Chapter 4

Environmental Consequences

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Changes to Chapter 4 between Draft LUPA/EIS and Proposed LUPA/Final EIS

- The likely direct and indirect impacts on the human and natural environment that could occur from implementing the Proposed Plan Amendment presented in **Chapter 2** were incorporated into **Chapter 4**. Analysis shown under the draft alternatives may be referenced in the Proposed Plan Amendment analysis with such statements as "impacts would be the same as, or similar to, Alternative D" or "impacts would be similar to Alternative D, except for...,"

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Chapter 4. Environmental Consequences

Chapter 4, Environmental Consequences, presents the direct and indirect impacts on the human and natural environment anticipated to occur from implementing the alternatives presented in **Chapter 2**. Cumulative impacts are presented in **Chapter 5**. The purpose of this chapter is to describe to the decision maker and the public how the environment could change if any of the alternatives in Chapter 2 were to be implemented. It is meant to aid in deciding which land use plan amendment, if any, to adopt.

This chapter is organized by topic, similar to Chapter 3. Each topic area includes the following:

- A method of analysis section that identifies indicators and assumptions
- An analysis of impacts for each of the six alternatives

Management actions proposed in Chapter 2 are planning-level direction that do not result in direct on-the-ground changes. The analysis focuses on impacts that could eventually result in on-the-ground changes. It does this by planning for land use on surface estate and federal mineral estate administered by the BLM and Forest Service over the life of the plan.

Some management actions may affect only certain resources and alternatives. This impact analysis focuses on those impacts that could impair a resource. If an activity or action is not addressed in a given section, either there are no impacts or the impacts are negligible, based on professional judgment.

The projected impacts on land use activities and the associated environmental impacts of land uses are characterized and evaluated for each of the alternatives. Impacts for the following resources are expected to be negligible, therefore they are not discussed in detail: air resources, soil resources, water resources, special status species (other than GRSG), fish and wildlife, cultural resources, tribal interests, paleontological resources, visual resources, cave and karst resources, forestry, recreation, and special designations (e.g., National Historic Trails, Wild and Scenic Rivers, Wilderness Areas, Wilderness Study Areas, National Monuments, and National Conservation Areas).

Impact analysis is a cause-and-effect process. The detailed impact analyses and conclusions are based on the following:

- The BLM and Forest Service planning team's knowledge of resources and the project area
- Reviews of existing literature
- Information provided by experts in the BLM and Forest Service, other agencies, cooperating agencies, interest groups, and concerned citizens

The baseline used for the impact analysis is the current condition or situation, as described in Chapter 3. Impacts on resources and resource uses are analyzed and discussed in detail,

commensurate with resource issues and concerns identified through the process. At times, impacts are described using ranges of potential impacts or in qualitative terms.

4.1 Analytical Assumptions

Several overarching assumptions have been made in order to facilitate the analysis of the project impacts. These assumptions set guidelines and provide reasonably foreseeable projected levels of development that would occur in the planning area during the planning period. These assumptions should not be interpreted as constraining or redefining the management objectives and actions proposed for each alternative, as described in Chapter 2.

The following general assumptions apply to all resource categories; any specific resource assumptions are provided in the methods and assumptions section for that resource:

- Sufficient funding and personnel would be available for implementing the final decision.
- Implementing actions from any of the LUPA alternatives would comply with all valid existing rights, federal regulations, BLM and Forest Service policies, and other requirements.
- Implementation-level actions necessary to execute the land use plan-level direction in this LUPA would be subject to further environmental review, including that under NEPA, as appropriate.
- Direct and indirect impacts of implementing the LUPA would primarily occur on BLM-administered and National Forest System lands in the planning area.
- Local climate patterns of historic record and related conditions for plant growth may change with warmer, drier conditions likely to occur over the life of this plan.
- In the future, as tools for predicting climate changes in a management area improve and climate change affects resources and necessitates changes in how resources are managed, the BLM and Forest Service may be required to reevaluate direction provided as part of this planning process and adjust management accordingly. It is speculative at this time to predict the specific nature or magnitude of such changes.
- The BLM and Forest Service would carry out appropriate maintenance for the functional capability of all developments.
- The discussion of impacts is based on best available data. Knowledge of the planning area and decision area and professional judgment, based on observation and analysis of conditions and responses in similar areas, are used for environmental impacts where data are limited.
- Restrictions (such as siting, design, and mitigation measures) apply, where appropriate, to surface-disturbing activities associated with land use

authorizations and permits issued on BLM-administered and National Forest System lands.

