show little or no recovery. Many Pinyon-juniper woodlands fall into this category. Impacts on bird species match those of the plant community, with overall increases in habitat and associated diversity in shrub and grass communities, and more gradual improvements in woodlands and arid shrub communities.

Long-term rest would increase the quantity and quality of surface litter and dead standing plant material. Livestock will consume this type of material in the absence of palatable forage, so seasonal restrictions and growing season rest would still result in the reduction of overall plant mass. The maintenance of standing dead material would increase cover, with positive impacts upon smaller bird species. An increase in litter would also provide additional habitat for insects, benefiting insectivores. Growing season rest would reduce trampling impacts on migratory ground nesting birds, since the growing season overlaps the nesting season. Long-term rest would remove trampling impacts.

Riparian area protection, through exclusion, long-term rest or by redirection, would improve the structure and density of riparian vegetation with a positive impact on riparian dependent species. The net increase in water availability from new range improvements would also have a positive impact on bird species.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

**Table 4-6 Impacts on Birds by Habitat Type**

Habitat Type (% land)	Bird Species	Impacts
<ul style="list-style-type: none"> <li>● Aspen (0.02 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Williamson's sapsucker</li> </ul>	Many aspen stands are located within this allotment which has been historically retarded in natural regeneration due to livestock use. This closure would greatly benefit these aspen habitats through and increase in reproduction, understory, and overall stand health.
<ul style="list-style-type: none"> <li>● Pinyon-Juniper (41.7 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black-throated gray warbler</li> <li>● Gray vireo</li> <li>● Pinyon jay</li> <li>● Virginia's warbler</li> </ul>	Suspensions on 9 allotments until health Standards are met would eliminate competition between P-J habitat dependent birds and livestock while providing for recovery of the vegetative understory, resulting in more production of insects and seeds for birds.
<ul style="list-style-type: none"> <li>● Ponderosa Pine-Douglas Fir (1.1 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Flammulated owl</li> <li>● Grace's warbler</li> <li>● Lewis's woodpecker</li> <li>● Northern goshawk</li> </ul>	Results from more intensive livestock grazing management similar to Alternative C. Suspension of grazing on 10 allotments would also result in elimination of competition for habitats during breeding, nesting, and overwintering periods. There would also be increased grasses and forbs in the understory which would provide for more insect and rodent habitat for these birds.
<ul style="list-style-type: none"> <li>● Desert Shrub (7.20 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Brewer's sparrow</li> <li>● Sage sparrow</li> <li>● Sage grouse</li> </ul>	Positive impacts on sagebrush and grassland dependent bird species and neotropical bird species from suspending livestock use in those areas that fail to meet upland Standards. Suspension would reduce competition for resources and physical disturbance during nesting and brood rearing. Priority on restoration activities and other rangeland improvements would benefit birds over the planning period.
<ul style="list-style-type: none"> <li>● Grassland &amp; Meadow (1.7 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black rosy-finch</li> <li>● Burrowing owl</li> <li>● Ferruginous hawk</li> <li>● Northern harrier</li> <li>● Short-eared owl</li> <li>● Swainson's hawk</li> </ul>	Allotments which fail upland health Standards would have grazing suspensions until recovery which benefits grassland migratory birds. Improved habitat would also result from vegetation restoration and rangeland improvement projects.
<ul style="list-style-type: none"> <li>● Riparian (0.51 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Blue grosbeak</li> <li>● Broad-tailed hummingbird</li> <li>● Common Yellowthroat</li> <li>● Lucy's warbler</li> <li>● Peregrine falcon</li> <li>● Prairie falcon</li> <li>● Yellow-billed cuckoo</li> <li>● Bald eagle</li> </ul>	Closure on nine allotment which fail both upland and riparian Standards would have a positive impact on riparian dependent bird species. Together with other riparian improvements, this would assist the protection and recovery of riparian dependent bird habitats.

### **Impacts on Bats**

Under this alternative there would again be little to no change on non-riparian bat roosting habitat. Grazing suspension, vegetation restoration and rangeland improvement projects would result in more rapid recovery of understory plant communities, and riparian recovery, resulting in more rapid recovery in non-riparian and riparian bat foraging habitats. Increased vegetative ground cover would result in an increased diversity of understory plant and insect prey species in both non-riparian and riparian foraging habitats resulting in the development of better quality foraging habitats over time. Recovery of riparian communities would result in the development

## CHAPTER 4 ENVIRONMENTAL IMPACTS

of better quality roosting habitat (i.e. large cottonwood trees) over time. Improved water distribution and design would increase the availability of water for bats.

**Table 4-7 Summary of Impacts on Bats**

<b>HABITAT TYPE</b>	Non-riparian, Roosting	Non-riparian, Foraging	Riparian, Roosting	Riparian, Foraging	Open water, Foraging & Drinking
<b>BAT SPECIES</b>	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat	Western red bat	Western red bat	Fringed myotis, Allen's lappet-brow bat, spotted bat, big free-tailed bat, Townsend's big-eared bat, Western red bat
<b>IMPACTS</b>	Little to no impacts on bat roosting habitat in cliff, cave, non-riparian tree, and multiple habitats.	Grazing suspension would recover uplands, with increased bat foraging habitat. Benefits would also result from vegetation restoration and rangeland improvement projects.	High priority for annual riparian monitoring, and management change requirement after failure to move towards PFC within four years lead to improved riparian roosting habitat.	High priority for annual riparian monitoring, and management change requirement after failure to move towards PFC within four years lead to improved riparian roosting habitat.	Medium priority for improved water distribution would result in greater water availability, along with wildlife-friendly increasing access.

### ***Impacts on Game Species***

#### ***Desert Bighorn Sheep***

While Alternative C emphasizes reduced stocking, Alternative D proposes long-term rest. The twenty nine percent unchanged (470,246 acres) and twenty seven percent with changed management (449,715 acres) are very similar to Alternative C. There would be an increase in area where livestock are removed for long term rest, (to thirty percent or 483,374 acres) and decrease in area where livestock numbers are merely reduced (fourteen percent or 227,367 acres). Together this would have a net positive impact on Bighorns, through increased forage availability. Areas under long-term rest would not have competition for water, in that Bighorns avoid water sources where livestock are present.

The seeding restoration activities proposed under this alternative would also have a positive impact on suitable Bighorn habitat by providing additional forage in the form of grass, but in areas which would receive little use. Structural improvements, in the form of water developments would provide additional sources of water for Bighorns, and improve livestock distribution.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Mule Deer

Sixty percent (26,226 acres) of Critical Mule Deer winter habitat would receive long-term rest from livestock use under this alternative. This would have a positive impact on Mule Deer by removing competition for browse in winter use areas.

This alternative also proposes new range improvements. Water developments would increase habitat availability to Mule Deer, which would be a positive impact, but better livestock distribution would come at the cost of more fencing, and fences have a potential to impede deer movements.

Seeding restoration would restore a forb component to lands which have reduced forbs, with a positive impact on Mule Deer by increasing forage availability for the long-term.

### Pronghorn

Forty seven percent (46,356 acres) of suitable Pronghorn habitat would receive long-term rest under this alternative. Livestock competition with Pronghorn for forage would cease on these lands. On the fifty three percent (46,356 acres) of habitat which would continue to be used by livestock, negative impacts on Pronghorn would be reduced through changes in grazing management. Growing season rest would be required (GRAZ-2), with a positive impact. This rest period would make forbs available for consumption early in the season, when Pronghorn prefer them over shrubs. Spring forb availability is also critical to fawn rearing success, since lactating females use forbs heavily.

Structural range improvements are proposed under this alternative. New water developments would increase the availability of browse for Pronghorns by increasing their distribution. Fences are also proposed, and they may have a negative impact on Pronghorns since they impede Pronghorn movement.

### Sage Grouse

As was noted in the No Action Alternative, impacts on occupied Sage grouse habitat are identical under all alternatives.

Under this alternative, there would be changes in livestock management consisting of growing season rest, and improved distribution on twenty four percent (431,941 acres) of historical habitat. The growing season rest would have the strongest impact, since it would prevent the removal of cover (through consumption) during the nesting and early brood rearing season. There also would be no competition between livestock and Sage grouse for forbs during the period when Sage grouse consume forbs. Growing season rest, along with improved distribution, would assist in riparian recovery, which would have a positive impact on Sage grouse. An additional eleven percent (192,587 acres) would receive reduced stocking along with improved management, with similar, but more pronounced, benefits. In most cases, the positive impact from growing season rest is not total, in that Sage grouse brood will still be susceptible to predation and trampling impacts upon the resumption of grazing, but to a lesser extent, since the highest risk of mortality occurs early in the season.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

The livestock impacts described above would be removed from thirty-one percent of historical habitat (556,913 acres). While the positive impacts are similar to those from reduced stocking or growing season rest, there is an additional benefit in that trampling impacts will not take place. Dead or cured plant material will also remain in place, since winter livestock use would not occur, which would increase nesting cover, and further reduce the potential for predation.

### ***Impacts on Fish and Aquatic Species***

Under this alternative, riparian areas would have the least amount of livestock use of the other action alternatives. Herbaceous utilization by livestock Monument-wide would be less under this alternative than under alternatives B and C. Most riparian areas would only be authorized for livestock use during the late fall and winter seasons, or dormant season use. This would allow for the greatest establishment and growth of riparian herbaceous and woody plants. This alternative would result in the fastest recovery of riparian areas not meeting standards and the most rapid achievement of good to excellent ecologic conditions. These conditions would have the greatest benefit to the habitats which fish and other aquatic species need for maintaining healthy and sustainable populations.

### ***Impacts on Threatened and Endangered Wildlife Species***

#### ***Mexican Spotted Owl***

Under this alternative, livestock grazing would be removed from Mexican Spotted Owl Protected Activity Centers during breeding and nesting seasons. Additional changes in grazing management would impact almost half (49%) of the Mexican Spotted Owl Critical Habitat within the planning area under this alternative. Both approaches (seasonal removal and improved rotation) would increase plant vigor, especially with grasses and forbs, which should have a positive impact on rodent and small animal populations, which in turn increases the prey population available to Mexican Spotted Owls.

The active use of the “riparian toolbox” in riparian restoration would improve the conditions of riparian areas. The Recovery Plan guidelines include “implement management strategies that will restore good conditions to degraded riparian habitat as soon as possible”.

#### ***Southwestern Willow Flycatcher***

Under this alternative, range improvements and growing season rest would encourage riparian recovery. Along with this, utilization standards would be imposed on allotments with suitable habitat for Southwestern Willow Flycatcher. Livestock use in allotments with suitable Southwestern Willow Flycatcher habitat will be restricted to between September 1<sup>st</sup> and March 15<sup>th</sup>. The net impact of these measures would be a strong improvement in riparian habitat and an eventual increase in bird numbers.

The Cottonwood Allotment contains habitat that meets the criteria for breeding Southwestern Willow Flycatchers. The Paria River and Cottonwood drainage portions of the allotment would be used as a separate pasture dedicated to trailing and emergency use. Any use would be subject to the winter only restriction. Taken together these actions would remove all livestock related impacts in this allotment from the stream corridor area, which would improve the suitability and extent of riparian habitat used by Southwestern Willow Flycatcher.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Forty two percent of the suitable and potential Southwestern Willow Flycatcher habitat would have livestock grazing impacts removed. While little of this habitat is within lands identified for recovery, the net impact would be the improvement of riparian corridors adjacent to high priority habitat, and an increased potential for Southwestern Willow Flycatcher recovery.

In addition to allotment specific changes on Cottonwood Allotment, long-term rest, and winter season grazing requirements on all other allotments with suitable habitat, stricter utilization standards would also be set on riparian plants, protecting plant recovery. Taken together, these measures would result in improved riparian habitat and benefits to Southwestern Willow Flycatcher.

#### **CULTURAL RESOURCES**

The implementation of the Cultural Resources Protocol (see Appendix 3) is common to all action alternatives. Under this alternative grazing related impacts on cultural resource sites would be identified on a site-specific basis, and appropriate mitigative measures would be implemented as necessary. In addition, the cultural resources research and monitoring component of the Protocol would provide the opportunity for in-depth research into grazing related impacts on cultural resource sites, use of appropriate mitigative measures, and the effectiveness of these measures, as well as provide for cultural resource inventory in areas where grazing related impacts are likely but the site density and character is unknown. This component is important in that research and monitoring regarding grazing related impacts would lead to a better understanding of the situation, and eventually better and more effective management practices.

This alternative emphasizes temporary suspensions of allotments failing upland range health standards in combination with changes in rangeland management practices (see Alternatives B and C). For cultural resources, this is an improvement over Alternatives B and C in that less on-the-ground improvements will be needed to keep livestock from concentrating in certain areas, vegetation will have an opportunity to re-establish (thus lessening erosion), and immediate protection from grazing related impacts are afforded to many cultural resource sites.

Although primarily designed for rangeland health and riparian concerns, proposed suspensions or closures would only benefit cultural resources in that the source of grazing related impacts would be, at least temporarily, lessened or removed. Erosion, either directly or indirectly caused by grazing pressures at cultural resource sites, is a major factor in the deterioration of these sites. Allowing the recovery of vegetation on these sites would generally slow the effects of erosion and help protect the sites. Suspensions on a long-term or permanent basis would also benefit the cultural resource research by providing a scientific control regarding grazing related impacts; the conditions and impacting agents at similar sites in similar settings could be directly compared between areas open to grazing and areas closed to grazing. Again, this would lead to better management practices in the future.

This alternative would provide immediate relief from grazing related impacts on cultural resource sites on 342,244 acres, primarily on those allotments with problems meeting upland rangeland health standards. This alternative provides for an increase in immediate protection for cultural resource sites over alternatives B and C. With the temporary removal of livestock from

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

14 % of the EIS area, grazing related impacts on those sites would halt immediately. While Alternatives B and C would gradually allow for the recovery of vegetation and the eventual protection this would afford many cultural resource sites, Alternative D provides many sites immediate relief from artifact trampling, breakage, dispersal, and other direct impacts associated with livestock on cultural resource sites.

Although the action alternatives are designed to achieve the same end rangeland health goals, the differences lie in the methods with which these goals are achieved by the various alternatives. Recovery of vegetation is an important factor in lessening overall impacts on cultural resource sites. In general, the faster an alternative leads to vegetative recovery, the better that alternative will be for cultural resources. This alternative would lead to more rapid vegetation recovery than Alternatives B and C, and is comparable to the following Alternative E when considering upland vegetation. This alternative also affords immediate protection from direct grazing related impacts on many cultural resource sites, an aspect that is largely lacking from Alternative B, and present only to a small extent in Alternative C.

