

4.8. LIVESTOCK AND GRAZING MANAGEMENT

4.8.1. IMPACTS COMMON TO THE PROPOSED RMP AND ALL ALTERNATIVES

Impacts to livestock and grazing resources would occur under the Proposed RMP and all of the proposed alternatives. The impacts could include those caused by route construction and maintenance, wellpad construction, vehicle traffic, accidental spills of potentially hazardous materials, and noxious weed infestations. These impacts are generally mitigated as part of the conditions of approval.

Controlling livestock movement by maintaining fence lines would serve to maintain efficient livestock and range management.

While new routes and wellpad construction produce adverse impacts on livestock grazing, such as removing forage, they can also have beneficial impacts. The construction of new routes associated with the Proposed RMP and the alternatives would provide beneficial impacts for livestock permittees from improved access to remote facilities and grazing areas. Also, the development of route systems within the VPA would improve livestock dispersal, thereby improving livestock foraging efficiency as cattle are better dispersed across the landscape due to improved access to forage and water sources. However, increased access could produce an increased disturbance to livestock, an increased number of undesignated routes, and increased distribution problems associated with unclosed cattle gates and/or gaps created in cut fences. Vehicles would also present a potential collision hazard to livestock.

For the Proposed RMP and all of the alternatives, fugitive dust caused by vehicles traveling along proposed new routes, existing routes, and other areas of surface disturbance could settle on vegetation used as forage, especially alongside routes with heavy traffic. This dust would potentially affect the quality and regenerative capacity of roadside grasses and forbs as well as decrease the palatability of the forage for livestock use.

Livestock forage would also be potentially impacted by spills and/or disposal of produced water from CBNG activities, and spills of fuels, solvents, or drilling fluids.

Areas of disturbed soil would lead to invasion by noxious weeds or other undesirable non-native, invasive plant species. These species would reduce rangeland and forage values by replacing preferred forage species, leading to a reduction in grazing capacity. Without proper management and control, invasive plant species become established and cause severe infestations. Additionally, some invasive species are poisonous to livestock and can kill or impair them if ingested.

Under the Proposed RMP and the proposed alternatives for riparian resources, many areas have proposed riparian management improvements that limit or reduce soil disturbance and manage for greater vegetative cover. Impacts from these management alternatives are generally projected to have minor impacts on livestock grazing, except as they relate to improved vegetation cover in currently impaired areas, or potential reduction in intensity or exclusion of grazing in currently

impaired areas being managed for the recovery of vegetation. Long-term effects are expected to include the required development of grazing management plans to achieve appropriate vegetation utilization as per BLM guidelines.

For all of the alternatives and the Proposed RMP, wild horse management decisions would generally have an indirect relationship to impacts upon livestock grazing, mostly in regards to forage availability. In terms of AUMs and categories of use, forage would be managed and designated to livestock, wildlife, and/or wild horses. Thus, if AUM designation were changed for wild horses, it could affect livestock and wildlife, or it could affect wildlife only. See Section 4.7.2.2 for specific foraging decisions that affect livestock in terms of wild horses.

Several areas have proposed wildlife and fisheries management decisions that would limit or reduce access and disturbance seasonally or year-round. Impacts from the proposed designations are generally projected to have relatively minor effects on livestock grazing. Impacts specific to decisions regarding the provision of habitat and forage, and potential emigration and reintroduction of Rocky Mountain bighorn sheep, bison, and moose, would include some changes in forage availability and use-priority. Combined with prescribed fire and other vegetation treatment options, including enhanced distribution and access to water, the impacts to livestock grazing from wildlife and fisheries management would be minor.

For proposed travel decisions under all of the alternatives and the Proposed RMP, many areas have proposed recreation management decisions that would increase on- and off-trail activities and OHV use. Impacts to livestock grazing from these management decisions would be moderately adverse in that they would result in increased human-caused noise, dust, and vegetation disturbance, and increase the opportunities for harassment of grazing animals. Intense recreational activities would exclude livestock use in the same area unless uses were separated in time. Increased human-caused impacts would include potential harassment of livestock, potential for OHVs to move off of designated routes, potentially producing vegetation losses on illegal trails, and the potential cutting of fences or leaving gates open affecting proper livestock distribution. Under Alternative D (No Action), much of the VPA would be open to cross-country OHV travel, which would allow visitors to travel throughout the allotments and potentially reduce forage productivity. For example, four open or "play" areas exist close to Vernal, Utah, and are designated as "open" for OHV use. While these areas are limited in forage production, they are located within existing allotments. Due to the level of impact, these areas would be considered lost in the calculation of forage production because these areas effectively change the allotment boundaries. The mean number of AUMs per acre of land within the VPA is 0.06 AUMs (standard deviation of 0.04). Assuming this average loss per acre of land open to OHV use, the number of lost AUMs for these areas under Alternatives A, B, and C, would be up to 372, 326, and 326 AUMs respectively. There is no way to effectively quantify the number of AUMs that have currently been lost in the 787,859 acres of area open to OHV use under Alternative D (No Action). However, it is assumed that future loss of AUMs, by continuing to leave these areas open, would be much higher than would be experienced under the more controlled OHV use proposed under the Proposed RMP and the action alternatives.