- New information may lead to changes in delineated GRSG habitat. New habitats, or areas that are no longer habitat, may be identified. This adjustment would typically result in small changes to areas. Modifications to GRSG habitat would be updated in the existing data inventory through LUP maintenance or plan amendment, as necessary.
- Acreage figures and other numbers used in the analyses are approximate projections for comparison and analysis only. Readers should not infer that they reflect exact measurements or precise calculations.
- For alternatives with an adaptive management component, hard trigger responses would impose PHMA/CHZ management decisions in IHMA/IHZ.
- There are no wild burros in Idaho or southwestern Montana, so impacts would apply only to wild horses.

4.1.1 General Methodology for Analyzing Impacts

Potential impacts are described in terms of type, context, duration and intensity, which are generally defined below.

Type of impact—Because types of impacts can be interpreted differently by different people, this chapter does not differentiate between beneficial and adverse impacts (except in cases where such characterization is required by law, regulation, or policy). The presentation of impacts for key planning issues is intended to provide the BLM and Forest Service decision makers and readers with an understanding of how multiple uses are balanced for each alternative.

Context—This describes the area or location (site-specific, local, planning area-wide, or regional) in which the impact would occur. Site-specific impacts would occur at the location of the action, local impacts would occur within the general vicinity of the action area, planning area-wide impacts would affect a greater portion of decision area lands in the sub-region, and regional impacts would extend beyond the planning area boundaries.

Duration—This describes the duration of an effect, either short term or long term. Unless otherwise noted, short term is defined as anticipated to begin and end within the first 10 years after the action is implemented; long term is defined as lasting beyond 10 years to the end of or beyond the life of this LUPA.

Intensity—Rather than categorize impacts by intensity (e.g., major, moderate, or minor), this analysis discusses impacts using quantitative data wherever possible.

Direct, indirect, and cumulative impacts—Direct impacts are caused by an action or implementation of an alternative and occur at the same time and place; indirect impacts result from implementing an action or alternative but usually occur later in time or are

removed in distance and are reasonably certain to occur. Cumulative impacts are effects on the environment that result from the impact of implementing any one of the Idaho and Southwestern Montana GRSG LUPA/EIS alternatives in combination with other actions outside the scope of this plan, either within the planning area or next to it. The cumulative effects analysis is provided in **Chapter 5**.

Required Design Features (RDFs) have been incorporated into the Forest Service Proposed Plan Amendment as planning-level guidelines, which will be implemented during site-specific project analysis.

4.1.2 Incomplete or Unavailable Information

The CEQ established implementing regulations for NEPA, requiring that a federal agency identify relevant information that may be incomplete or unavailable for evaluating reasonably foreseeable significant adverse impacts in an EIS (40 CFR 1502.22). If the information is essential to a reasoned choice among alternatives, it must be included or addressed in an EIS. Knowledge and information is, and would always be, incomplete, particularly with infinitely complex ecosystems considered at various scales.

The best available information pertinent to the decisions to be made was used in developing the LUPA. The BLM has made a considerable effort to acquire and convert resource data into digital format for use in the LUPA, both from the BLM itself and from outside sources.

Under the FLPMA, the inventory of BLM-administered and National Forest System land resources is ongoing and continuously updated. However, certain information was unavailable for use in developing the LUPA because inventories either have not been conducted or are not complete. Some of the major types of data that are incomplete or unavailable are the following:

- Comprehensive state-wide inventory of wildlife and special status species occurrence and condition
- Geographical information system data used for disturbance calculations on private lands

For these resources, estimates were made concerning the number, type, and significance of these resources based on previous surveys and existing knowledge. In addition, some impacts cannot be quantified, given the proposed management actions. Where this gap occurs, impacts are projected in qualitative terms or, in some instances, are described as unknown. Subsequent site-specific project-level analysis would provide the opportunity to collect and examine site-specific inventory data to determine appropriate application of LUP-level guidance. In addition, the BLM and other agencies in the planning area continue to update and refine information used to implement this LUPA.

4.1.3 Mitigation

This chapter describes the environmental consequences associated with the impacts to GRSG and its habitat from activities carried out in conformance with this plan, in addition to BLM and Forest Service management actions. In undertaking BLM and Forest Service management actions, and consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation, the BLM and Forest Service will require mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. In addition, to help implement this Idaho and Southwestern Montana Sub-region GRSG LUPA/EIS, a WAFWA Management Zone Regional Mitigation Strategy (per **Appendix J**) will be developed within one year of the issuance of the Record of Decision. The strategy will elaborate on the components identified in Chapter 2 (avoidance, minimization, compensation, additionality, timeliness, and durability), and will be considered by the BLM and Forest Service for BLM and Forest Service will consider it for their management actions and third party actions that result in habitat loss and degradation. The implementation of a Regional Mitigation Strategy will benefit GRSG, the public, and land -users by providing a reduction in threats, increased public transparency and confidence, and a predictable permit process for land-use authorization applicants.