#### **RECREATION**

Most conflicts between recreational use and livestock grazing would be reduced or eliminated under this alternative. During the period of temporary suspension of grazing in allotments that do not meet upland Standards, most conflicts would be eliminated in those allotments for the duration of the suspension, but upon the resumption of grazing those conflicts would return.

Recreational access problems relating to range developments (access through fences) would be reduced by incorporating the proposed “Standard Requirements and Design Restrictions on Range Improvements” (see *Standard Operating Procedures* [SOPs], Appendix 10). Additional requirements providing for recreational foot and horse access through fences would further reduce conflicts.

Changes in Seasons of Use under this alternative would reduce the overlap between the high recreational use season (mid-March through June, and September through November) and a grazing season in certain allotments.

The Upper Gulch Pasture of Circle Cliffs Allotment would be grazed only spring or fall of every other year. In years when spring grazing would occur, the season of use would end no later than March 15, which is also the typical start of the spring high recreational use season. Conflicts relating to competition for space in the Upper Gulch would be greatly reduced under this alternative.

The season of use for livestock grazing in Clark Bench Allotment would be cut back by one month in the spring, with the end of the grazing season being March 31<sup>st</sup> rather than April 30<sup>th</sup>. Conflicts with recreational use would be reduced during the highest recreational use period of the spring under this alternative. One pasture would be deferred each year. Additionally, by the creation of The Dive Pasture, there would be reduced livestock use of the Paria Canyon-Vermillion Cliffs Wilderness, further reducing opportunities for conflict on the allotment.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Death Hollow Allotment would have a season of use with less overlap onto the high recreational use season. Some livestock grazing has been authorized from April 1 through May 15; under this alternative all livestock grazing would end no later than March 31. Furthermore, fencing livestock out of the head of the narrows of Little Death Hollow would eliminate problems with hikers inadvertently herding livestock into the narrows. This would eliminate most recreational conflicts in this allotment.

The closure of Big Bowns Bench Allotment would eliminate all potential conflicts between recreational use and livestock grazing in that area.

One of the locations of highest conflict between recreational use and livestock grazing is the portion of the King Bench Pasture of King Bench Allotment that contains The Gulch, which is a very popular destination for hikers, backpackers and equestrians. Most of The Gulch on this allotment is designated as an Outstanding Natural Area, and there is an expectation among recreational users that it should be an outstanding, natural-appearing landscape. Because The Gulch supplies the only reliable water for most of the pasture, the livestock tend to concentrate use in the canyon bottom, which is also where recreational use is concentrated. Under this alternative the season of authorized use would be reduced by one month in the spring, ending no later than February 28, rather than March 31, and spring grazing would occur only every other year. This would greatly reduce conflicts relating to competition for space by eliminating the presence of livestock during the spring season of high recreational use. It would also improve the natural appearance of vegetation in the canyon by allowing for an extra month of un-grazed spring growth. However, this would only somewhat reduce conflicts relating to access to clean water, because while there would be no livestock present during the high recreational use season, there would still be relatively fresh livestock feces concentrated around the stream in years of spring grazing use, especially during the early part of the recreational season.

Since much of the forage in the pasture is on King Bench itself (above the canyon), development of water catchments and/or repair of the existing water development on the bench would provide the opportunity to keep livestock mostly out of the canyon except for trailing purposes. If water sources are successfully developed then most recreational conflicts with authorized livestock use would be eliminated.

The creation of a new “Deer Creek” Pasture in the King Bench Allotment would be necessary to achieve reduction of conflict in The Gulch. It is possible in this alternative that new conflicts could arise in Deer Creek. Monitoring for increasing conflict would be necessary. Mitigation measures would need to be taken if monitoring indicated an increase in conflict.

The exclusion of livestock from the slot canyons of Dry Fork of Coyote Gulch (Dry Fork Narrows, Peek-a-boo, Spooky and Brimstone) in Lower Cattle Allotment would eliminate recreational conflicts related to inadvertent herding of livestock and the resulting unpleasant confrontations in the constricted areas.

The creation of Buckskin Gulch Pasture in Mollies Nipple Allotment, and designating the portion of the pasture east of House Rock Valley Road as limited to livestock use would reduce conflicts with recreational use related to competition for water and space.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

In Upper Cattle Allotment, the exclusion of livestock from the visitor facilities (parking, toilet and picnic area) and rock formations of Devil's Garden would eliminate conflicts with recreational use in those areas.

### ALTERNATIVE E

#### LIVESTOCK GRAZING

Implementing Alternative E would result in the temporary suspension of livestock grazing in Collet, Ford Well, Soda, Mollies Nipple, School Section, Upper Paria, Vermilion, Death Hollow, Rock Creek-Mudholes allotments and portions of the Coyote allotment for restoration purposes or as a result of not meeting Standards. These suspensions, while temporary, would require adjustments to grazing operations in these allotments (impacts more specifically described below). Adjustments for some livestock operators could affect their ability to continue to operate. In order to adjust, livestock operators would be forced to reduce livestock numbers, feed livestock off-site and/or procure replacement pastures. The schedule of restoration activities and lifting of the temporary suspensions are dependent on funding available and successful establishment of desirable species. It would be unrealistic to expect that funding would be available to restore all allotments at the same time so the temporary suspension for some allotments could exceed five years.

Closure of the Big Bowns Bench Allotment would eliminate 750 AUMs. This would have minimal impacts as this allotment has not been grazed since 1999 due to unfavorable conditions. Closure of the Antone Flat (currently unallotted) and Little Bowns Bench (currently a forage reserve) Allotments and the Wolverine Pasture (currently a forage reserve) would have no impact as these areas are not used for livestock grazing and no AUMs are authorized within them. This alternative would close, at the request of Glen Canyon National Recreation Area, the southern tip of Grand Bench (Rock Creek-Mudholes allotment) for near-relic area research resulting in the elimination of 72 AUMs and also close the GCNRA portion of the Navajo Point Pasture (Lake allotment) resulting in the elimination of 294 AUMs.

Retention of the Phipps Pasture as a forage reserve would leave the status of the area unchanged.

For the remaining allotments that meet Standards, changes to existing management would be minimal as they would be limited to those short-term adjustments commonly associated with on-going allotment administration such as requests for change of season of use, modification to pasture rotation use, voluntary non-use, transfers and temporary non-renewable use.

#### *Allotment Specific Consequences*

##### Circle Cliffs

The impacts would be the same as analyzed in Alternative B.

##### Clark Bench

The impacts would be the same as analyzed in Alternative B.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Collet

(Uplands and Riparian did not meet)

The impacts would be the same as analyzed in Alternative D.

### Coyote

The impacts would be the same as analyzed in Alternative C.

### Death Hollow

(Riparian did not meet)

The impacts of this alternative would be greater than in the other alternatives because there would be an immediate temporary suspension of all 1,057 AUMs until Standards are met. Riparian areas that currently do not meet Standards because of livestock use would progress toward recovery without grazing pressure, but invasive and undesirable species would remain a problem. Priority would be increased for treatment of invasive species at these springs.

Fences to restrict livestock access to Little Death Hollow and Wolverine Creek narrows would be constructed, since their intent is to reduce conflicts between livestock and recreational users. The installation of those fences would be deferred until the allotment meets Standards and livestock use is reauthorized. The riparian exclosures would not be constructed, which would be a concern upon the reintroduction of livestock. The complete exclusion of livestock from the allotment would aid in adding scientific knowledge because this allotment would act as a livestock exclosure. Data gathered from the exclusion of livestock on this allotment would help the Monument utilize adaptive management concepts learned from management changes.

The temporary suspension of active use would have a greater impact on the permittee's livestock operations than any of the other alternatives. The temporary suspension of active use would have a significant negative impact on the permittee's livestock operations in the short-term, and may have a negative impact on the permittee's finances. In the long-term, proposed restoration actions would mitigate this impact.

### Ford Well

(Riparian did not meet)

The impacts of this alternative would be more noticeable than in the preceding alternatives since there would be no grazing of livestock on the allotment until Standards are met. This alternative would suspend all 328 active AUMs until either the Ford Well riparian area meets that Standard or until livestock grazing is no longer a contributing factor to Standards not being met. The riparian area should improve more rapidly with this alternative compared to the others.

Total rest from grazing would improve uplands through increased plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts would be corrected through plant community restoration.

The temporary suspension of active use would have a significant negative impact on the permittee's livestock operations in the short-term, and may have a negative impact on the permittee's finances. In the long-term, proposed restoration actions would mitigate this impact.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### Soda

(Uplands and Riparian did not meet)

The impacts would be the same as analyzed in Alternative D.

### King Bench

The impacts would be the same as analyzed in Alternative C.

### Lake

This alternative would close the GCRNA portion of the allotment resulting in a reduction of 294 AUMS on a portion of the Navajo Point pasture. This closure would result in a short-term and long-term positive impact to the health of the vegetative community in the closed portion. Substantial improvement to the vegetation is not anticipated however due to the presence of invasive annual grasses, as well as historical changes in the plant community. Riparian areas would improve and upward trend would continue.

The closure described above would have a significant negative impact on the permittee's livestock operations in the short-term and long-term, and may have a negative impact on the permittee's finances.

### Last Chance

This alternative would not change livestock numbers. The only fence that would need to be constructed as part of this alternative would be to fence off East Roger's Canyon. The riparian assessment in East Roger's Canyon is trending downward because of livestock trailing. This alternative would effectively close the pasture since the canyon bottom is the only access to the entire drainage, but since it is not a significant amount of forage, no reductions in stocking rate are necessary for this alternative. The riparian area in East Roger's Canyon would improve as result of this action.

Five of the sites indicate a drastic downward trend since 1998, four of which are located in crested wheatgrass seedings. Two sites, both in the hotter and drier region of the allotment indicate a static trend. Overall the trend would be downward for the allotment and this trend would continue

The fencing of East Roger's Canyon would not have a negative impact on the remaining permittee's livestock operations.

### Mollies Nipple

(Uplands and Riparian did not meet)

This alternative would implement temporary grazing suspensions until Standards are met, with a reduction of 3,862 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. Upon achieving Standards, and the resumption of grazing, the allotment has a potential of 3,307 AUMs, but the final quantity may change, subject to the determination of the new evaluation.

The impacts of this alternative would be similar to the previous alternative since the entire allotment would be rested until Standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would

## CHAPTER 4 ENVIRONMENTAL IMPACTS

increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts would be corrected through plant community restoration.

Once it has been determined that Standards are met, active use would be restored. Restoration work on Blue Spring, Telegraph, Mine Spring, Jenny Clay, and Rockhouse Pastures would be a high priority under this alternative. While more forage would be available for livestock upon completion of the restoration than is available currently, it is probable that active use would not be restored to the historical level of 3,862 AUMs since that level was determined using healthy crested wheatgrass seedings and a two month longer season of use. The restored seedings would be a mixture of grass species, including natives, and would not produce as much forage as the old monotypic crested wheatgrass seedings. A new Allotment Evaluation would be required prior to the reintroduction of grazing to assess the quantity of available forage, and to establish use at a level which would not result in a return to failing to meet Standards.

After restoration activities are completed the long-term trend in the Blue Spring, Telegraph, Mine Spring, Jenny Clay and Rockhouse Pastures should be upward with an increase in the species that were seeded. The success of the restoration activities would depend on the timing and the amount of precipitation the area receives.

The riparian areas that were determined to not be meeting Standards would recover faster than upland sites from the grazing suspension. .

Additionally, Nipple Pasture would not be sub-divided which would change its season of use. Under this alternative the Nipple Pasture would be grazed in June through the middle of August the first year and middle of August through October the second.

The temporary suspension of active use and the shortening of the season of use would have a significant negative impact on the permittee's livestock operations in the short- and long-term, and may have a negative impact on the permittee's finances. In the long-term, proposed restoration actions would not fully mitigate this impact.

### Rock Creek-Mudholes

(Riparian did not meet)

This alternative would implement temporary grazing suspensions of 2,101 AUMs until Standards are met. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. Upon achieving Standards, and the resumption of grazing, the allotment has a potential of 2,101 AUMs, but the final quantity may change, subject to the determination of the new evaluation. Additionally, closure of the southern tip of Grand Bench for near-relic area research, by request of Glen Canyon National Recreation Area, would result in a permanent reduction in grazing preference of 72 AUMs.

Fencing and restoration of riparian sites would be a priority. It is anticipated that this would reduce erosion and increase desirable vegetative cover, community, and litter throughout the allotment. This would be verified by monitoring. Since the installation of structural improvements is subject to funding, it is anticipated that the reduction of impacts would be

## CHAPTER 4 ENVIRONMENTAL IMPACTS

phased in over the life of the plan. Considering the amount of time required for the environmental assessment, funding, and construction of these project, on the ground gains would be slow. Once in place, riparian areas would progress toward PFC, however exotic and undesirable species would continue to be present.

Trend within the allotment is monitored at seven different locations. Based on the most recent trend information, the allotment as a whole demonstrates an upward trend. With the implementations mentioned above it is anticipated that trend will improve under this alternative.

The temporary suspension of active use would have a significant negative impact on the permittee's livestock operations in the short-term, and may have a negative impact on the permittee's finances. In the long-term, proposed restoration actions would partially mitigate this impact. The loss of 72 AUMs would not result in negative long-term significant impact.

### School Section

(Uplands did not meet)

The impacts would be the same as analyzed in Alternative D.

### Upper Paria

(Uplands and Riparian did not meet)

The impacts would be the same as analyzed in Alternative D.

### Vermilion

(Uplands and Riparian did not meet)

This alternative would implement temporary grazing suspensions until Standards are met, with a reduction of 2,849 AUMs of active preference. Before the reauthorization of grazing would be allowed, a new Allotment Evaluation would need to be completed. Upon the achievement of Standards, and the resumption of grazing, the allotment has a potential for 1,813 AUMs, but the final quantity may change, subject to the determination of the new evaluation.

The impacts of this alternative would be more noticeable than in the preceding alternatives since the entire allotment would be rested until Standards are met. Total rest from grazing would increase plant vigor by allowing increased carbohydrate storage. Seed development and dispersal would increase, as would total vegetative cover and plant litter, leading to decreased erosion. Complete recovery is not anticipated due to the presence of invasive annual grasses, as well as historical changes in the plant community. Those impacts would be corrected through plant community restoration.