Under the Proposed RMP and the action alternatives, areas proposed for woodland and forest management improvements would limit or reduce soil disturbance and manage for greater

vegetation cover. Impacts from these management alternatives are generally considered to have relatively minor impacts on livestock grazing, except as they relate to improved vegetation cover and additional forage in currently impaired areas.

4.8.2. ALTERNATIVE IMPACTS

Management decisions specific to the Proposed RMP and the identified alternative have the potential to impact livestock grazing in the following ways:

- Impacts to livestock grazing from fire management decisions, livestock grazing management decisions, rangeland improvements, riparian management decisions, vegetation management decisions, and woodland and forest management decisions are projected to be directly beneficial and provide both short- and long-term improvements in forage health and availability, habitat improvements, and water access and availability. The use of fire as a management tool may lead to some areas being unavailable for foraging in the short term, but in the long term would act to improve overall conditions and reduce the likelihood for wildland fire damage.
- Without careful management, increased levels of livestock, wildlife and/or wild horse use could lead to increased utilization levels and decreased forage quality over time.
- Impacts from special status species and wildlife and fisheries management decisions are projected to be adversely small to moderate on livestock grazing, as management for the increased needs of bighorn sheep could result in the reduction of grazing opportunities and changes in priority forage utilization for livestock.
- Impacts from recreation and travel-based management decisions are expected to be adversely small to moderate on livestock grazing as related to increases in noise, dust, soil and vegetation disturbances, and harassment from humans. The majority of these projected impacts are assumed to be the result of proposed increases in motorized travel and access opportunities.
- Impacts associated with mineral management decisions could be potentially adverse to livestock grazing, as they represent the potential loss of AUMs from mining, well pad and access road construction, and the construction of support facilities. In most cases, these impacts are routinely mitigated, are of relatively short duration (e.g., surface disturbances around oil and gas well pads and extraction infrastructure are reclaimed immediately after construction) and affect a relatively small area within the VPA (the predicted surface disturbances and losses of AUMs from minerals development are discussed below in subsection 4.7.2.3). These adverse impacts to livestock and grazing may be greater where energy development features include dense well sites (i.e., more dense than a 40-acre well spacing). Current RFD scenarios do not assume such a high density. Other potentially adverse but remote impacts from mineral development would include increased livestock management needs, decreased livestock dispersal, and the physical risks of livestock/vehicle collisions associated with increased vehicle traffic in grazing areas. There are often benefits where reclamation of right-of-way corridors and well pads establish more palatable forage.
- Impacts from cultural resource management decisions, paleontological resources decisions, land and realty management decisions, soils and watershed management decisions, special designations, and visual resource management decisions are projected to have minor or

negligible impacts on livestock grazing except as they impact other management decisions as outlined above. These categories will not be discussed in detail in this alternatives analysis.

4.8.2.1. IMPACTS OF FIRE MANAGEMENT DECISIONS ON LIVESTOCK GRAZING

4.8.2.1.1. PROPOSED RMP, AND ALTERNATIVES A, B, C, AND E

The Proposed RMP and all of the action alternatives propose using prescribed fire to treat up to 156,425 acres per decade. Livestock grazing management decisions would need to be coordinated with fire management decisions. While general areas have been identified for prescribed fire treatments, decisions regarding where fire would be prescribed would be determined by the Fire Management Plan and would be dependent upon the status of the vegetation and the seasonal and annual meteorological conditions. Therefore, it is very difficult to quantify potential impacts to livestock grazing. Prescribed burning is a useful tool for resource management and would be used to enhance forage for cattle and to reduce hazardous fuel loads.

The direct effects of prescribed fire and fire treatments as a tool for forage and fuels management would be large for livestock grazing, both in the short and long term. Cumulatively, the use of prescribed fire would have beneficial impacts, and would outweigh the short-term impacts associated with the use of prescribed fire or other fire treatments as a management tool. Generally, the short-term livestock grazing effects from prescribed burn and/or other fire treatments would include the exclusion of livestock (and other related activities) from treated areas for approximately three growing seasons (typically, one growing season prior to treatment and two seasons post-treatment). This would result in a short-term reduction in available grazing acreage and associated AUMs where prescribed burning or other fire treatments coincide with grazed areas.

The long-term direct effects from prescribed burns would include improvement in the health, biomass, and diversity of forage. Studies on prescribed fire in other areas have shown that cattle gains were much greater on burned range than on unburned range during the spring and two to three times higher for the entire season. Also, the cattle showed a strong preference for recently burned areas, when the burned areas were available for grazing (FDOF 2000). The use of prescribed burning is an irreplaceable tool in maintaining biological diversity and ecological balance. Prescribed burns, as well as wildland fire, could effectively produce an increase in forage for livestock, wildlife, and wild horses. Decisions to potentially increase AUMs would be authorized temporarily and would be non-renewable for the affected allotments.

In conclusion, while the use of prescribed burning as a management tool would result in some short-term losses of grazing areas, the long-term beneficial impacts of its application far outweigh the projected short-term impacts. Prescribed fire has the potential to improve forage and presents a much lower risk to livestock grazing than wildland fire burning over the same area.