4.2 Sage-Grouse and Sage-Grouse Habitat

This section discusses impacts on GRSG from proposed management actions under each alternative. Existing conditions concerning GRSG are described in **Section 3.2**.

4.2.1 Methods and Assumptions

Indicators of impacts on GRSG are as follows:

- Acres of sagebrush
- Direct habitat loss or gain
- Habitat fragmentation
- Impacts on life history requirements
- Population loss or gain
- Habitat degradation
- Habitat restoration and improvement

Effects listed above may be characterized for each resource and alternative, as appropriate, and, where available, quantified by the indicators described below.

- Identified GRSG Habitat (SFA, PHMA, IHMA, and GHMA)—Identified habitat includes those considered vital to the persistence of GRSG populations at

all scales. Acres impacted or improved by each resource is a general metric for acres of sagebrush, direct habitat loss, habitat degradation, and habitat restoration and improvement. The metrics provide a basis for a qualitative discussion of habitat loss and fragmentation and species life history requirements.

- Populations—A surrogate metric for population information used in this analysis is the number of occupied leks. Leks are strongly correlated with nesting habitat since hens fitted with radio collars tend to nest within several miles of their lek of capture (Connelly et al. 2000b). In Idaho, lek-to-nest distances may vary spatially over large landscapes, depending on the status of local GRSG populations, but roughly 80 percent of nests statewide occur within 5 to 7.5 miles of the lek of capture (Connelly et al. 2013). In some parts of the state, a small proportion of hens (e.g., five to seven percent) nested in excess of 9 miles from lek of capture (Connelly et al. 2013).

  The metric was derived by quantifying each GRSG population area, the number of occupied leks using the most recent lek data available (2014 for IDFG and MFWP; 2013 for Utah Division of Wildlife Resources), and lek occupancy or activity definitions consistent with those respective states. Numbers of occupied leks shown reflect leks with at least two or more displaying males in at least one of the past 5 years (2010 to 2014) for Idaho and for the last 10 years for Montana (2005 to 2014) and Utah (2004 to 2013). This metric provides general insight into the population contribution of specific population areas relative to the sub-region overall, providing additional context for comparison.

  The metric also allows for inferences of risk to population persistence from certain threats or resource allocations (such as areas open to ROWs or mineral leasing), assuming that population areas with a smaller number of occupied leks are more vulnerable to resource activities and that areas with a greater number of occupied leks imply larger populations and a greater opportunity for long-term persistence, given effective conservation efforts (see **Section 3.2**). Where land or resource allocations overlap population areas or occupied leks, the allocation is considered to be affecting the grouse population.

- To the extent lands are subject to adaptive management or an anthropogenic disturbance cap, the effects of threats would be further restricted based on the applicable thresholds and caps. Coordination between state and federal managers would further ensure the application and implementation of these thresholds and caps.

- Habitat suitability—Measured by vegetation dynamics development tool (VDDT) modeling, driven by sagebrush canopy cover and lack of conifer encroachment.

- Climate change—Under projected climate change, cooler and moister sagebrush communities (i.e., nesting and brood rearing habitat) would decrease. In addition, Wyoming big sagebrush is expected to decline (Still and Richardson 2014). GRSG may have the ability to move to areas that are currently cooler and wetter, as long at the new regions are suitable and available for sagebrush expansion (BLM 2013a; Knick et al. 2013). Climate change impacts are discussed for each threat where relevant.

Assumptions

Three general categories of human disturbance to habitats or disruption to animals would be the most influential on GRSG and their habitat, as follows:

- Disturbance or disruption from casual use
- Disturbance or disruption from permitted activities
- Changes in habitat condition, such as from fire or presence of noxious weeds and invasive species

The assumptions listed below are intended for large-scale planning-level analysis; project-level assumptions for NEPA may differ:

- GRSG habitat management area designations are assumed to represent habitat adequate to maintain GRSG populations in the sub-region. For Idaho, GRSG habitat designations were derived from modeling completed in 2012, based on 75 percent breeding bird density and 75 percent lek connectivity models, as well as known winter habitat, connectivity considerations and other factors. In Montana, GRSG habitat designations were derived from habitat modeling of core areas by MTFWP with additional input from the BLM. MZs were delineated by WAFWA in order to divide range-wide GRSG habitat into discrete areas for broad-scale planning. Population monitoring for GRSG is still done at finer scales, including state, local working group, and conservation area.
- This analysis uses PPH and PGH categories for Alternative A only to facilitate comparison across the other alternatives. There are currently no BLM-administered or National Forest System lands formally designated as GRSG PPH or PGH in the sub-regional planning area; Alternative A would neither result in the designation of PPH or PGH nor assign additional management actions to PPH or PGH areas.
- Population and subpopulation boundaries (Connelly et al. 2004) were modified to include the entirety of mapped GRSG Habitat Management Area designations in the vicinity (see **Section 3.2**).
- Habitat conditions and trends for each GRSG population area were determined by modeling vegetation dynamics, such as wildfire, succession, insects and disease, habitat restoration projects (e.g., sagebrush seeding, grass seeding, and

herbicide treatment of annual grass), prescribed fire, overgrazing, conifer encroachment and treatment, mechanical sagebrush treatment, and fuels reduction projects using the VDDT (**Appendix X**). Modeling was done for population areas in Idaho, Utah (Sawtooth National Forest portion only), and southwestern Montana. Initial population areas from Connelly et al. (2004) were considered, but some were ultimately combined or delineated further, to accommodate similarities in vegetation models or disturbance regimes.

- Because GRSG are highly sensitive to habitat fragmentation, development, and changes in habitat conditions and require large, intact habitat patches, alternatives proposing to protect the most GRSG habitat from disturbance are considered of greatest beneficial impact. These impacts can be described both qualitatively and quantitatively.

- Seasonal ranges of migratory and nonmigratory GRSG are largely encompassed within GRSG habitat management area designations; however, mapping is incomplete across much of the sub-region, so an accurate assessment of direct impacts is not possible.

- GRSG habitat management area designations encompass adequate habitat for providing connectivity within populations and subpopulations. Connectivity is considered by incorporating population area information in the design and implementing restoration projects.

- Under the Proposed Plan, SFA has been identified by the USFWS as areas that represent recognized "strongholds" for GRSG that have been noted and referenced as having the highest densities of GRSG and other criteria important for the persistence of the species. PHMA focuses on conserving the two key GRSG meta-populations in the sub-region. The PHMA encompasses areas with the highest conservation value to GRSG, based on the presence of larger leks, habitat extent, important movement and connectivity corridors, and winter habitat. IHMA contains additional high value habitat and populations that provide a management buffer for the PHMA, connecting patches of PHMA. IHMA encompasses areas of generally moderate to high conservation value habitat and populations and in some CAs includes areas beyond those identified by USFWS as necessary to maintain redundant, representative, and resilient populations (priority areas for conservation, or PACs). The IHMA are typically next to PHMA but generally reflect somewhat lower GRSG population status or reduced habitat value, due to disturbance, habitat fragmentation, or other factors. GHMA encompasses habitat that is outside of PHMA and IHMA. It is generally characterized by more marginal habitat and few, if any, occupied leks or other important seasonal use areas.

- Impacts on GRSG accrue over varying distances from origin depending on the type and scale of development and the habitat type impacted

- Impacts from transmission lines constructed before 2002 are likely fully manifested. BMPs, RDFs, COAs, and standard operating procedures are used for analysis and would be implemented to reduce impacts on GRSG. These are subject to modification based on subsequent guidance and new science.
- Ground-disturbing activities could modify habitat and cause loss or gain of individuals, depending on the size of the area disturbed, the nature of the disturbance (e.g., development vs. habitat restoration), and the location of the disturbance. For example, juniper reduction treatments in sagebrush steppe disturb the ground but are assumed to positively modify habitat quality and quantity in the long term.
- For analysis purposes, a 4.25-mile foraging distance is assumed to adequately encompass possible direct and indirect effects for both nesting and roosting avian predators (Boarman and Heinrich 1999; Leu et al. 2008) in instances where there is an increased threat of predation from human infrastructure (e.g. power lines, wind turbines, communication towers, agricultural and urban development).
- Energy extraction, such as oil and gas and geothermal, and plan of operation mining can cause impacts up to 11.8 miles, based on direct impacts of field development, including associated infrastructure, noise, lighting, and traffic (Johnson et al. 2011; Taylor et al. 2012).
- Interstate highways at 4.7 miles and paved roads and primary and secondary routes can cause impacts at 1.9 miles, based on indirect effects measured through road density studies (Connelly et al. 2004; Holloran 2005; Lyon 2000).
- Site-specific disturbances, such as small-scale mining and mineral material sites, can cause impacts at 1.6 miles, based on indirect influence distance from estimated spread of exotic plants (Bradley and Mustard 2006).