In order to meet all Standards additional input such as restoration activities need to be completed. For example just removing cattle would not correct the soil erosion problem occurring in the Fossil Wash and Petrified Hollow Pastures. Restoration is proposed in order to control the rills, overland flows, gullyng and other soils related problems, which will assist in meeting the soils Standard. Also, suspending livestock use would not reduce the problems with exotic weed species (such as cheatgrass). Treatment and/or reseeding would reduce the amount of exotic species on the allotment. While more forage would be available for livestock upon completion of the restoration than is available currently, it is probable that active use would not be restored to the historical level of 2,849 AUMs since that level was determined using healthy crested wheatgrass seedings and a three month longer season of use. The restored seedings would be a

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

mixture of grass species, including natives, and would not produce as much forage as the old monotypic crested wheatgrass seedings.

Fossil Wash and RCA 1 Pastures will require restoration in order to return to meeting Standards. The reseeded effort would include actions to reduce soil erosion in the two pastures. Future authorized use could probably be less than the current active use of 2,849 AUMs, since the mix of species used in restoration could produce less forage than the (failed) monotypic crested wheatgrass seedings they replace.

Trend would move upward for the most part, especially in the Fossil Wash and RCA 1 after restoration. Trend may decline in pastures where sagebrush is replacing perennial grasses or where pinyon/juniper trees are reestablished themselves in old seeded areas where they out-compete shrubs and grasses.

Once cattle are authorized on the allotment growing season rest (GRAZ-2) would be required, which would keep the long-term trend at static to upward. Perennial grasses would be able to seed each year rather than every other year in some pastures. As a result, there would be more grasses and a higher percent cover of perennial grasses on the allotment.

The riparian areas around the spring that which did not meet the Standards would respond well to rest.

A three pasture rotation in the Nephi Pasture would improve trend because early June use will be deferred each year.

The temporary suspension of active use and the shortening of the season of use would result in an estimated 1,036 AUM loss and would have a significant negative impact on the permittee's livestock operations in the short- and long-term, and may have a negative impact on the permittee's finances. In the long-term, proposed restoration actions would not fully mitigate this impact.

#### *Willow Gulch*

Same as Alternative A, except that Calf Creek between Upper and Lower Falls would be closed. The livestock/recreational user conflict would be resolved.

No impact to the livestock operations due to closure, because there are no AUMs associated with the proposed closed area.

#### **VEGETATION**

The impacts for all plant communities would be the same as analyzed in Alternative D.

#### **THREATENED, ENDANGERED AND SENSITIVE PLANT SPECIES**

Many of the special status species found in the Monument are edaphic endemics that are restricted to sparsely vegetated sites with specialized soil or bedrock characteristics. These are

## CHAPTER 4 ENVIRONMENTAL IMPACTS

often harsh sites that provide little forage for livestock and are frequently inaccessible because of steep slopes. Because of these habitat features, most special status plant species receive little to no direct impacts from livestock grazing. With improved distribution of livestock, grazing impacts may occur closer to special status species than previously occurred. Potential does exist for indirect impacts as a result of habitat degradation from invasive weed species from adjacent habitats and loss of pollinators that rely on the health of the surrounding vegetation. In general, the focus on restoration and research under this alternative would indirectly improve habitat conditions for special status plants. Therefore, indirect impacts are the most likely influences on special status plant populations under Alternative E.

Threats to Kodachrome bladderpod are mainly related to off-road vehicle use but trampling by livestock is a possibility. Impacts on Kodachrome bladderpod would be reduced as a result of the language in VEG-5 (Chapter 2) which prevents trampling through placement of salt blocks, supplements, and water away from Kodachrome bladderpod populations. This species occupies approximately 600 acres within the Dry Valley, Upper Hackberry, and Upper Paria allotments. Under this alternative, roughly 585 acres of the occupied habitat (98% of population) would remain unchanged and approximately 0.5 acres of habitat (<1% of population) would experience improvements as a result of changes in grazing management. Under this alternative, Kodachrome bladderpod populations would generally remain the same or show improvements in size and extent.

Ute ladies' tresses has a restricted distribution (King Bench Allotment, Deer Creek) in the planning area and is managed in a manner that generally encourages the growth of the species. Winter grazing benefits this species by removing competing plant cover. Approximately 49 acres of riparian habitat is occupied by Ute ladies' tresses. Under Alternative E, current grazing practices would continue where this population is located, which would maintain the population at its' current levels.

Under Alternative E, Jone's cycladenia would remain unchanged. One site is known of this species within the planning area. The site occupies approximately 36 acres of steep, remote habitat in the Moody allotment that is inaccessible to livestock. No change to this population is anticipated under this alternative.

### **RIPARIAN AND WATER RESOURCES**

#### ***Watershed Health***

Grazing would be suspended on the nine allotments not meeting one or more Rangeland Health Standards. Upon achieving Standards, allotment management strategies could include using rest, rotational grazing systems, changes in season of use, and permanent stocking adjustments. Grazing pressure on seedings that do not meet Standards would be suspended. The net effect of the proposed changes would be a moderate to strong reduction in the severity of impacts on upland hydrologic processes. Moderate improvements in understory cover would occur in dominant vegetation types, causing commensurate reductions in runoff. Improvements would begin immediately and occur over a majority of the planning area. Maintenance and restoration of hydrologically important vegetation, such as the perennial cool season grass component of the

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Pinyon-juniper and Sagebrush-grassland communities and the grassland and meadow community in general, would have the highest likelihood of success under this alternative.

Beneficial impacts would occur both more quickly and over a much broader area under this alternative than under Alternatives A, B, and C, and over a broader area than under Alternative D, because use would be reduced immediately throughout the majority of the planning area. Using suspensions rather than changes in management would also increase the certainty of achieving watershed management objectives. As with Alternative D, increased research, monitoring, and prioritization of Sagebrush-grassland and Pinyon-juniper plant communities would increase the effectiveness of management actions designed to restore desired vegetation conditions, as well as the likelihood that hydrologic processes would be considered in the selection and design of treatment units. Unlike other alternatives, watershed restoration projects would be prioritized in this alternative.

In the long-term, upland hydrologic conditions governing infiltration and runoff would improve moderately in the six allotments not meeting Upland Standards, as well as in the three other allotments not meeting standards. Causes of excessive runoff from uplands would be addressed in the short-term, via suspension of grazing. Along with Alternative D, this alternative has the highest likelihood of achieving long-term maintenance and restoration of upland hydrologic conditions. Beneficial impacts would be strongest in areas where grazing is suspended or eliminated, where restoration occurs, and where proposed grazing management strategies are successful. Relinquished forage could be allocated to natural resource values or used to mitigate impacts elsewhere, further benefiting watershed conditions.

### ***Riparian Proper Functioning Condition***

Proposed actions and impacts associated with management of allotments that are failing upland Standards are similar as under Alternative D. The primary differences between Alternatives D and E are in the management of allotments that fail the riparian Standard.

This alternative places a priority on restoring rangeland and riparian health while providing research opportunities in restoration and monitoring. The Riparian Toolbox emphasizes management of riparian grazing and riparian and watershed restoration, and accommodates repair and installation of fences and water developments.

Retrofitting existing water developments to reduce dewatering would increase the extent, diversity, and vigor of native riparian plants in many riparian areas in the short-term, and would improve stream channel conditions in the long-term by increasing bank stability and large wood recruitment.

Riparian systems on all allotments would benefit from the initiation of growing season rest every other year. Bank stability would increase as a result of less frequent trampling and increased vegetation cover, and sediment delivery from adjacent uplands to stream channels would decrease as a result of enhanced sediment capture by vegetation.

Immediate suspension of grazing in the nine allotments failing one or more Standards would cause immediate and long-term benefits in riparian areas, as 8 of these allotments are failing the

## CHAPTER 4 ENVIRONMENTAL IMPACTS

riparian Standard. Immediate impacts in some lotic reaches would be slight, as ecological processes in certain areas have been affected by upland conditions that would take time to recover. Long-term reductions in runoff from uplands, coupled with the eventual repair of range improvements, would cause reduced rates of headcutting and channel widening, thereby allowing for maintenance and establishment of riparian communities. Stream and wetland areas that are directly impacted by livestock grazing would benefit immediately in eight allotments from reduced grazing and trampling.

Because grazing would be suspended until all Standards are met, there is a high likelihood that this alternative would allow riparian systems in these 8 allotments to achieve or trend towards PFC. Upon achieving Standards, grazing management would be designed to maintain desired riparian conditions using only existing fences and water developments. Livestock management strategies to be implemented following resumption of grazing would have to consider the vulnerability of unfenced riparian areas to direct and indirect impacts, or degradation of some riparian areas would occur as a result of inappropriate stocking rates or seasons of use.

Erosion control projects would avert reductions in the extent or functionality of riparian areas. The benefits of these projects would be greatest in functioning-at-risk systems in allotments without active use or where fences exist to control grazing and trampling. Because headcuts are a common cause of riparian areas not achieving PFC, the emphasis on erosion control in this alternative, coupled with upland and riparian restoration, would increase the likelihood for sustained long-term recovery of functioning-at-risk riparian systems.

Riparian vegetation treatments to remove invasive exotics would be most extensive under this alternative. These treatments could increase recruitment of willow and cottonwood and would thereby maintain or restore important ecological (e.g., habitat) and physical (e.g., large wood recruitment and bank stability) functions.

### ***Water Quality***

In the short-term, areas vulnerable to erosion would continue to receive livestock use, however because of management changes runoff and erosion from degraded allotments would be reduced. Because the primary sources of total dissolved solids (TDS) are marine shales ('badlands') that are naturally highly erosive and receive light grazing pressure, grazing would continue to have a negligible or minor impact on TDS and salinity. Erosion control projects could be used effectively in upland areas, streams, and meadows to reduce the supply and downstream transport of saline soils.

Livestock use and nutrient delivery around springs would be reduced as a result of use suspension in eight allotments that fail Standards. Installation and repair of existing fences would reduce livestock-derived nutrient loading around many waterbodies within allotments that receive continued or resumed livestock use.

Reducing the magnitude and duration of dewatering would improve water temperatures in some spring-fed streams. Suspension of livestock grazing on the 8 allotments that fail the riparian Standard would allow quicker and more widespread (compared to other alternatives) recovery of woody riparian species that provide stream shading. Channel incision and widening (and

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

attendant increases in solar radiation inputs and water temperature) would continue in some streams as channel adjustments that are already in progress would continue, although recovery of upland hydrologic conditions would reduce the overall rate at which new headcuts are initiated. Channel stability would increase in streams that are in the very early or advanced stages of channel adjustment, as a result of riparian vegetation recovery and implementation of erosion control projects.

#### **SOILS**

The soils resource would be improved and maintained under Alternative E more readily than any of the alternatives due in part to the initial reduction of AUMs to 18,030. On allotments not meeting Standards livestock grazing would be temporarily suspended until Upland and Riparian Standards are met. Rehabilitation efforts, such as re-seeding, watershed and riparian projects would be emphasized in those areas. The emphasis on resources other than grazing is expected to result in the increased protective cover of residual vegetation and litter resulting in reduced areas of bare soil.

In this alternative, a strong emphasis would be placed upon plant restoration within existing rangeland seedings. This would expedite the recovery of soil health

Management conditions would encourage the growth of species with high root production and a mix of species with different rooting depths and patterns increasing micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, erosion prevention, organic matter, and resilience to compaction. An increase in near-surface roots, plant litter, and vegetation would reduce the susceptibility of soils to compaction by helping to cushion impacts.

Management under this alternative would aid in prevention and/or mitigation of compaction and wind and water erosion.

Soil health including micro-organism populations, infiltration, aggregate stability, porosity, plant nutrients, litter accumulation, organic matter, woody material accumulation would be maintained.

Management activities would avoid and/or mitigate detrimental compaction, wind and water erosion.

The protective cover of plants and litter would increase or maintain minimizing erosion, reducing the amount of bare soil area and increasing soil aggregate stability, organic matter, and water infiltration.

Soil disturbance would be minimized during management activities including rangeland improvement projects (i.e. mechanical harvest of Pinyon-juniper, seed bed preparation, and drilling seed). When possible, only designated trails and roads would be used. Surface disturbance that would cause loss of litter and the organic matter layer would be avoided.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Where appropriate, eroding land would be rehabilitated with an emphasis on improving conditions in areas where there is a lack of ground cover, gullies, rills, and sheet erosion.

Detrimental impacts on soils would be avoided or mitigated with an emphasis on soils with a high risk of degradation. Vegetative manipulation and soil disturbing projects would be appropriate for the soil series within the project area to ensure success of the project.

#### **NOXIOUS WEEDS AND NON-NATIVE PLANTS**

Under this alternative there would be no further livestock spread of Noxious and/or invasive plant species in the three closed allotments, one pasture and one near-relic site. The remaining twenty suspended allotments would have a reduced spread of Noxious and or invasive plant species since adjustments to livestock management would reduce grazing intensity, along with reducing disturbance during the growing season.

Successful restoration and vegetation treatment projects aimed at improving vegetation health and cover would result in a decrease in Noxious and/or invasive plant species. Soil disturbance due to fence building has potential to increase weed spread but, the improvements would result in localized impacts. Replacing water catchments won't create new disturbances but, will evenly disperse livestock which will likely increase the distribution of invasive species.

#### **WILDLIFE**

##### ***Impacts on Migratory/Special Status Bird Species of Concern***

Alternative E would place a high priority on passive grazing management, with an emphasis on long-term rest to resolve factors contributing to a failure to meet either upland or riparian Standards. Active management would consist of vegetation restoration and growing season rest. No structural range improvements are proposed.

This alternative proposes a strong emphasis on vegetation restoration, with a priority on rehabilitating failed seedings. Restoration would result in greater plant variety and an increase in habitat diversity, with a positive impact on grassland dependent bird species, especially in locations which currently have little surface cover due to a reduced grass component. There would be an increase in desirable habitat for ground nesting migratory birds which require nesting or protective cover.

Growing season rest (GRAZ-2) would result in changes in vegetative composition, but to a lesser degree than other alternatives, since the rest requirement would only go into effect on allotments which currently meet Standards, most of which already receive some form of seasonal rest.