4.8.2.1.2. ALTERNATIVE D (NO ACTION)

This alternative would use prescribed burning to treat up to approximately 50,900 acres per decade within the VPA. The description of impacts under Alternative D (No Action) would be generally the same as Alternative A, with a difference in magnitude of both impacts and benefits associated with the difference in total acres treated. In comparison, the Proposed RMP and the action alternatives would have greater beneficial impacts on livestock grazing from fire treatments and prescribed burning than Alternative D (No Action) because more area would be treated than under Alternative D (No Action).

4.8.2.2. IMPACTS OF FORAGE MANAGEMENT DECISIONS ON LIVESTOCK GRAZING

4.8.2.2.1. PROPOSED RMP

The determination of the season of use under the Proposed RMP was based on plant phenology to ensure that the physiological needs of plants would be met. Therefore, the Proposed RMP, by focusing on the needs of plants, both due to season of use and utilization levels, would ultimately improve rangeland conditions and meet the Standards for Rangeland Health. Within the VPA, a total of 138,402 AUMs would be allocated to livestock, a total of 104,865 AUMs would be allocated to wildlife, and 2,340 AUMs would be temporarily allocated to wild horses. Within the uplands in the VPA, up to 50% use of forage would be allowed unless otherwise specified by a management plan. The Proposed RMP and all of the action alternatives would reduce forage availability from current conditions for livestock. Under the Proposed RMP, there would be a 5% reduction in livestock forage allocations when compared to Alternative D (No Action).

As the number of AUMs is directly related to the amount of available forage for grazing, the short- and long-term direct impacts can be similarly anticipated whenever AUMs are used as a quantitative measure of impact. In the short term, the Proposed RMP would beneficially impact livestock. Also, the use of grazing management criteria (see Section 2, Alternatives) to maintain or improve rangeland conditions, would over the long term, maintain adequate forage production levels for livestock, wildlife, and wild horse use. Minor, adverse, indirect impacts as a result of the implementation of the Proposed RMP would occur to the ranching community, but not individual ranchers, due to the reduction in AUMs.

Under the Proposed RMP, allowable utilization on upland would be 50 percent. This level of utilization would be considered proper use because plant health would be maintained and adequate root growth would be allowed to occur. The Proposed RMP would result in less impact to rangeland health than Alternative D (No Action) because upland utilization is unspecified under Alternative D (No Action).

4.8.2.2.2. ALTERNATIVE A

The impacts to livestock and grazing under this alternative would be the same as discussed under the Proposed RMP because the management decisions are similar. Under Alternative A, 137,838 AUMs would be allocated to livestock, 104,871 AUMs for wildlife, and 2,940 AUMs for wild horses, and the percentage of upland forage utilization would be the same as the Proposed RMP.

4.8.2.2.3. ALTERNATIVE B

The determination of season of use under Alternative B was based on billed use. The billed use is based on how the permittees are actually billed.

Within the VPA, a total of 139,163 AUMs would be allocated to livestock, a total of 104,871 AUMs would be allocated to wildlife, and no (0) AUMs would be allocated to wild horses. This reallocation in AUMs would be due to the increase in AUMs from acquired private properties. This alternative would result in an approximate 5% reduction in AUMs for livestock as compared to Alternative D (No Action). Overall reductions in forage use would be 0.8 percent. Within the uplands of the VPA, up to 60% use of forage would be allowed unless otherwise specified by a management plan. The Proposed RMP and all of the action alternatives would reduce forage availability from current conditions for livestock; however, of the action alternatives, Alternative B would be most favorable to livestock.

In the short term, Alternative B would beneficially impact livestock, and the use of grazing management criteria (see Chapter 2, Alternatives) to maintain or improve rangeland conditions would, over the long-term, maintain adequate forage production levels for livestock and wildlife use. Overall, grazing management criteria under this alternative would be beneficial for livestock management. Minor indirect impacts as a result of the implementation of Alternative B would occur to ranchers due to the reduction in AUMs and to local economies because of economic impacts to ranchers.

Under Alternative B, allowable utilization by livestock on upland vegetation would be 60 percent. This level of utilization would not be considered proper use without appropriate grazing management in place that would meet the physiological needs of plants because plant health would not be maintained over the long term and adequate root growth would not be allowed to occur. This alternative would have indirect long-term, adverse impacts on livestock and grazing because of a decline in rangeland health. Alternative B would result in a greater adverse impact to rangeland health than the Proposed RMP and Alternatives A, C, and E, but would be less than Alternative D (No Action).

4.8.2.2.4. ALTERNATIVES C AND E

The determination of season of use under Alternatives C and E would be based on how grazing was adjudicated (judicially assigned) in the 1960s. Within the VPA, a total of 77,294 AUMs would be allocated to livestock, a total of 106,196 AUMs would be allocated to wildlife, and a total of 3,960 AUMs would be allocated to wild horses. The number of livestock AUMs was determined by removing historic non-use AUMs (available AUMs not used over the past 10 years) from Alternative D (No Action) for the life of the management plan. Non-use by permittees would be the result of factors such as private business reasons, livestock market fluctuations, and drought conditions. This would result in an approximate 47.1% permitted reduction for livestock under Alternatives C and E as compared to Alternative D (No Action), which would have a major adverse impact on the livestock and grazing resource. Overall reductions in forage use would be 24.3%. Within the uplands of the VPA, up to 50% use of forage would be allowed unless otherwise specified by a management plan. All of the action alternatives would reduce forage availability from current conditions for livestock, and

Alternatives C and E are the alternatives least favorable to livestock from the standpoint of total available AUMs. However, from a rangeland health perspective, Alternatives C and E would result in the least use by livestock of the forage. Proper levels of use sustain a healthy vegetation condition that would support continued livestock grazing.

Because the number of AUMs is directly related to the amount of available forage for grazing, the short- and long-term direct impacts can be similarly anticipated whenever AUMs are used as a quantitative measure of impact. In the short term, Alternatives C and E would provide forage for livestock for roughly half of the AUMs as compared to Alternative D (No Action), due to the 47.1% removal of historic non-use AUMs. This reduction would have a major impact on the livestock industry within the VPA. However, the total use of AUMs would not realistically differ from current conditions based on the levels of non-use. As with the other alternatives, grazing management criteria would be followed (see Chapter 2, Alternatives) to maintain or improve rangeland conditions. A long-term direct, adverse impact of Alternatives C and E would be the limitation of permittees to expand the size of their operations above current levels within the allotments. This limitation would not allow the number of livestock to increase as markets improve, but increases would be driven by rangeland health and the capacity of the vegetation to support grazing. Forage production would likely increase under Alternative E, resulting in increased feed for foraging animals and an improvement in rangeland health. Alternatives C and E would result in indirect impacts to ranchers and their families, to the local economy due to the reduction in livestock AUMs, and to local businesses due to the slowed economy. The reduction in permitted AUMs could affect the ability of ranchers to obtain adequate financial resources because federal permits are a recognized value to lending institutions. Fire ecology would also change due to the limited amount of grazing that would be authorized. The increased amount of forage would increase fuel loads, thereby affecting rangeland fire conditions.

Rangeland health would be the driving force under Alternatives C and E and would be monitored to ensure that rangeland health standards would be met. As a result, the number of AUMs could increase under Alternatives C and E on a case-by-case basis as directed by improved rangeland health. Under Alternatives C and E, allowable utilization levels of 50% on uplands would be targeted to provide for plant health and adequate root growth. This level is expected to vary from year to year due to climatic changes, and the 50% utilization target could be modified in site-specific management plans considering allotment-specific conditions. Because of their lower utilization limits (50%), the Proposed RMP, and Alternatives A, C, and E would result in less livestock use of forage, compared to Alternative B (specified for management at 60% forage utilization). Proper levels of use sustain a healthy vegetation condition that would support continued livestock grazing. A comparison to Alternative D (No Action) is not possible because there is no specified utilization target. However, healthy rangeland standards would be targeted under all of the alternatives.

4.8.2.2.5. ALTERNATIVE D (NO ACTION)

The determination of season of use under Alternative D (No Action) was based on the permitted use. Season of use, combined with allowable utilization levels would adversely impact rangeland health to the greatest degree among the alternatives. Under this alternative, within the VPA, a total of 146,161 AUMs would be temporarily allocated to livestock, a total of 96,607 AUMs

would be allocated to wildlife, and a total of 2,340 AUMs would be allocated to wild horses. Forage actions for the uplands in all localities of the VPA are unspecified; therefore, the effects of forage management decisions on livestock grazing cannot be determined at this time. Alternative D (No Action) is the alternative most favorable to livestock.

As the number of AUMs is directly related to the amount of available forage, the short- and long-term direct impacts can be similarly anticipated whenever AUMs are used as a quantitative measure of impact. In the short term, Alternative D (No Action) would beneficially impact livestock, and the use of grazing management criteria (see Section 2, Alternatives) to maintain or improve rangeland conditions, would over the long-term, maintain adequate forage production levels for livestock, wildlife, and wild horse use. Minor indirect impacts as a result of the implementation of Alternative D (No Action) would occur to ranchers due to the increased amount of forage from range improvement practices.

Under Alternative D (No Action), allowable utilization on upland vegetation and riparian vegetation are unspecified. Depending on the allotment, proper use would potentially not be maintained. Alternative D (No Action) would potentially result in the greatest adverse impact to rangeland health, as compared to the Proposed RMP and alternatives.

4.8.2.3. IMPACTS OF MINERAL DECISIONS ON LIVESTOCK GRAZING

Activities associated with the exploration and development of mineral resources would have impacts on livestock grazing that would result in:

- the temporary loss of vegetation and/or the loss of land available for grazing;
- the possible disruption of livestock practices;
- the possible loss of grazing capacity due to changes in land management.

These impacts would be minor (and would be routinely mitigated), unless well densities were higher than projected. Short term losses of forage from surface disturbances would be adverse; however, reclamation of these areas would create the opportunity for establishing more palatable forage. Livestock grazing and the development of oil and gas and CBNG natural gas deposits are assumed to be generally compatible with livestock grazing in most cases, as exploration activity would be short-term and extraction activities and impacts are expected to require relatively small areas for the placement of equipment and machinery. The development of phosphate and Gilsonite resources would result in the long-term removal of lands from grazing activity to a greater extent than the above resource extraction processes because of greater surface and subsurface disturbances. In general, livestock grazing on rangeland would be expected to continue at some level during the development of oil and gas, and coal bed resources.