This alternative proposes rest on nine allotments which fail to meet one or more Standards. Suspending grazing impacts would increase habitat niches for bird species, and would reduce the impacts of grazing on those bird species which have been negatively impacted by past or present grazing practices. Suspending grazing would assist in the recovery of shorter lived and rapidly reproducing species, such as grasses and forbs, resulting in an increase in structural diversity and cover. In comparison to seasonal rest, long-term rest would show better recovery of longer lived,

## CHAPTER 4 ENVIRONMENTAL IMPACTS

and slower to reproduce species, such as woody shrubs. Strongest recovery (and positive impacts on bird species) is expected in communities which normally have a high percentage of grasses and forbs, such as the Grassland-meadow community. Fair recovery is expected in shrub dominated communities, such as Mountain Shrub or Oak Woodlands. Upland areas which have experienced a loss of soil productivity would show little or no recovery. Many Pinyon-juniper woodlands fall into this category. Impacts on bird species match those of the plant community, with overall increases in habitat and associated diversity in shrub and grass communities, and more gradual improvements in woodlands and arid shrub communities.

**Table 4-8 Impacts on Birds by Habitat Type**

Habitat Type (% land)	Bird Species	Impacts
<ul style="list-style-type: none"> <li>● Aspen (0.02 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Williamson's sapsucker</li> </ul>	Mudholes Allotments would be suspended from grazing. This would reduce livestock browsing of aspen stands allowing recovery. Under this alternative, protection fencing of aspen stands would not be authorized which would leave aspen vulnerable to browse by deer and livestock upon resumption of grazing.
<ul style="list-style-type: none"> <li>● Pinyon-Juniper (41.7 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black-throated gray warbler</li> <li>● Gray vireo</li> <li>● Pinyon jay</li> <li>● Virginia's warbler</li> </ul>	Same affects as under Alternative D, except to a much greater extent. However, no new range improvements would be developed, which may affect future redistribution of livestock and continue grazing concentration in some Pinyon-Juniper habitats.
<ul style="list-style-type: none"> <li>● Ponderosa Pine-Douglas Fir (1.1 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Flammulated owl</li> <li>● Grace's warbler</li> <li>● Lewis's woodpecker</li> <li>● Northern goshawk</li> </ul>	Impacts on pine and fir habitats similar to Alternative D, however on a large scale.
<ul style="list-style-type: none"> <li>● Desert Shrub (7.20 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Brewer's sparrow</li> <li>● Sage sparrow</li> <li>● Sage grouse</li> </ul>	The alternative has the most positive impact on this habitat, with grass and forb recovery due to suspensions. No new range improvements are proposed, so concentrated use in areas important to nesting and foraging for these dependent bird species would resume upon the reauthorization of grazing.
<ul style="list-style-type: none"> <li>● Grassland &amp; Meadow (1.7 %)</li> <li>● Sagebrush-grassland (8.22 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Black rosy-finch</li> <li>● Burrowing owl</li> <li>● Ferruginous hawk</li> <li>● Northern harrier</li> <li>● Short-eared owl</li> <li>● Swainson's hawk</li> </ul>	This alternative would result in the fastest rate of recovery in habitats for shrub, grassland, and wet meadow associated bird species. No new range developments would be accomplished which could hinder efforts to lessen long-term grazing pressure in shrublands and grasslands. Small meadows would not be protectively fenced from livestock use.
<ul style="list-style-type: none"> <li>● Riparian (0.51 %)</li> </ul>	<ul style="list-style-type: none"> <li>● Blue grosbeak</li> <li>● Broad-tailed hummingbird</li> <li>● Common Yellowthroat</li> <li>● Lucy's warbler</li> <li>● Peregrine falcon</li> <li>● Prairie falcon</li> <li>● Yellow-billed cuckoo</li> <li>● Bald eagle</li> </ul>	Same as Alternative D, but with stronger positive impacts. This alternative would provide the greatest protection of and most rapid recovery to riparian habitats for those bird species which are primarily dependent upon them.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Long-term rest would increase the quantity and quality of surface litter and dead standing plant material. Livestock will consume this type of material in the absence of palatable forage, so seasonal restrictions and growing season rest would still result in the reduction of overall plant mass. The maintenance of standing dead material would increase cover, with positive impacts upon smaller bird species which use it to provide cover. Increase in litter would also provide additional habitat for insects, which would benefit insectivorous birds.

The removal of livestock would result in the removal of trampling impacts on migratory ground nesting birds, with a positive impact on ground nesting birds.

Riparian areas would primarily be protected by long-term rest through the removal of livestock. This would improve the structure and density of riparian vegetation with a positive impact on riparian dependent bird species. Riparian areas respond rapidly to the removal of grazing pressure, so recovery would be expected in a matter of years, and not decades. On the negative side, a lack of exclosures would keep riparian areas vulnerable to wildlife browsing or grazing both during the long term livestock rest, and upon the reintroduction of livestock.

There would be no increase in water availability, since no water related range improvements would be proposed under this alternative.

### ***Impacts on Bats***

Under this alternative there would again be little to no change on non-riparian bat roosting habitat. This alternative would have the highest rate of recovery for non-riparian foraging habitat. Increased vegetative ground cover would result in an increased diversity of understory plant and insect prey species in both non-riparian and riparian foraging habitats resulting in the development of better quality foraging habitats over time. Temporary grazing suspension and annual riparian monitoring would result in more rapid recovery in riparian bat foraging and roosting habitats. Recovery of riparian communities would result in the development of better quality roosting habitat (i.e. large cottonwood trees) over time. Improved water distribution and increased availability of water for bats could be delayed under this alternative.

***Table 4-9 Summary of Impacts on Bats***

<b>HABITAT TYPE</b>	Non-riparian, Roosting	Non-riparian, Foraging	Riparian, Roosting	Riparian, Foraging	Open Water, Foraging, Drinking
<b>BAT SPECIES</b>	Fringed myotis, Allen's lappet-brow, spotted, big free-tailed, Townsend's big-eared bats	Fringed myotis, Allen's lappet-brow, spotted, big free-tailed, Townsend's big-eared bats	Western red bat	Western red bat	Fringed myotis, Allen's lappet-brow, spotted, big free-tailed, Townsend's big-eared, Western red bats
<b>IMPACTS</b>	Little to no impacts on bat roosting habitat in cliff, cave, non-riparian tree and multiple habitats.	This alternative would have the most impact on habitats for shrub and grassland foraging habitats, since it allow the highest rate of recovery.	Temporary grazing suspension and annual riparian monitoring result in improved riparian roosting habitat.	Temporary grazing suspension and annual riparian monitoring result in improved riparian foraging habitat.	Improved water distribution and water development improvement would be delayed until Standards are met.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### *Impacts on Game Species*

#### Desert Bighorn Sheep

Sixty five percent of Desert Bighorn Sheep suitable habitat (1,055,828 acres) would have no livestock interaction due to long-term rest requirements. This would remove competition between livestock and Bighorns for forage from the majority of the planning area. It would also prevent livestock-Bighorn interactions at water sources. Only seventeen percent (285,070 acres) would continue under existing management. Lands which continue under existing management meet all range monitoring requirements (specifically existing utilization requirements), and meet Standards. The remaining lands, eighteen percent (289,191 acres), would receive modified grazing management, specifically growing season rest, which would reduce forage competition.

Plant community restoration, including seeding rehabilitation, are proposed under this alternative, with a net positive impact on Bighorns through the increased availability of forage. Structural range improvements are not proposed under this alternative, so there would be no gain in water sources (or Bighorn distribution).

#### Mule Deer

As in Alternative D, under this alternative sixty percent (26,226 acres) of Critical Mule Deer winter habitat would receive long-term rest from livestock use under this alternative. This would have a positive impact on Mule Deer by removing competition for browse in winter use areas.

Unlike previous alternatives no new range improvements are proposed in this alternative. This would have a positive impact on deer in that no new fences would be constructed, and there would be no impacts on deer migration or access to browse.

#### Pronghorn

Impacts on Pronghorn would be greatly reduced under this alternative. Eighty six percent (85,962 acres) of suitable habitat would receive long-term rest from livestock grazing. This would remove competition for forage, primarily forbs during the early growing season. Incidental browsing of shrubs by livestock would also cease, again increasing the availability for Pronghorn.

Structural range improvements, specifically water developments, would not be built under this alternative, which may hinder Pronghorns in locations where the lack of water has restricted their access to browse. On the positive side, no new fences would be constructed. Fences have a negative impact on Pronghorn movement.

#### Sage Grouse

As was noted in the No Action Alternative, impacts on occupied Sage grouse habitat are identical under all alternatives.

Sixty percent of historical habitat (1,085,798 acres) would have livestock impacts removed. This would eliminate livestock caused impacts on Sage grouse. Along with an increase in live plant cover, dead or cured plant material would also remain in place, since winter livestock use would not occur. Together, this maximizes nesting cover, and reduces the potential for predation.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

Riparian recovery would be strongest under this alternative, with positive impact of the food base of Sage grouse.

There would also be growing season rest, and improved distribution on sixteen percent (279,943 acres) of historical habitat. Growing season rest would prevent the removal of cover (through consumption) during the nesting and early brood rearing season. There also would be no competition between livestock and Sage grouse for forbs during the period when Sage grouse consume forbs. Growing season rest would assist in riparian recovery, which would have a positive impact on Sage grouse. In most cases, the positive impact from growing season rest is not total, in that Sage grouse brood will still be susceptible to predation and trampling impacts upon the resumption of grazing, but to a lesser extent, since the highest risk of mortality occurs early in the season.

### ***Impacts on Fish and Aquatic Species***

Of the action alternatives, this alternative would result in the most benefits to the condition of those riparian habitats, and their upland watersheds, upon which fish and aquatic species are dependent. Those allotments that are failing to meet rangeland and riparian Standards would be suspended from livestock grazing until their ecologic condition class improved to an acceptable condition. This would provide the most immediate response from any impacts caused from livestock grazing activities. Some riparian areas would be permanently closed to livestock grazing due to wildlife management concerns. Those allotments that are not subject to temporary closure would be grazed to the levels described under Alternative D.

### ***Impacts on Threatened and Endangered Wildlife Species***

#### ***Mexican Spotted Owl***

Under this alternative two thirds of Mexican Spotted Owl Critical Habitat would receive long-term rest. Within the remaining one third, livestock would be removed from Protected Activity Centers during breeding and nesting seasons. Both approaches (seasonal removal and long-term rest) would increase plant vigor, especially with grasses and forbs, which would have a positive impact on rodent and small animal populations, and, in turn increases the prey population available to Mexican Spotted Owls.

Within riparian areas, recovery would take place due to removal of livestock from all riparian areas which are not either fully functioning, or showing recovery. This would result in an increased prey base and improved habitat, which a positive impact on Mexican Spotted Owls.

#### ***Southwestern Willow Flycatcher***

Utilization standards would be imposed on allotments with suitable habitat for Southwestern Willow Flycatcher. Livestock use in allotments with potential or suitable Southwestern Willow Flycatcher habitat would be restricted to between September 1<sup>st</sup> and March 15<sup>th</sup>. By adding potential habitat to the seasonal use restrictions, there is a opportunity to recover riparian areas which currently lack the continuity and density of vegetation required by Southwestern Willow Flycatchers. The net impact of these measures would be a strong improvement in riparian habitat and an eventual increase in bird numbers.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

In addition to long-term rest, and winter season grazing requirements on all other allotments with suitable or potential habitat, stricter utilization standards would be set on riparian plants, protecting plant recovery. Taken together, these measures would result in improved riparian habitat, and benefits to Southwestern Willow Flycatcher.

#### **CULTURAL RESOURCES**

The implementation of the Cultural Resources Protocol (see Appendix 3) is common to all action alternatives. Under this alternative grazing related impacts on cultural resource sites would be identified on a site-specific basis, and appropriate mitigative measures would be implemented as necessary. In addition, the cultural resources research and monitoring component of the Protocol would provide the opportunity for in-depth research into grazing related impacts on cultural resource sites, use of appropriate mitigative measures, and the effectiveness of these measures, as well as provide for cultural resource inventory in areas where grazing related impacts are likely but the site density and character is unknown. This component is important in that research and monitoring regarding grazing related impacts would lead to a better understanding of the situation, and eventually better and more effective management practices.

This alternative emphasizes temporary closure of allotments failing upland range health standards and riparian standards in combination with changes in rangeland management practices (see Alternatives B and C). For cultural resources, this is an improvement over Alternatives B and C in that less on-the-ground improvements will be needed to keep livestock from concentrating in certain areas, vegetation will have an opportunity to re-establish (thus lessening erosion), and immediate protection from grazing related impacts are afforded to a large number of cultural resource sites. This alternative offers immediate protection to a larger number of cultural resources sites than does Alternative D.

This alternative provides for temporary closures of nine allotments and the permanent closure of the Big Bowns Bench allotment. Although primarily designed for rangeland health and riparian concerns, such closures would only benefit cultural resources in that the source of grazing related impacts would be, at least temporarily, lessened or removed. By allowing the recovery of vegetative cover, these temporary and permanent closures would have the effect of reducing erosion. Erosion, either directly or indirectly caused by grazing pressures at cultural resource sites, is a major factor in the deterioration of these sites. Allowing the recovery of vegetation on these sites would generally slow the effects of erosion and help protect the sites. Closures on a long-term or permanent basis would also benefit the cultural resource research by providing a scientific control regarding grazing related impacts; the conditions and impacting agents at similar sites in similar settings could be directly compared between areas open to grazing and areas closed to grazing. Again, this would lead to better management practices in the future.

This alternative would provide for immediate relief from grazing related impacts on cultural resource sites on more than 446,935 acres, primarily on those allotments with problems meeting upland range and riparian health standards. This alternative provides for a substantial increase in immediate protection for cultural resource sites over alternatives B, C, and D. With the temporary removal of livestock from of the project area, grazing related impacts on sites in those areas would halt immediately. While Alternatives B and C would gradually allow for the

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

recovery of vegetation and the eventual protection this would afford many cultural resource sites, those alternatives provide comparatively little in the way of immediate site protection. Although Alternative D provides many cultural resource sites immediate relief from artifact trampling, breakage, dispersal, and other direct impacts associated with livestock, Alternative E applies these same protections to a larger land base and the concomitant cultural resource sites.

Although the action alternatives are designed to achieve the same end rangeland health goals, the differences lie in the methods with which these goals are achieved by the various alternatives. Recovery of vegetation is an important factor in lessening overall impacts on cultural resource sites. In general, the faster an alternative leads to vegetative recovery, the better that alternative will be for cultural resources. This alternative will promote vegetative recovery more rapidly than the other action alternatives. Also, Alternative E affords immediate protection from direct grazing related impacts on a substantial number of cultural resource sites, an aspect that is largely lacking from Alternative B, present only to a small extent in Alternative C, and not as inclusive in Alternative D.