The potential impacts of mineral development on livestock grazing would be the same for the Proposed RMP and all of the alternatives. The construction of drilling well pads, pipelines, and access routes would remove areas from the forage base, thereby resulting in a decrease in available AUMs for livestock. The actual losses of AUMs as a result of development under each alternative are described separately below. Mineral development would also potentially produce adverse impacts on use patterns due to the construction of new access routes and fencelines,

resulting in the potential fragmentation of forage resources. This fragmentation could result in areas where livestock grazing would be avoided or areas where livestock become more concentrated. While the loss in AUMs under any alternative would be relatively low, these other impacts pertaining to resource fragmentation could result in a cumulatively greater impact.

The development of wellpad and mining access routes would have both adverse and beneficial impacts on the grazing resource. Routes would beneficially provide additional access to portions of the allotments that currently do not have access. Access routes could increase livestock distribution in some areas, but can also disrupt distribution patterns. Increased livestock distribution could occur in some areas that have previously been inaccessible due to terrain limitations, distance from water, or a combination of both. Livestock distribution would be adversely disrupted in some areas because livestock would move along the routes, thereby missing available forage, or livestock could gain access to areas that are not desirable or are too fragile for grazing. Access routes would also allow increased vehicular traffic, contributing to potentially adverse disturbance to livestock from OHV users and those seeking dispersed recreational opportunities.

4.8.2.3.1. ANALYSIS ASSUMPTIONS

In developing this analysis, there was a large degree of recognized uncertainty regarding the magnitude of final development. Uncertainty specific to livestock grazing impacts includes the number of wells, type and amount of equipment used, specific locations of development, etc. Because of this uncertainty, actual impacts would vary from the projected values and would potentially be affected by the timing of phased development and associated permit requirements. The projected impacts discussed below were based on the following assumptions:

- Losses in grazing area from exploration activities.
- Areas of impact and changes in AUMs were calculated assuming that all mineral extraction activity would be located on grazed lands.
- All impacts to livestock grazing were assessed at the full magnitude of the proposed management alternatives and therefore represent impacts at full development. Initial impacts are expected to be much smaller as all lands will not be developed at the same rate or schedule for any of the proposed alternatives.
- To the extent possible, existing roadways and fence crossings would be used for oil and gas operations rather than new construction in the same vicinity.
- Fugitive dust emissions from roadways were treated as line sources in the air quality model (see subsection 4.2.3.6.1.3). This may increase or reduce the predicted maximum loads deposited near roadways depending on meteorology and terrain.
- Other specific assumptions as detailed within this analysis.

4.8.2.3.2. PROPOSED RMP

General impacts to livestock grazing under the Proposed RMP are projected to be primarily caused by the loss of grazing land from the construction of well pads, other extraction facilities and access routes; loss of vegetation available for grazing due to surface disturbance in areas

associated with extraction activities; and disruption of livestock management practices due to extraction activities. For the purposes of this analysis, the mean number of AUMs per acre of land within the VPA (0.06) was used to estimate the potential loss of AUMs due to mineral development disturbances. Under the Proposed RMP, a total of 303 AUMs (based on the RFD prediction of 5,045 acres of short term surface disturbances) would be lost in the short-term due to oil and gas well construction (including CBNG development) and associated facilities. The total long-term loss of AUMs from minerals development would be 829 AUMs (based on a RFD prediction of 13,815 acres of long-term disturbance from well pads, pipelines, roads, compressors, and power line construction), which would be a 4% increase in lost AUMs when compared to Alternative D (No Action).

Each exploration or extraction site would be unique and would have site-specific impacts on livestock and on grazing. Impacts specific to minerals exploration are expected to be short-term (e.g., the length of time required to drill a well and determine its productivity potential); impacts from extraction activities are expected to be long term and last as long as those activities are occurring (i.e., the productive lifetime of a oil/gas well or mine). Changes in livestock management that would be necessary during minerals operations would potentially include construction of cattle guards and fences to prevent livestock escape due to the proposed construction of routes, and identification of specially designated or restricted areas and pipelines. It should be noted that a total exclusion of livestock grazing is not expected to occur within areas of oil and gas, and CBNG development.

In the long term, the movement of livestock within the VPA would be hindered, to some degree, by the placement of routes and well pads or similar extraction-related construction. New routes associated with the proposed alternatives would provide livestock permittees with improved access to remote facilities and grazing areas. Increased vehicle traffic associated with the new routes (recreational and those associated with mineral exploration and extraction activities) would present a potential physical hazard to livestock proportional to traffic and livestock density. Increased use of the land area by mineral resources would potentially shift grazing locations, resulting in greater grazing pressure on more remote areas.

Fugitive dust from new and existing routes and other areas of surface disturbance would have adverse impacts on livestock grazing, as it would tend to settle onto forage, especially along routes with heavy traffic. Such dust has the potential to affect the quality and regenerative capacity of grass and forb forage. Generally such effects are most severe in an area extending up to 0.25 miles from the route. Air quality modeling for this alternative has projected that 254 miles of new routes would be constructed per year, with the potential to generate 121 tons of particulates (PM₁₀) per year. Given the 0.25-mile assumption for dust effects, this equates to an area of impact of approximately 350,000 acres, not all of which would be grazed acres.

Additional, potentially adverse impacts on livestock and grazing would be produced by the establishment and spread of non-native, invasive species and noxious weeds that replace or out-compete palatable forage, and the disposal or spilling of highly saline produced-water from CBNG extraction activities, fuels and solvents, and drilling fluid that would adversely reduce forage productivity.

4.8.2.3.3. ALTERNATIVE A

The short term and long term impacts would be the same as discussed above under the Proposed RMP. There would be a short term loss of 304 AUMs from wellpad, pipeline, infrastructure, and access road construction (based on a RFD projection of 5,066 acres of disturbance). The total long-term loss in AUMs from constructed physical facilities would be 833 AUMs (based on a RFD projection of 13,879 acres of disturbance), which would be 4% increase in lost AUMs, when compared to Alternative D (No Action).

Fugitive dust impacts would be the same as discussed above under the Proposed RMP, as the same number of new roads per year would be constructed, with the potential to generate the same number of tons of PM₁₀ particulates per year. The impacts from fluid spills and invasive species establishment would be the same as discussed above.

4.8.2.3.4. ALTERNATIVE B

Short-term and long term impacts from mineral resource exploration and development for Alternative B would be the same as those described under the Proposed RMP. Under Alternative B, a total of 305 AUMs that would be lost in the short-term due to oil and gas (including CBNG) well construction and associated facilities (based on a RFD disturbance of 5,088 acres in the short term). This alternative would reduce forage by 837 AUMs in the long term (from a projected surface disturbance of 13,945 acres). This would be a 5% long-term increase in the number of lost AUMs as compared to Alternative D (No Action).

The air quality modeling for this alternative has projected that the construction of 257 miles of new routes per year would create the potential to generate 123 tons of particulate (PM₁₀) per year. Given the assumption of 0.25 mile for dust effects, this equates to an area of impact of approximately 350,000 acres, not all of which would be grazed acres. The impacts of fugitive dust on livestock forage are discussed under the Proposed RMP.

4.8.2.3.5. ALTERNATIVE C

The short-term and long term impacts from mineral resource exploration and development for Alternative C would be the same as those described under the Proposed RMP. Under Alternative C, a projected total of 301 AUMs that would be lost in the short term because of oil and gas well (including CBNG) construction and associated infrastructure. The total long-term loss of AUMs from constructed physical facilities would be 824 AUMs (from oil and gas disturbances on 13,737 acres), which is a 3% increase in AUMs lost as compared to Alternative D (No Action). Air quality modeling for this alternative has projected the construction of 249 miles of new routes per year with the potential to generate 119 tons of particulate (PM₁₀) per year. Given the 0.25-mile assumption for dust effects, this equates to an area of impact of approximately 350,000 acres, the same as the Proposed RMP.

4.8.2.3.6. ALTERNATIVE D (NO ACTION)

General impacts from mineral resource exploration and development for Alternative D (No Action) are expected to be comparable to those described for the Proposed RMP. Under Alternative D (No Action), a total of 293 AUMs that would be lost in the short-term due to oil and gas well (includes coal bed) construction and associated facilities. There would be a total long-term loss of 800 AUMs, with the same impacts as those described under the Proposed RMP.

For Alternative D (No Action), air quality modeling has projected that 250 miles of new routes would be constructed per year with the potential to generate 119 tons of PM₁₀ particulates per year. Given the 0.25-mile assumption for dust effects, this equates to an area of impact of approximately 350,000 acres.

4.8.2.3.7. ALTERNATIVE E

The short term and long term impacts to livestock forage from minerals development would be the same as discussed under the Proposed RMP Under Alternative E, a total of 282 AUMs would be lost in the short term due to oil and gas well (includes CBNG) construction and associated facilities. Long term loss of forage productivity would total 766 AUMs (based on a RFD prediction of 12,765 acres of disturbances), with impacts as discussed above under the Proposed RMP, which would result in a 4% reduction in lost AUMs when compared to Alternative D (No Action).

Air quality modeling has determined that 249 miles of new roads would be constructed each year, with the generation of 119 tons of PM₁₀ particulates per year. This equates to an area of impact of approximately 350,000 acres.

4.8.2.4. IMPACTS OF NON-WSA AREAS WITH WILDERNESS CHARACTERISTICS DECISIONS ON LIVESTOCK GRAZING**4.8.2.4.1. PROPOSED RMP**

Under the Proposed RMP, 106,178 acres of non-WSA lands with wilderness characteristics would be managed to protect their wilderness values. Management decisions under the Proposed RMP would allow construction of livestock facilities if compatible and consistent with the goals and objectives of preserving wilderness values in these areas. At the programmatic level of analysis, the impacts to livestock grazing would be difficult to predict, and any impacts would be analyzed at the site-specific activity level and/or at the time of proposed conversions or construction of new facilities.

4.8.2.4.2. ALTERNATIVE A, B, C, AND D (NO ACTION)

Under these alternatives, there would be no management decisions to specifically protect non-WSA lands with wilderness characteristics. Thus, there would be no impacts to livestock grazing.

4.8.2.4.3. ALTERNATIVE E

Under Alternative E, 277, 596 acres of non-WSA lands with wilderness characteristics, which represent approximately 16% of public lands in the VPA, would be protected from impacts that would degrade their wilderness characteristics. Management decisions would allow the construction of livestock facilities and permit the maintenance of existing facilities in non-WSA lands with wilderness characteristics if consistent with the goals and objectives of managing non-WSA lands with wilderness characteristics. The impacts would be similar to those discussed under the Proposed RMP because the management decisions for livestock are the same.