#### **RECREATION**

Most conflicts between recreational use and livestock grazing would be reduced or eliminated under this alternative. During the period of temporary suspension of grazing in allotments that do not meet upland and riparian Standards, most conflicts would be eliminated in those allotments for the duration of the suspension, but upon the resumption of grazing those conflict would return.

Recreational access problems relating to range developments (access through fences) would be reduced by incorporating the proposed “Standard Requirements and Design Restrictions on Range Improvements” (see *Standard Operating Procedures* [SOPs], Appendix 10). Additional requirements providing for recreational foot and horse access through fences would further reduce conflicts.

Changes in Seasons of Use under this alternative would reduce the overlap between the high recreational use season (mid-March through June, and September through November) and a grazing season in certain allotments.

The Upper Gulch Pasture of Circle Cliffs Allotment would be grazed only spring or fall of every other year. In years when spring grazing would occur, the season of use would end no later than March 15, which is also the typical start of the spring high recreational use season. Conflicts relating to competition for space in the Upper Gulch would be greatly reduced under this alternative.

The season of use for livestock grazing in Clark Bench Allotment would be cut back by one month in the spring, with the end of the grazing season being March 31 rather than April 30. Conflicts with recreational use would be reduced during the highest recreational use period of the spring under this alternative. Any individual pasture would either spring or fall, further reducing conflicts in off-grazing years. Additionally, by the creation of The Dive Pasture, there would be

## CHAPTER 4 ENVIRONMENTAL IMPACTS

reduced livestock use of the Paria Canyon-Vermillion Cliffs Wilderness, further reducing opportunities for conflict on the allotment.

The designation of the Cottonwood Wash and Paria Box Pastures of the Cottonwood Allotment for limited use and trailing only would reduce conflicts between recreational use and livestock grazing. Excluding livestock from Snake Creek and Hogeeye Canyon would protect valuable campsites and backcountry water sources from livestock impacts. This would eliminate conflicts related to competition for water and greatly reduce conflicts related to competition for space in these pastures.

Death Hollow Allotment would have a season of use with less overlap onto the high recreational use season. Some livestock grazing has been authorized from April 1 through May 15; under this alternative all livestock grazing would end no later than March 31. Furthermore, fencing livestock out of the head of the narrows of Little Death Hollow would eliminate problems with hikers inadvertently herding livestock into the narrows. This would eliminate most recreational conflicts in this allotment.

The closure of Big Bowns Bench Allotment would eliminate all potential conflicts between recreational use and livestock grazing in that area.

One of the locations of highest conflict between recreational use and livestock grazing is the portion of the King Bench Pasture of King Bench Allotment that contains The Gulch, which is a very popular destination for hikers, backpackers and equestrians. Most of The Gulch on this allotment is designated as an Outstanding Natural Area, and there is an expectation among recreational users that it should be an outstanding, natural-appearing landscape. Because the Gulch supplies the only reliable water for most of the pasture, the livestock tend to concentrate use in the canyon bottom, which is also where recreational use is concentrated. Under this alternative the season of authorized use would be reduced by one month in the spring, ending no later than February 28<sup>th</sup>, rather than March 31<sup>st</sup>, and spring grazing would occur only every other year. This would greatly reduce conflicts relating to competition for space by eliminating the presence of livestock during the spring season of high recreational use. It would also improve the natural appearance of vegetation in the canyon by allowing for an extra month of un-grazed spring growth. However, this would only somewhat reduce conflicts relating to access to clean water, because while there would be no livestock present during the high recreational use season, there would still be relatively fresh livestock manure concentrated around the stream in years of spring grazing use, especially during the early part of the recreational season.

Since much of the forage in the pasture is on King Bench itself (above the canyon), development of water catchments and/or repair of the existing water development on the bench would provide the opportunity to keep livestock mostly out of the canyon except for trailing purposes. If water sources are successfully developed then most recreational conflicts with authorized livestock use would be eliminated.

The creation of a new “Deer Creek” Pasture in the King Bench Allotment would be necessary to achieve reduction of conflict in The Gulch. It is possible in this alternative that new conflicts

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

could arise in Deer Creek. Monitoring for increasing conflict would be necessary. Mitigation measures would need to be taken if monitoring indicated an increase in conflict.

The exclusion of livestock from the slot canyons of Dry Fork of Coyote Gulch (Dry Fork Narrows, Peek-a-boo, Spooky and Brimstone) in Lower Cattle Allotment would eliminate recreational conflicts related to inadvertent herding of livestock and the resulting unpleasant confrontations in the constricted areas.

The creation of Buckskin Gulch Pasture in Mollies Nipple Allotment, and designating the portion of the pasture east of House Rock Valley Road as limited to livestock use would eliminate conflicts with recreational use related to competition for water and space.

In Upper Cattle Allotment, the exclusion of livestock from the visitor facilities (parking, toilet and picnic area) and rock formations of Devil's Garden would eliminate conflicts with recreational use in those areas.

### **SOCIO-ECONOMIC IMPACTS (ALL ALTERNATIVES)**

Any adjustments in authorized uses of the public lands can produce impacts, both positive and negative, to social values associated with the public lands, often referred to as "Custom and Culture" and to economic values through changes to the "products" produced or harvested, as well as to the income and jobs these products generate.

#### **IMPACTS ON CUSTOM AND CULTURE**

Alternative A, the "No Action" Alternative, proposes continuation of livestock grazing in all of the allotments currently used for livestock grazing. Alternatives D and E propose the continuation of livestock grazing in all but one allotment (and that allotment has been in non-use for at least five years). All of the current livestock grazing operations would continue, subject to primarily voluntary changes if and when initiated by the permittees. The public lands that many livestock operations rely on for a viable business operation would continue to be available.

Custom and Culture, as often characterized in Kane and Garfield Counties by the image of the independent western rancher making a living by running cattle on the open range, would be seemingly unchanged even though this scenario is more the exception than the rule anymore. The reality of current Custom and Culture which is primarily characterized by small ranching operations carrying on family traditions, but which is often made possible only through primary employment of the rancher and/or spouse in non-farm occupations, would continue to be the most common form of livestock operation.

In assessing Custom and Culture, consideration must also be given to the context in which it is defined, and how that definition varies among residents and visitors. There is no single custom and culture of the region and no single "impact" to measure. Residents, especially those with long family ties to the region, are strongly tied to traditional uses such as livestock grazing, mining and logging. Their "culture" values the ability to pass on these traditions to future generations. They long to see these traditional uses continue. Few of the newer residents moved

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

to the region so they could follow the customs and culture of the ranching lifestyle. Many new residents chose this region specifically due to the combination of open space and the ability to tap into the growing market for tourism and recreation services. Retirees move here to get away from urban areas, or to maximize the economic benefits from appreciated real estate or for incentives that are not tied to the region but to a personal desire. Case in point is the Best Friends Animal Sanctuary in Kanab. A significant portion of new Kanab residents move to the area specifically to support Best Friends. Their “culture” is animal welfare. Newer residents may not even be aware of the region’s history. To the general public visiting the planning area, the vast open spaces of the region, where livestock are often seen, would continue to present an image of the western rangelands where cattle and cowboys roam.

Market forces associated with the changing demographics, conversion of open range to ranchettes and subdivisions, the decline of traditional economic sectors (mining, ranching, logging), the decline of niche economic sectors (western movie filming), the pricing of livestock products in a global economy and the continued growth in the recreation and tourism industries, would have a greater impact on the ability of the region to maintain the western ranching “custom and culture” than would the minor adjustments to livestock grazing use proposed in any of the alternatives.

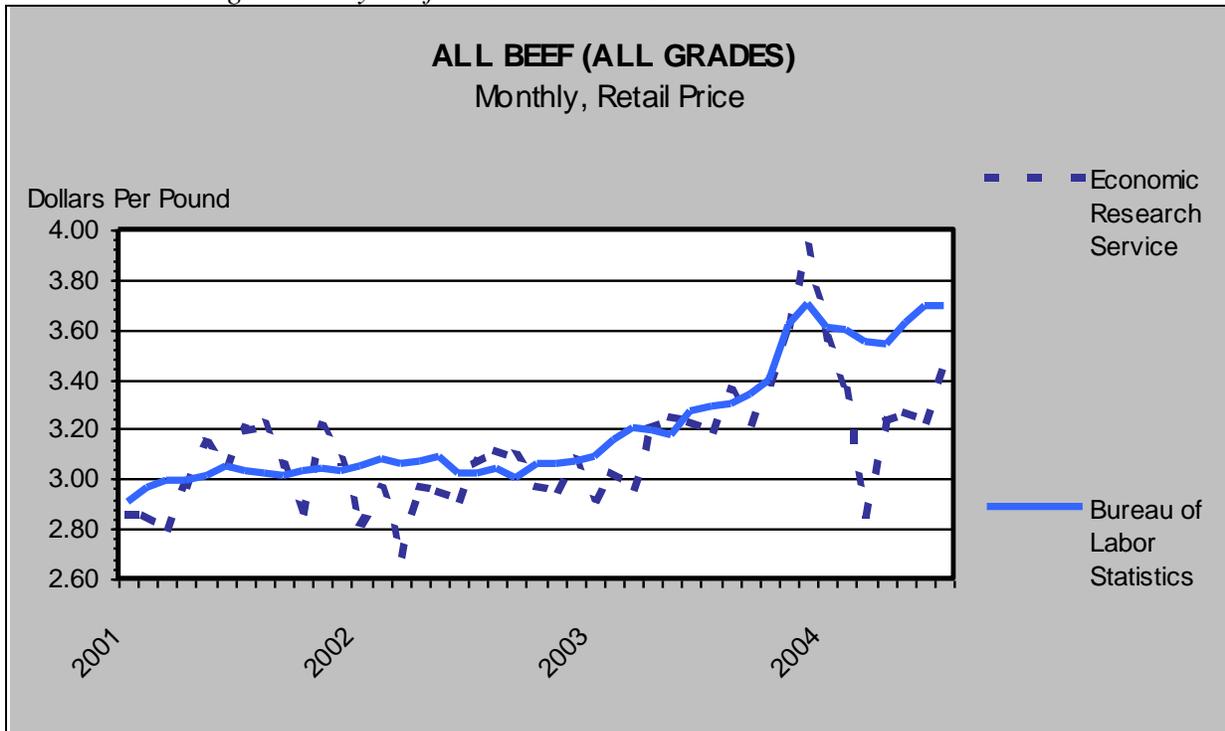
### **ECONOMIC IMPACTS OF THE GRAZING ALTERNATIVES**

#### ***BACKGROUND AND OVERVIEW***

As in other parts of the West, the economic viability of the livestock industry is increasingly influenced by global and national markets for beef. These markets have presented challenges for many beef producers. For example, recent trends in high-protein diets have spurred demands, while growing concerns over bovine *Spongiform encephalopathy* (i.e., mad cow disease), have moderated consumption. As with any market, there have been fluctuations, but overall since the mid 1980s, the market has improved 64% (Tables 4-1 & 4-2). This gain has happened even with recent gains in dietary substitutes like chicken, which has experienced growth in both price and per capita consumption in recent years.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

*Table 4-10 Average Monthly Beef Prices in the U.S.*



Source: Sonoran Institute 2004.

*Table 4-11 U.S. Beef Prices From 1970 - 2002, with Projections to 2015 (in Constant 1990 Dollars)*

Year	Price (\$/kg)
1970	\$4.65
1980	\$3.50
1990	\$2.56
2000	\$1.99
2002	\$2.21
2003	\$2.19
2004	\$2.26
2005	\$2.25
2010	\$2.17
2015	\$2.06

Source: Cattle Fax 2005.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

These broad-scale global and national market conditions present strong challenges to the economic viability of Utah's livestock industry, regardless of the actions of public land management agencies. However, within this broad market context, local management decisions on public lands can exacerbate or ameliorate the impacts of these market trends, especially in the arid West where public lands often comprise the vast majority of grazing lands.

Indeed, public lands are a dominant feature of the study area. For example, only 15.4% of Kane and Garfield Counties are privately owned (Table 4-3). The remaining 85.6% is in federal and state ownership and administered by various public land management agencies (see Table 3). Hence, while the economic base in this area has historically been logging, ranching, mining and agriculture, these activities have largely taken place on public—not private—lands (the exception is agriculture). These activities are still important components of the local economy; however, an increased emphasis on recreation and tourism, combined with growing concerns over environmental quality, have combined to limit the scale of these traditional uses on public lands.

**Table 4-12 Land Ownership in Garfield and Kane Counties, Utah**

Land Ownership	Acres	% Total
<b>Total Acres in Kane County</b>	<b>2,627,234</b>	<b>100.0</b>
Federal Government	2,178,531	82.9
BLM	1,655,087	63.0
US Forest Service	123,497	4.7
National Parks	399,948	15.2
State Government	108,573	4.1
State Trust Lands	103,000	3.9
State, County, City	5,743	0.2
Private (May Include Some Local Gov't Land)	266,149	10.1
Water: Lakes and Reservoirs	73,810	2.8
<b>Total Acres in Garfield County</b>	<b>3,331,004</b>	<b>100.0</b>
Federal Government	2,982,341	89.5
BLM	1,489,718	44.7
US Forest Service	1,044,849	31.4
National Parks	447,775	13.4
State Government	161,747	4.9
State Trust Lands	159,018	4.8
Stat, County, City	2,243	0.1
Private (May Include Some Local Gov't Land)	168,827	5.1
Water: Lakes and Reservoirs	18,513	0.6

Source: 2003 Utah State and County Economic Travel and Indicator Profile.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

### ***GRAZING WITHIN THE PLANNING AREA***

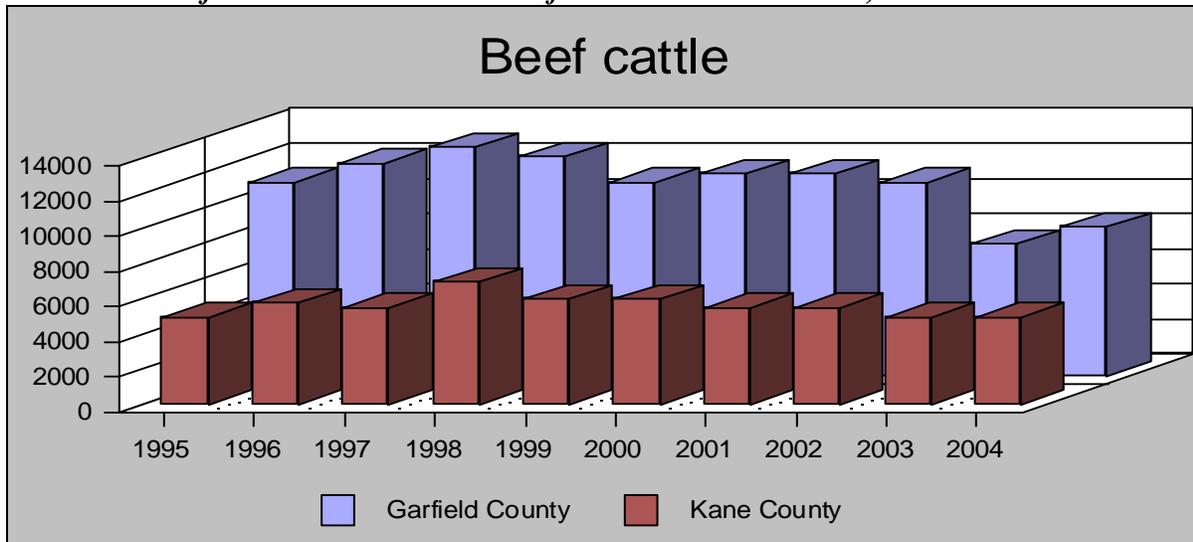
Grazing has long been a dominant use of the public lands within the planning area, including Grand Staircase-Escalante National Monument and Glen Canyon National Recreation Area. In fact, nearly all of the lands within the planning area are or have been grazed by livestock – mostly cattle. Given the vast acreage involved and the limited amount of private lands within Kane and Garfield Counties, livestock producers are highly dependent on public lands for their forage. For example, within Garfield County, 21% of all grazing takes place within or on lands administered by the BLM (Table 4-4). In Kane County, the corresponding figure is 72%.

***Table 4-13 Acres Grazed in Garfield and Kane Counties***

<b>Garfield County</b>	
Total acres grazed	2,644,513
Acres grazed within the Monument	568,358
Percent grazing within the Monument	21%
<b>Kane County</b>	
Total acres grazed	2,056,856
Acres grazed within the Monument	1,478,950
Percent grazing within the Monument	72%

*Source BLM, 2005.*

***Table 4-14 Beef Cattle Inventories in Garfield and Kane Counties, 1995–2004***



*Source: Utah Agricultural Statistics, 1995 through 2004.*

The AUM (animal unit month) is the basic unit of authorization for grazing on BLM lands. An AUM is the amount of forage required to sustain one cow and one calf for one month. The Agency determines an allotment's authorized level of AUMs as a percentage of the total forage produced that can be grazed while still maintaining a healthy ecosystem. The Agency currently charges \$1.79 (2005) per AUM based on a formula established by Congress. This price is generally recognized as being below "fair market value," which is generally accepted as the price

## CHAPTER 4 ENVIRONMENTAL IMPACTS

of privately offered forage. It is important to recognize that an AUM is a monthly unit, and that it is not equivalent to a cow. For example, grazing one cow for an entire year represents 12 AUMs. But oftentimes a rancher may use BLM forage for only a portion of the grazing year, with the remainder of the herd's forage supplied by other public or private rangelands. For example, a rancher with a permit for 1,200 AUMs could graze 100 cows all year, or 200 cows for six months, or 400 cows for three months.

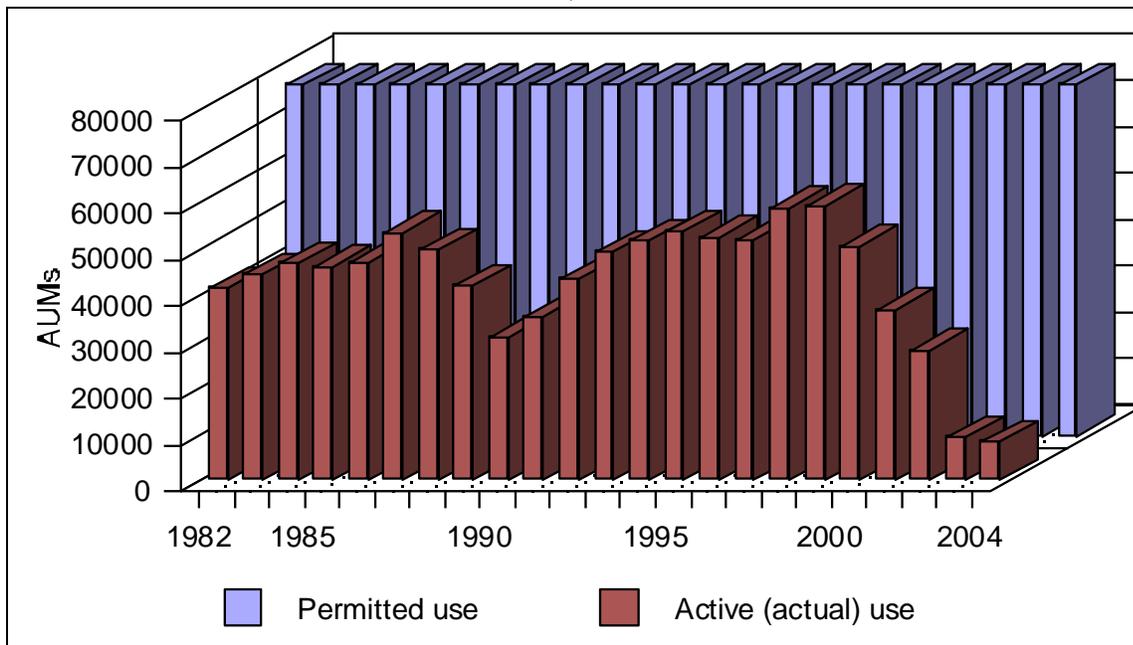
The multiple-use mandate of the Federal Land Policy and Management Act (FLPMA) of 1976 requires that grazing be one of many considered uses of BLM lands. FLPMA also requires that federal land management agencies undertake a decision process that ensures that public lands are managed in a manner that will best meet today's needs as well as future needs of the American people. In this regard, grazing on public lands has become an increasingly volatile issue. The health of the rangeland and the perceived impacts of grazing are a concern for a variety of reasons. The potential for adverse impacts on wildlife habitat, riparian and watershed health, native plant species, and cultural resources are some of the largest concerns. In addition, overgrazing and declining rangeland health are recognized as problems in many areas as well. In the study area in and around the Monument, many believe that the current drought has also exacerbated these problems. In an effort to retire grazing on allotments considered valuable for their natural and historical attributes, environmental groups have attempted to change the terms and conditions of grazing permits, but have met with limited success. More recently, environmental groups have considered purchasing grazing privileges or base property from permittees, or working with ranchers to voluntarily relinquish some or all of their grazing privileges.

Today, approximately 76,457 active use AUMs are authorized within the planning area, and over the course of a year, permittees graze roughly 11,000 cattle on these lands. Differences between authorized active use and actual use are common and result from year-to-year forage variability, fluctuations in the market for livestock, and/or individual permittees taking voluntary non-use. These deviations can be large, and many permittees have historically not fully utilized the number of AUMs authorized for use.

The figure below shows that actual livestock grazing use within the planning area has consistently fallen below the permitted active use level of 76,457 AUMs (Table 4-6). For example, during pre-drought years between 1982 and 1996 inclusive, permittees used an average of 49,514 AUMs – or 64% of the approximately 76,457 AUMs permitted for use. During the more recent drought years of 1996 through 2004, permittees used roughly 35,000 AUMs – or just 45 % of permitted levels. In fact, actual use has ranged from high of 59,283 in 1999, to a low of 8,250 in 2004. The data reveal a cyclical pattern, in recent years being most strongly affected by the severe drought that began in 1997.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

*Table 4-15 Permitted and Actual AUM Use, 1982–2004*



Source: BLM 2005.

### ***MODELING THE ECONOMIC IMPACTS OF GRAZING***

The economic impacts of the various grazing options considered is largely a function of each alternative's authorized level of AUMs, and the resulting number of livestock produced and marketed each year. For example, differences in annual livestock sales resulting from the various AUM levels will affect ranchers' income, as well as overall employment and economic activity within Garfield and Kane Counties.

In addition to these "direct" effects, changes in the number of AUMs authorized will also produce "multiplier effects" that ripple through the economy. For example, to more fully consider the economic impacts of alternative grazing levels, one must examine the "indirect effects" or "backward linkages" that measure the impact of expenditures that livestock producers make for various inputs needed to produce cattle (e.g., supplemental feed, veterinary services, etc.). These indirect effects would be missed if one examined only differences in the number of livestock marketed under each alternative.

In addition to these indirect effects, economists also consider the "induced effects" of proposed changes in economic activity. In this case, induced or "forward linkages" measure the effect that changes in personal income and associated spending has within the economy. For example, livestock producers spend some portion of the income generated by livestock sales on food, clothing, housing, and other miscellaneous purchases. This spending in turn supports other businesses and wage earners, which in turn spend a portion of their earnings. As with the indirect effects described above, the extent to which these expenditures are incurred and multiplied throughout the two-county study area is important in determining the overall induced economic impact of the grazing alternatives being considered.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

While direct sales clearly have the largest impact on an economy, the indirect and induced effects are important as well, with the former effect generally larger than the latter. In the case of the Monument, however, "leakage" from the two-county study area is likely to be relatively high for all sectors of the economy given the limited availability of local services. Indeed, businesses and consumers alike appear to be increasingly dependent on large, rapidly-growing regional service centers like Cedar City and St. George, which are located outside of Kane and Garfield Counties. Also, as described earlier, the Agricultural Services sector comprised just 0.3% and 3% of total 2000 employment in the two counties, respectively (see Tables 3 and 6), thus implying a relatively small role for these businesses in the overall regional economy.

In summary, the economic impact of each grazing alternative can be estimated by the sum of the direct, indirect, and induced effects of the number of livestock produced under each alternative's level of authorized AUMs. In quantifying these impacts, we used an input-output model called IMPLAN, which describes the financial relationships between various sectors of the economy, and allows one to estimate the impact of changes in one sector of the economy on overall economic activity. In this case, the changes considered are authorized AUM levels under the various alternatives. The effects modeled include: (1) total production or output in goods and services, (2) labor income, and (3) the number of full and part-time jobs.

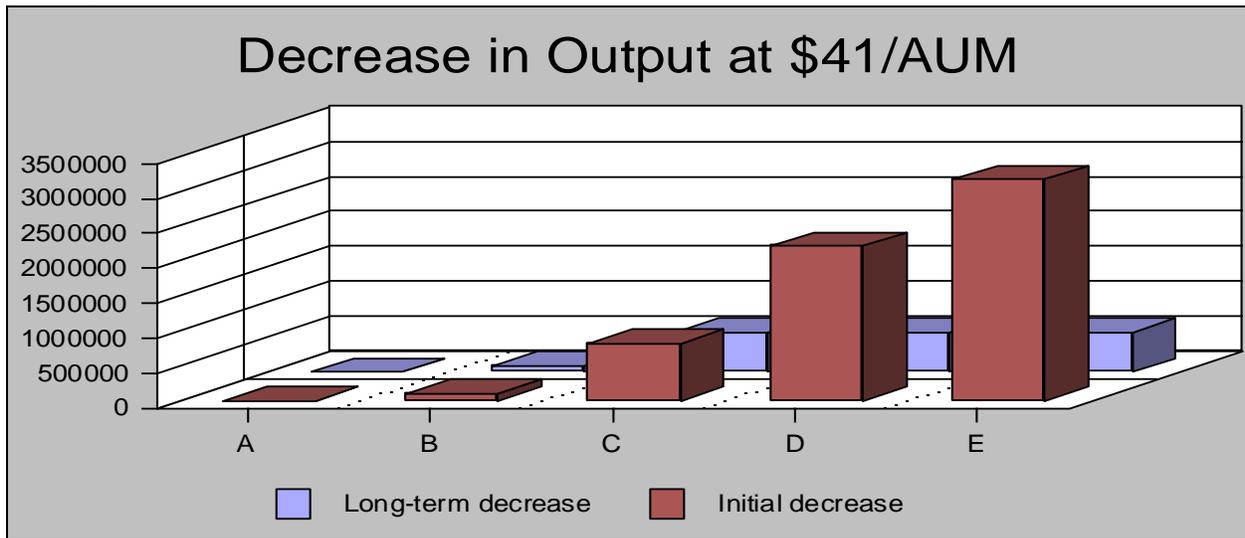
### *ECONOMIC IMPACTS OF THE ALTERNATIVES CONSIDERED*

The alternatives considered range from No Action (Alternative A or the current use level of 76,457 AUMs) to Alternative E, which suspends grazing on allotments failing to meet any rangeland health standard (initial authorization of 58,427 AUMs, rising to 73,398 AUMs as allotments reach standards). In the analysis presented below, the economic impacts of the various alternatives are depicted as losses in output, income, and jobs vis-à-vis the current situation of 76,457 AUMs.

A direct impact value of \$41.22 per AUM was used for this analysis. This figure represents the average value of production per AUM in 2002 dollars for the State of Utah based on a 10-year average (see USDI Bureau of Land Management 2005). Using this direct impact value, the total impact (including indirect and induced effects) for each alternative is presented below (Table 4-7). The initial decrease represents the immediate annual impact of the new authorized AUM level under each alternative. The long-term decrease represents the eventual annual impact once allotments achieve rangeland health standards. In reality, a transition between the initial and long-term effect would be experienced as rangeland health improves. The timing and path of this transition, however, is not known.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

**Table 4-16 Reductions in Overall Economic Output under the Various Alternatives (2002 dollars)**



**Table 4-17 Reduction in Output, Jobs, and Labor Income under the Various Alternatives (2002 Dollars)**

	Total Economy	A	B	C	D	E	Potential C, D, E
Output	\$356.3 Million	0 (0%)	\$97,018 (0.03%)	\$826,485 (0.23%)	\$2,153,816 (0.60%)	\$3,107,633 (0.87%)	\$568,417 (0.16%)
Jobs	6,439	0 (0%)	1.4 (0.02%)	12.3 (0.19%)	32.1 (0.50%)	46.4 (0.72%)	8.5 (0.13%)
Income	146.4 Million	0 (0%)	\$6,100 (0.00%)	\$51,970 (0.04%)	\$135,433 (0.10%)	\$195,409 (0.14%)	\$35,742 (0.02%)

Under the preferred alternative (Alternative C), the immediate impact is an annual reduction of \$826,485 in overall economic output for the two-county study area (Table 4-8). To place this number in perspective, total 2002 output across all sectors was \$356.3 million. Hence, under the preferred Alternative C, output in the study areas is expected to fall just 0.23%. Under the most severe AUM reductions associated with the initial implementation of Alternative E, total output in the two-county region would be expected to fall by just 0.87%.