4.8.2.5. IMPACTS OF RANGELAND IMPROVEMENT DECISIONS ON LIVESTOCK GRAZING

The net impacts to livestock grazing resulting from rangeland improvements would be beneficial in the long term under the Proposed RMP and each of the four action alternatives.

4.8.2.5.1. PROPOSED RMP

Under this alternative, direct impacts would include the short-term, adverse impacts of displacement of livestock while improvements are made, and the long-term, beneficial impacts of improvements to grazing allotments.

Displacement of cattle would occur as a result of vegetation treatments. Cattle would be displaced for two growing seasons from a total of 34,640 acres of vegetation while it is being treated. Cattle would be temporarily and intermittently displaced during construction of approximately 69 linear miles of fenceline. This displacement would occur for the short term (i.e., pre-construction and the time needed to construct a portion of the fence in a particular allotment) and from a very small area (i.e., a construction zone to be designated on either side of the fence centerline). Cattle would be temporarily and intermittently displaced during development of 812 guzzlers and/or reservoirs, 51 wells and/or springs, and 38 miles of pipeline within their allotments. The more favorable grazing conditions would result from the three kinds of improvement actions. After two growing seasons, a total of 34,640 acres of improved/increased forage would be available. After construction of the 69 linear miles of fenceline, grazing areas would be more clearly delineated and that would result in better livestock management. Finally, more water would be available to cattle after installation of 812 guzzlers and/or reservoirs and 51 wells and/or springs, as well as the pipelines.

4.8.2.5.2. ALTERNATIVE A

The impacts to livestock and grazing under this alternative would be the same as discussed under the Proposed RMP because the management decisions are the same.

4.8.2.5.3. ALTERNATIVE B

Under this alternative, direct impacts would include the short-term, adverse impacts of livestock displacement while improvements are being made, and the long-term, beneficial impacts of

improvements to grazing allotments. The rangeland improvement actions comprising Alternative B would have the greatest number of acres improved, as compared to the other alternatives.

Displacement of cattle would occur as a result of the three kinds of improvement actions, as described under the Proposed RMP. Cattle would be displaced for two growing seasons from a total of 50,900 acres of vegetation while it is being treated. Cattle would be temporarily and intermittently displaced during construction of 369 linear miles of fenceline. This displacement would be in the short term and from a very small area, as described under the Proposed RMP. Cattle would be temporarily and intermittently displaced during development of 1,165 guzzlers and/or reservoirs and 78 wells and/or springs within their allotments. Cattle would also be temporarily and intermittently displaced during construction of 51 linear miles of water pipeline. This displacement from pipeline construction would occur in the short term and from a small area, as described under the Proposed RMP.

More favorable grazing conditions will result from the three kinds of improvement actions. After two growing seasons, a total of 50,900 acres of improved/increased forage would be available. After construction of the 369 linear miles of fenceline, grazing areas would be more clearly delineated. Finally, more water would be available to cattle after installation of 1,165 guzzlers and/or reservoirs and 78 wells and/or springs, as well as the pipeline.

4.8.2.5.4. ALTERNATIVES C AND E

More favorable grazing conditions would result from three kinds of improvement actions. These improvement actions include vegetation treatments; fence construction for improved livestock control; and the development of guzzlers and/or reservoirs, wells and/or springs, and pipeline construction within cattle allotments. Cattle would be displaced for two growing seasons from a total of 45,860 acres for vegetation treatments. Cattle would be temporarily and intermittently displaced from a very small area during construction of 129 linear miles of fenceline. Cattle would be temporarily and intermittently displaced during the development of 811 guzzlers and/or reservoirs and 87 wells and/or springs, and during the construction of 30 linear miles of water pipeline. After two growing seasons, a total of 45,860 acres of improved/increased forage would be available, grazing areas would be more clearly delineated, and more water would be available to cattle.

Under Alternatives C and E, direct impacts include the short-term, adverse impacts of displacement of livestock while improvements are made and the long-term, beneficial impacts of improvements to grazing allotments. Rangeland improvement actions under Alternatives C and E will improve current rangeland more than under the Proposed RMP and Alternatives A and D (No Action) but less than under Alternative B.

4.8.2.5.5. ALTERNATIVE D (NO ACTION)

Under this alternative, direct impacts include the short-term, adverse impacts of displacement of livestock while improvements are made and the long-term, beneficial impacts of improvements to grazing allotments. The rangeland improvement actions composing Alternative D (No Action)

would improve current rangeland more than the Proposed RMP and Alternative A but less than Alternatives B and C.

Displacement of cattle would occur as a result of the three kinds of improvement actions described under the Proposed RMP. Cattle would be displaced for two growing seasons from a total of 40,390 acres of vegetation while it is being treated. Cattle would be temporarily and intermittently displaced during construction of 65 linear miles of fenceline. This displacement would occur in the short term and over a very small area, as described under the Proposed RMP. Cattle would be temporarily and intermittently displaced during development of 775 guzzlers and/or reservoirs and 74 wells and/or springs within their allotments. Cattle would also be temporarily and intermittently displaced during construction of 35 linear miles of water pipeline. This displacement from pipeline construction would occur in the short term and from a small area.