The impacts reflect an overall output multiplier (SAM) of 1.62 – meaning that every dollar generated through grazing in the two-county study area results in a total of \$1.62 in total economic activity. The size of the multiplier is relatively low yet in line with what would be expected from a small, two-county study area with limited economic diversification (Hughes 2003).

It is also important to note that the analysis of impacts presented here overstates the true impact of the alternatives because it compares each alternative against the current authorized grazing level of 76,457 AUMs. In reality (and as discussed above), actual AUM use levels on public lands in the planning area since 1982 have ranged from 45% to 64% of authorized use. Indeed, the actual 1996-2004 historic average use level of 35,000 AUMs falls below the initial impacts

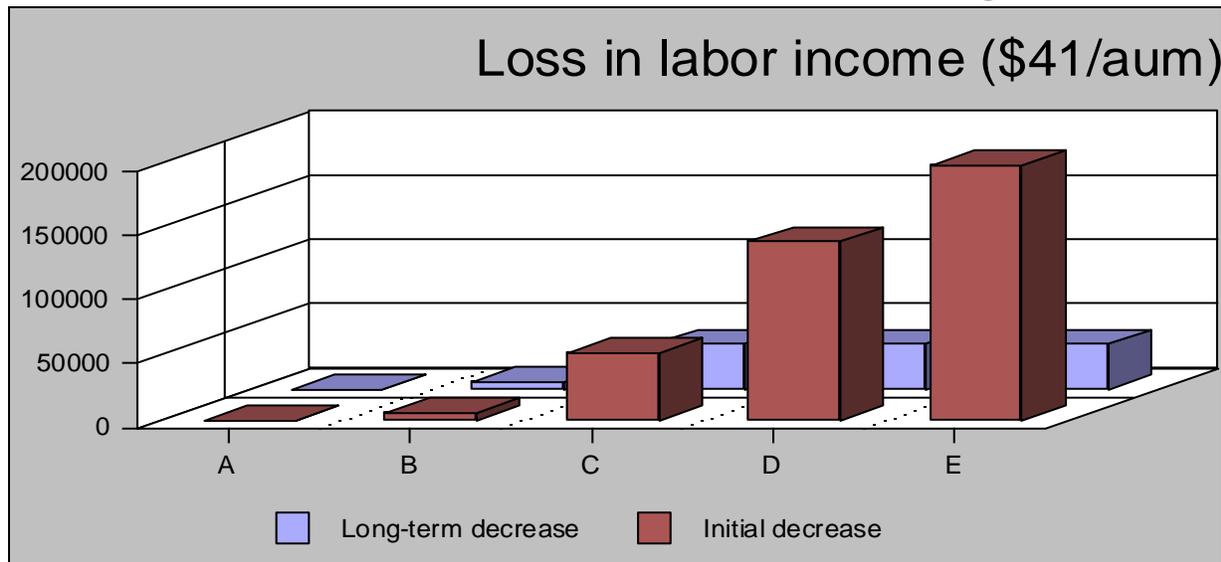
## CHAPTER 4 ENVIRONMENTAL IMPACTS

of all the alternatives. It should be noted that the decreased AUM use during this time period has been with the cooperation of the grazing Permittees.

### IMPACT ON EMPLOYMENT AND LABOR INCOME

Labor income includes both employee compensation and proprietor income. Reductions in labor income under the alternatives range from \$6,100 per year for Alternative B, to nearly \$200,000 under the initial grazing suspensions that would accompany Alternative E (Table 4-9). While these impacts are real in that they directly affect household earnings in a region where jobs and income are both limited, the impacts are quite small when expressed in relation to overall labor income. For example, the two-county region's total labor income was \$146.4 million in 2002.

**Table 4-18 Annual Losses in Personal Income under the Various Grazing Alternatives**



Hence, under even the most restrictive alternative (i.e., the initial AUM reductions under Alternative E), initial labor income losses of \$195,409 represent just 0.13% of the total. Under the preferred Alternative C, losses in labor income comprise just 0.04% of the total. For alternatives C, D, and E, the impacts are even lower under a long-term perspective (e.g., just 0.02% of total labor income) because AUMs are expected to increase as reduced grazing pressures and improved management allow rangeland health standards to be met on an increasing number of allotments.

The minimal impact of the alternatives on labor income reflects the low economic contribution of the farm sector overall. Indeed, Table 4-10 shows that personal farm income as a percent of total non-farm personal income has fallen from 7% in 1970, to less than 1% in 2001.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

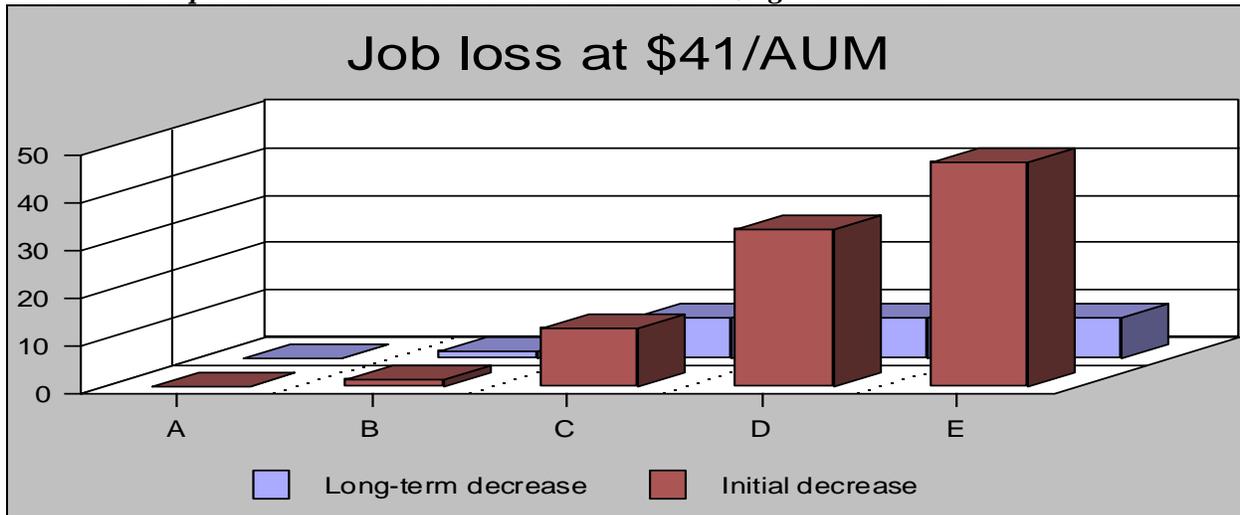
**Table 4-19 Change in Personal Farm Income as a Percent of Non-farm Personal Income in Garfield and Kane Counties, Utah**

County	1970	1980	1990	2001
Garfield	6.11%	3.98%	18.18%	0.30%
Kane	9.28%	3.13%	6.84%	0.48%
Average	7.69%	3.56%	12.51%	0.39%

Source: Governor's Office of Planning and Budget 2004.

Expected annual job losses range from just 1.4 under Alternative B, to 46.4 under Alternative E's initial impact (Table 4-11). It is important to note, however, that these are not full-time equivalent jobs (i.e., jobs paying a wage for roughly 2,080 hours of work per year), but instead is a compilation of both full-time and part-time jobs. As a result, the actual hours of employment lost under the various alternatives cannot be determined. The job losses can, however, be placed in the context of the two-county study area's overall employment. For example, in 2002 the economy of Garfield and Kane Counties supported 6,439 jobs. **Using this as a comparison, even the most severe reduction in AUMs under Alternative E's initial impact results in the loss of about .72% of study area jobs. Under the preferred alternative (Alternative C), the loss is just .19%.**

**Table 4-20 Expected Job Losses under the Various Grazing Alternatives**



### IMPACT ON THE CATTLE RANCHING AND FARMING INDUSTRY

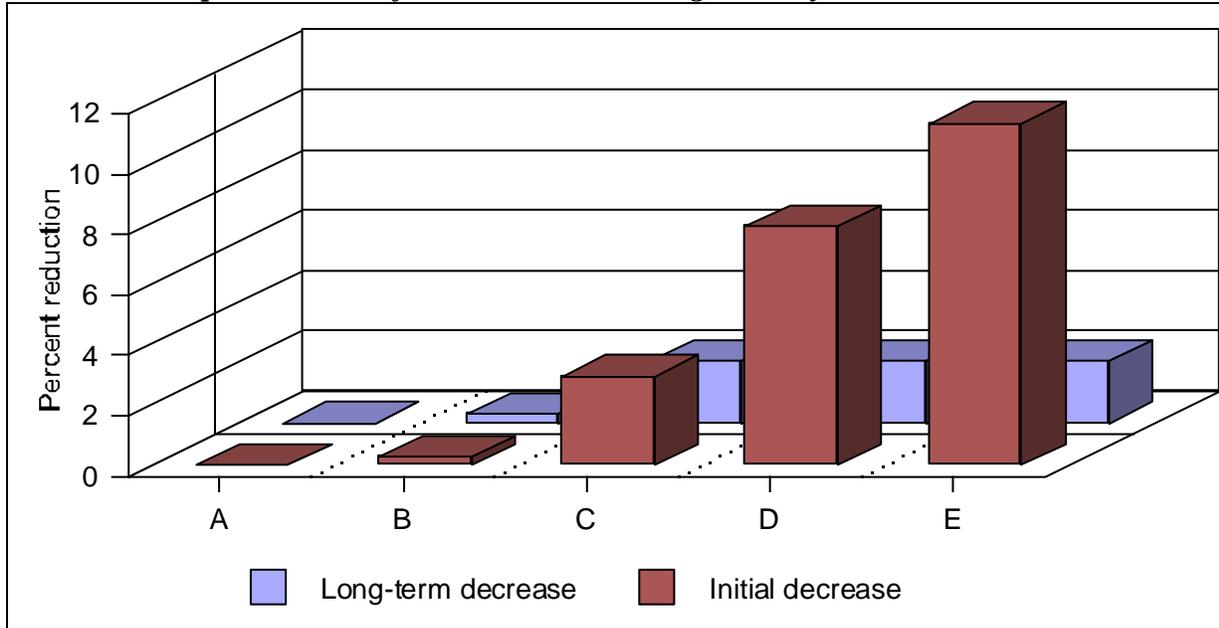
While the output impact of the various alternatives is small in comparison to the overall economy of the two-county region, the effect on the cattle ranching and farming sector is greater. For example, the total output of this sector was \$17 million in 2002. Using this as a benchmark for comparison, the impacts of the alternatives is shown below (Tables 4-12 & 4-13) using the direct impact value of \$41.22 per AUM. Note that while the impacts of Alternatives A and B are still quite small (0 and 0.3 percent reductions in the sector's output), the effects of Alternative C through E are greater (3.0, 7.8, and 11.3 percent reductions, respectively). The long-term effects for these three alternatives, which portray the impact once rangeland health standards improve, are roughly 2% of total 2002 output.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

**Table 4-21 Data for Figure Showing Percent Output Reduction**

	A	B	C	D	E
Initial decrease	0.0	0.3	2.96%	7.82%	11.29%
Long-term decrease	0.0	0.3	2.04%	2.04%	2.04%

**Table 4-22 Output Reduction for the Cattle Ranching Industry**



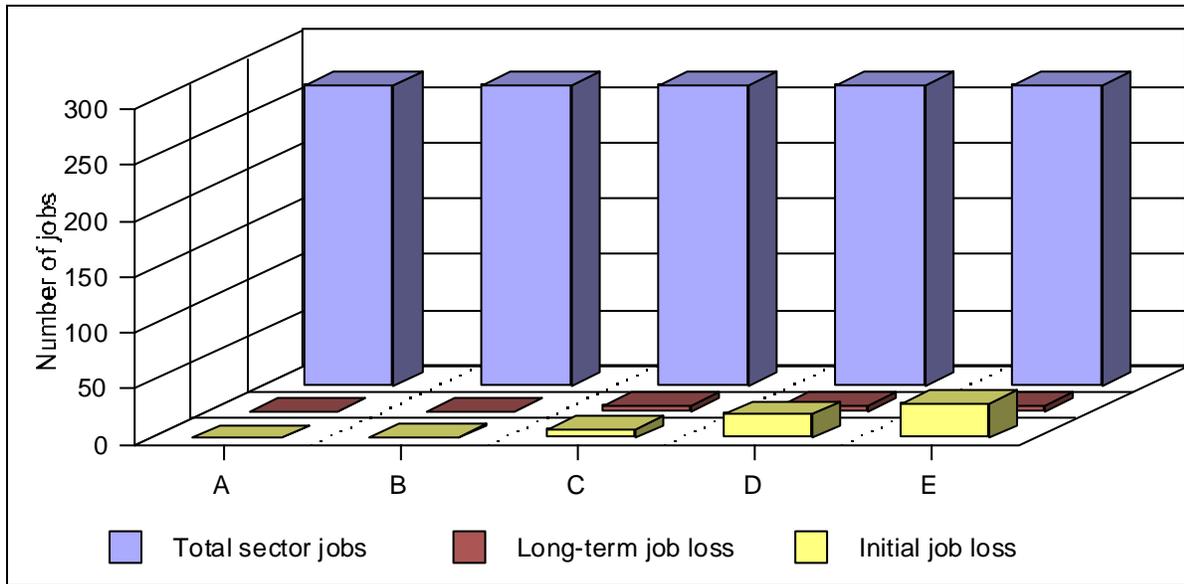
Below, the Table 4-14 & 4-15 show the number of full and part-time jobs lost within the cattle ranching and agriculture industry under each of the alternatives. For example, in 2002 the sector supported 269 full and part-time jobs. Under the alternatives, initial job losses range from zero (Alternative A), to 29.9 under Alternative E. Long-term job losses range from zero to 5.5.

**Table 4-23 Data for Job Loss by Alternative**

	A	B	C	D	E
Total sector jobs	269	269	269	269	269
Long-term job loss	0.0	0.9	5.5	5.5	5.5
Initial job loss	0.0	0.9	8.0	20.7	29.9

## CHAPTER 4 ENVIRONMENTAL IMPACTS

**Table 4-24 Job Loss by Alternative**



### ***A Final Comment on Methods and Assumptions***

The methodology used here represents one approach to impact analysis and modeling. An underlying assumption of this process is that proposed changes in an economy are linear. For example, using this approach, the assumption is that a 20% reduction in AUMs simply scales back grazing activities by 20%. In essence, the industry continues to function as before, but at a lower level of output. The method thus assumes that no critical thresholds are met, and that the proposed changes do not trigger any fundamental changes in operations.

Given the nature of ranching operations in the study area, this may or may not be a good assumption. For example, if a ranching operation relies on BLM forage for a critical season of use, eliminating or reducing AUMs at that time could have a greater impact than what would be suggested by a linear model. For example, if the reduction occurs at a critical time, and if substitute forage is unavailable, an operation could cease to be economically viable, and thus be forced out of business.

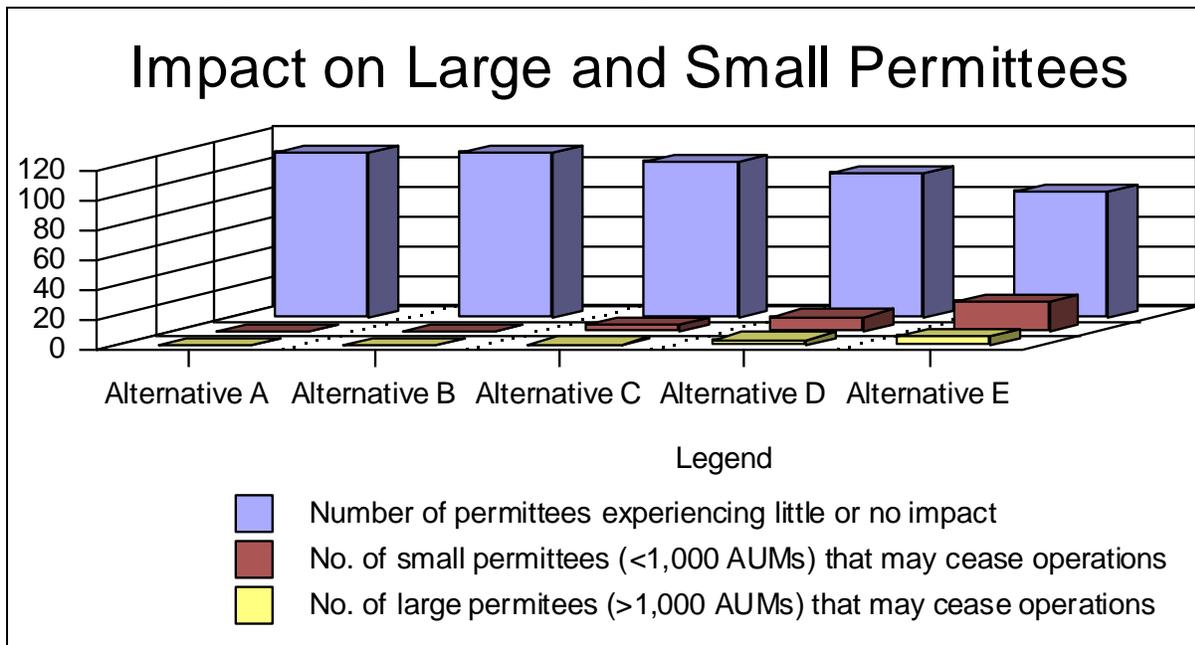
### ***ECONOMIC VIABILITY OF INDIVIDUAL PERMITTEES***

In this section, we describe the impacts in relation to the economic viability of individual permittees, as well as the number of AUMS affected across the different allotments. Data are aggregated to the level required to protect the identity of individual permittees.

Table 4-16 below summarizes the likely impacts of the alternatives on the viability of existing permittees. Based on a total of 110 permittees, the impacts are broken down for large (greater than 1,000 AUMs) and small operators. As shown in the Figure, the impacts across all alternatives are relatively small, although small operators are likely to be the most severely affected, especially under alternative E.

## CHAPTER 4 ENVIRONMENTAL IMPACTS

*Table 4-25 Likely Impact of Alternatives on Large and Small Permittees*



Source: BLM 2005.

### Alternatives A and B

Since these alternatives result in little change from the current condition, the impact on individual permittees and total AUMs is negligible.

### Alternative C

Under Alternative C, total authorized active use initially drops from the current level of 76,457 AUMs, to 73,428 a decline of 9.6 %. Thereafter, as rangeland health improves, authorized active use is projected to eventually increase to 75,355 AUMS – a long-term decrease of 1 %.

Although the long-term reductions under this Alternative are fairly modest, the bulk of the initial reductions would occur on two of the planning area's 82 allotments – making the impact disproportionate on the permittees affected. For example, these two allotments currently have 4,336 authorized AUMs. This level of use would initially decline 7 % under Alternative C, or to a combined use of 3,379 AUMs. The likely response for most of the permittees affected by these reductions is to decrease herd size by roughly 50% or more, and/or buy feed or rent pasture to compensate for the reduced number of AUMs. It is foreseeable that one large and as many as four smaller permittees would most likely cease operations due to financing issues and a lack of replacement range (note that these AUMS could then be reassigned to other permittees or new applicants without a decrease in total AUMs authorized).

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

#### **Alternative D**

Alternative D would result in a greater reduction in authorized active use, from the current use level of 76,457 AUMs, to 62,279 AUMs initially with an increase to 75,355 AUMs as range conditions improve. Under these more severe restrictions, the impacts cited above for Alternative C would likely occur, along with impacts on the additional allotments affected by initial reductions. For example, under Alternative D, it is foreseeable that seven Permittees permittees could likely cease operations due to financing issues and a lack of replacement range (note that these AUMS could then be reassigned to other permittees or new applicants without a decrease in total AUMs authorized). In addition, the permittees on several other allotments would likely continue operations, but at reduced herd levels until rangeland health improved.

#### **Alternative E**

Alternative E would reduce authorized active use from 76,457 to 58,427 AUMs initially with an increase to 73,398 AUMs once rangeland standards are met. In addition to the impacts described above for Alternatives C and D, the initial reduction of 24% would affect a large number of permittees. In response, permittees would need to reduce herd size, lease winter pasture, and/or buy feed. It is foreseeable that six large and as many as four smaller permittees would most likely cease operations due to financing issues and a lack of replacement range (note that these AUMS could then be reassigned to other permittees or new applicants without a decrease in total AUMs authorized). In addition, the permittees on several other allotments would likely continue operations, but at reduced herd levels until rangeland health improved.

#### **CUMULATIVE IMPACTS**

Cumulative impacts consist of impacts from past, present, and reasonably foreseeable future actions on lands (Federal, State and private) within the analysis area. Few cumulative impacts are expected in connection to this analysis and decision-making process. Eighty three percent of the planning area consists of the Grand Staircase-Escalante National Monument. As was stated in the Proclamation for the Monument, the lands within are “set apart and reserved... for the purpose of protecting the objects described...”, which include geological, paleontological, archeological, historical and biological resources. The direction of the Proclamation developed into the Monument Management Plan, which emphasizes “management of uses to protect and prevent damage to Monument resources”. In effect, most actions which result in degradation of Monument resources are prohibited under the approved plan. Conformance with the plan requires the disapproval of most actions which would cause cumulative impacts. Specific examples would include mineral development, road construction, land disposals, or significant realty actions. Exceptions, which might generate cumulative impacts, consist of activities specifically authorized in the plan (usually related to recreation or frontcountry development), or existing (i.e, pre-plan) activities which have legal standing.

#### **LIVESTOCK GRAZING**

Livestock grazing is an existing activity, and its continuation was specifically addressed in the Monument Proclamation. In the context of range impacts, the past, present, and proclaimed future consists of continued livestock grazing. “Existing grazing uses shall continue to be

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

governed by applicable laws and regulations other than the proclamation.” Grazing levels can be modified either to correct range health problems, or in response to additional available forage. No additional available forage was identified based upon the monitoring prior to this analysis, so no increase to the existing livestock authorizations is proposed. Deficiencies in Rangeland Health were noted during monitoring, and the alternatives within the analysis propose a series of corrective measures, including reductions in the overall livestock authorization. Future actions would continue within this envelope, varying between incremental increases when additional forage becomes available and incremental reductions when the long-term sustainability of rangelands is found to be at risk. It is highly improbable that grazing authorizations will ever again reach their historical high levels due to the legal mandates for sustainability. It is equally improbable under the existing regulatory framework that future stocking levels would be reduced below those in the analysis, since the lowest stocking level assessed was based upon the suspension of livestock grazing in all areas where past grazing had not been proven to be sustainable. In other words, the minimum stocking level proposed was based upon the most conservative estimate of sustainable forage production.

The Rangeland Health Standards assessment identified specific resources which required corrective actions in order to restore health. Long-term trend and continued monitoring will assess the effectiveness of any corrective actions, and the Record of Decision will take steps towards restoring Rangeland Health, and in turn, ensuring the viability of continued economic use of the range. All of the proposed alternatives would make progress toward achieving rangeland health. It is anticipated that future grazing actions would have the same goal, and as such, the main cumulative impact would be healthier range, and the restoration of resources which have experience past negative grazing impacts.

#### **SOCIO-ECONOMIC**

Cumulative impacts on the livestock industry are not anticipated. While the analysis has disclosed the potential for negative impacts on the economics of individual permittees, the overall intent of the proposed amendment to the management plan is to preserve the productivity of the rangelands within the planning area. A primary goal of this amendment process is to “keep lands suitable for grazing open and productive, while minimizing conflicts with other resources.” Adjustments in livestock permits are proposed, but to restore rangeland health, which in turn maintains the viability of rangeland production.

Cumulative impacts on the “custom and culture” of South-central Utah are also not anticipated. Over ninety-nine percent of the lands within the planning area that are currently open to livestock grazing will be kept open for future grazing. While the quantity of livestock allowed may vary, in response to monitoring, the quality (and opportunity) to pursue a ranching experience will remain unchanged.

#### **VEGETATION**

At the present time, vegetation treatments are being applied on Buckskin Mountain (approximately 5700 acres), and are proposed at Ford Pasture (approximately thousand acres). The rangeland seedings on Circle Cliffs, Mollies Nipple, Cole Bench, Sheep Creek, and Coyote

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Allotment are being maintained. It is anticipated that other previously approved rangeland seedings will be rehabilitated or maintained in the near future, subject to the availability of funding. Restoration, by seeding and scarification (excluding physical manipulation) currently costs between one hundred and one hundred and fifty dollars an acre. The final price is highly dependent upon seed mix selection and the availability of desired species on the seed market. It is anticipated that several hundred acres will be seeded each year, and seeding restoration work over the life of this plan should be less than twenty thousand acres.

Future restoration work, involving physical manipulation, is anticipated. Initial project assessment work is being done on roughly thirty thousand acres, mainly consisting of Pinyon-juniper vegetation within high value wildlife habitat. The assessments should identify future treatment tracts of land with high potential for habitat restoration (recognizing that high value does not equate to restoration effectiveness). Cost estimates for vegetation management run from nearly a hundred, to over four hundred dollars per acre. Based upon current budgets, it is anticipated that about a thousand acres of restoration will be proposed per year, and less than that accomplished based upon final cost estimates. Over the life of this plan amendment, there should be less than twenty thousand acres of vegetation restoration using physical manipulation.

The recent statewide amendments concerning fire planning may result in an increased use of introduced fire as a landscape management tool. While historically there has been little use of introduced fire within the planning area, fire is a viable tool for range rehabilitation. Lacking past experience, and accepting concerns over the role of fire in increasing the presence of non-native annuals, it is not anticipated that introduced fire will be a major vegetation treatment method. It is anticipated that several thousand acres will be treated over the life of this plan.

#### **RIPARIAN AND WATER RESOURCES**

The combination of past, present and future actions on riparian areas would be positive. Existing planning guidance (RIPA 1 through 9), along with habitat protection measures required for special status species, should result in the incremental improvement of riparian areas within the planning area. Proposed modifications to livestock grazing should improve riparian areas. No other impacts are anticipated.

#### **SOILS AND BIOLOGICAL SOIL CRUSTS**

Since the cumulative impacts to soils and biological soil crusts are the same, they are discussed together below.

No cumulative impacts on soils are anticipated. Most causes of detrimental impacts on soils are identified and restrained in the existing management plan. Historical impacts on soils and biological crust as a result of livestock grazing would continue, but at a lesser level. Minor new impacts are expected, mainly as a result of improved livestock distribution, but no impacts are expected beyond those assessed in this analysis.

## **CHAPTER 4**

### **ENVIRONMENTAL IMPACTS**

Eventual implementation of new structural range improvements will result in discrete, localized, surface disturbance. New disturbance from range improvements would be offset by improved livestock management, with a net reduction in surface erosion and compaction.

#### **NOXIOUS WEEDS AND NON-NATIVE PLANTS**

Noxious weed and non-native plant spread will continue, but as a result of ongoing activity, primarily disturbance and introduction related to recreational use, existing approved vehicular use, and the continued presence of livestock. No new mechanisms for the introduction or spread of noxious weeds are anticipated over the life of the plan. The rate of spread and introduction should diminish, as a result of new requirements for management of vegetation treatments and livestock. The effectiveness of control methods should increase as a result of a better understanding of noxious species distribution, and a more aggressive containment program.

#### **WILDLIFE**

Cumulative impacts (positive and negative) are anticipated to wildlife. Changes in livestock management, along with range restoration work, would result in changes to vegetation community composition. Grass and forb species should increase, and there will be a pronounced increase in riparian vegetation. Wildlife species which require greater structural diversity or greater cover, will improve in numbers and distribution. Interspecies competition would result in lower numbers of species which thrive with the existing vegetation communities. Species which require an open understory in woodlands or forests, would decline. Species which require the additional niche space of a diverse understory would increase. Species which prefer browsing shrubs or trees would face increased competition from species which prefer foraging on grasses and forbs.

#### **CULTURAL RESOURCES**

No cumulative impacts are anticipated to cultural resources. Existing uses would be continued at a lesser level. No new resource impacting activities are anticipated, and the continued, historical, uses will be mitigated or reduced in intensity.

#### **RECREATION**

It is anticipated that recreational use will continue to gradually increase. This is as a result of demographics, and not as a result of any specific action taken within the planning area. The (unchanged) constraints on recreation within the existing plan will spread recreational use over a large area, and would prevent concentrated use beyond the thresholds in the plan. Changes in livestock management would assist this dissemination pattern, in that user conflicts with livestock will be reduced.