In the long term, more favorable grazing conditions would result from the three kinds of improvement actions, as described under the Proposed RMP. After two growing seasons, a total of 40,390 acres of improved/increased forage would be available. After construction of the 65 linear miles of fenceline, grazing areas would be more clearly delineated. Finally, more water would be available to cattle after installation of 775 guzzlers and/or reservoirs and 74 wells and/or springs, as well as the pipeline.

4.8.2.6. IMPACTS OF VEGETATION MANAGEMENT DECISIONS ON LIVESTOCK GRAZING

4.8.2.6.1. PROPOSED RMP, AND ALTERNATIVES A, B, C, AND E

Vegetation in the Vernal planning area would be managed by using prescribed burning on approximately 156,425 acres per decade and by using rangeland improvements, with impacts similar to those described in Sections 4.8.2.1 and 4.8.2.4. Under the Proposed RMP and all of the action alternatives, the impacts to grazing would be those associated with and discussed under Fire Management and Rangeland Improvement.

4.8.2.6.2. ALTERNATIVE D (NO ACTION)

Generally, the types of impacts would be the same as discussed under the Proposed RMP and action alternatives, with a reduction in magnitude of both beneficial and adverse impacts, which would be associated with the decrease in acres proposed for fire treatments and reduced levels of rangeland improvements.

4.8.2.7. SUMMARY

4.8.2.7.1. PROPOSED RMP

The Proposed RMP would have adverse impacts on livestock and grazing by allowing a 4% loss of AUMs from mineral development (more than Alternative E, but less than Alternative B) and proposes the least number of acres treated for rangeland improvement treatments. Forage allocation would be less than Alternatives B and D, but more than Alternatives A, C, and E.

4.8.2.7.2. ALTERNATIVE A

This alternative would have impacts similar to the Proposed RMP from a 4% loss of AUMs from minerals development and the same acreage of rangeland improvements treatments. Forage allocation would be less than the Proposed RMP and Alternative D (No Action), but more than Alternatives C and E.

4.8.2.7.3. ALTERNATIVE B

Alternative B would produce short-term conditions favorable to livestock, but long-term adverse impacts to rangeland health by exceeding forage production capacity, even though this alternative proposes the most area for rangeland improvements treatments. The percentage of AUMs lost to minerals development would be the highest of the action alternatives (5 percent).

4.8.2.7.4. ALTERNATIVE C

Under Alternative C, the impacts on livestock grazing would be adversely high (by removing the most AUMs from livestock grazing [the same as Alternative E]), but beneficial to rangeland health. The adverse impacts from AUMs lost to minerals development would be the less than of all the action alternatives except for Alternative E. Rangeland improvement management actions would be less beneficial than Alternative B, but greater than the Proposed RMP and Alternatives A and D (No Action).

4.8.2.7.5. ALTERNATIVE D (NO ACTION)

Alternative D (No Action) would provide the least number of acres for fire treatment (and indirect improvements to rangeland forage). This alternative would provide for rangeland improvements greater than the Proposed RMP and Alternative A, but less than Alternatives B, C, and E. The area of AUMs lost to minerals development would be less than the Proposed RMP, and Alternatives A, B, C, but more than Alternative E.

4.8.2.7.6. ALTERNATIVE E

Under Alternative E, the short-term adverse impacts on livestock grazing would be greater than under the other alternatives by removing the most AUMs from livestock grazing; however, it would result in the most beneficial long-term impacts to rangeland health. Adverse impacts from AUMs lost to minerals development would be the least of all the alternatives and the Proposed RMP. Rangeland improvement management actions would be less beneficial than under Alternative B, but greater than the Proposed RMP and Alternatives A and D (No Action).

4.8.3. MITIGATION MEASURES

Timing and location planning and coordination of prescribed burning would be critical in the mitigation of impacts. In some cases, it would be possible to time prescribed burns to avoid coinciding with seasons of peak grazing use. However, it may be necessary to allow a season of rest for a grazing area designated for prescribed burning in order to allow sufficient fuel loads to

accumulate. Therefore, because such coordination would typically be impossible, scheduling of prescribed burns should be coordinated with grazing to reduce or disperse the overall impacts between individual allotment holders to the extent possible and avoid undue impacts and hardships to individual allotment holders.

4.8.4. UNAVOIDABLE ADVERSE IMPACTS

There would be a short-term, unavoidable adverse impact to grazing from fire and vegetation treatments, which would temporarily reduce grazing areas within the VPA during treatment and vegetation recovery. There would be unavoidable, adverse short- and long-term loss of AUMs from the exploration and development of mineral resources. These losses are described above.

4.8.5. SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

As discussed in the subsections above, short-term uses could be forgone in order to enhance long-term productivity. This is particularly the case with rangeland improvements such as prescribed fire, vegetation manipulation, and vegetation treatment scenarios. As discussed, foregoing short-term uses would greatly enhance the long-term productivity of the resource, thereby producing beneficial long-term outcomes.

4.8.6. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

Long-term surface-disturbing activities associated with 1) mineral development and access route construction, 2) OHV use, 3) motorized and non-motorized trail construction would result in irretrievable impacts to resources. There are no irreversible impacts that were identified for livestock and grazing resources.