- Quantitative impacts are presented for BLM-administered and National Forest System surface and subsurface only, unless otherwise indicated.
- Short-term impacts would accrue over a time frame of up to 10 years. Long-term impacts would accrue over time frames exceeding 10 years.

4.2.2 Nature and Type of Effects

Riparian Areas and Wetlands

See Livestock Grazing Management, below.

Water Resources Management

See Livestock Grazing Management, below.

Vegetation and Habitat Restoration

Current treatments and active vegetation management typically focus on vegetation composition and structure for fuels and habitat management and productivity manipulation for improving the habitat and forage conditions for ungulates and other grazers (Knick et al. 2011). The distribution of these treatments can affect the distribution of GRSG and sagebrush habitats by affecting the distribution of suitable cover and forage (Manier et al. 2013, p. 169).

GRSG are more productive in higher-quality habitat conditions, including a diversity of herbaceous species, vegetative and reproductive health of native grasses, and an abundance of sagebrush (Manier et al. 2013, p. 169; Connelly et al. 2000). Residual vegetation cover, especially grass and litter, has often been noted as essential for GRSG for concealment during nesting and brood-rearing (Sveum et al. 1998; Kirol et al. 2012; Doherty et al. 2014). An example of passive restoration is adjustments in management practices, such as grazing systems and seasonal restrictions or closures in seasonal-use areas, have a reasonable chance to improve degraded or altered habitats (Manier et al. 2013, p. 170; Connelly et al. 2004).

Some areas within the Idaho and southwestern Montana sub-region are experiencing severe habitat degradation from undesirable annual invasive species. They have displaced native species, making passive management approaches unsuitable and requiring direct manipulation (Connelly et al. 2004).

The BLM's Northern Great Basin Rapid Ecoregional Assessment (BLM 2013a) states that climate change may worsen the spread of invasive species by increasing the severity of droughts, reducing precipitation, or altering wildfire cycles (BLM 2013a). Over the longer term, climate change may exacerbate the spread of annual invasive plants and woody plants such as juniper, displacing native sagebrush communities. Climate change models indicate less precipitation may occur from July through August in lower elevation sites; this may favor cheatgrass, which becomes dormant in summer, over native perennials, which depend on summer moisture for growth. Elevated temperatures due to climate change may increase the competitive ability of cheatgrass at higher elevations, expanding its range into sites where it currently is not widespread. Climate change may increase the spread of woody plants such as juniper at higher elevations due to increased precipitation in winter and spring and warmer temperatures, which may increase fire risk (BLM 2013a).

Invasive plants alter plant community structure and composition, productivity, nutrient cycling, and hydrology and may competitively exclude native plant populations. In parts of the sub-region, invasive species, such as cheatgrass, or native species, such as juniper, have replaced desirable sagebrush, perennial bunchgrasses, and forbs. Cheatgrass invasion areas typically require active control (e.g., herbicides). Subsequent seeding of desirable native perennial species may be needed for successful restoration, unless deep-rooted bunchgrasses are still present in the understory (Miller et al. 2007). Seeding with nonnative perennials may also be necessary, in drier sites. Juniper encroachment requires active treatment, including manual and mechanical juniper removal. Pinyon pine occurs only locally in parts of southern Idaho and has not been identified as a management concern to date.

Cheatgrass competes with native grasses and forbs that are important components of GRSG habitat. Cheatgrass abundance is negatively correlated with habitat selection by GRSG (Kirol et al. 2012), indicating that changes in composition and structure associated with cheatgrass specifically degrade GRSG habitat. Invasion by medusahead (*Taeniatherum caput-medusae*) may be even worse than cheatgrass. This is because it is unpalatable to herbivores, due to its high silica content, supports high-frequency wildfire intervals, and requires intensive treatment for restoration (Davies 2010; Archer 2001). Invasive species directly degrade sagebrush habitats, affecting local GRSG populations by affecting forage, cover quality and composition, and increased wildfire frequency and intensity. It has the potential to cause GRSG to completely avoid forage (Manier et al. 2013, p. 135).

Expanding conifer woodlands also threaten GRSG populations. This is because woodlands do not provide suitable habitat, and trees can displace shrubs, grasses, and forbs that are required by GRSG, particularly in shallow-rooted soils (Miller et al. 2007). Conifer expansion is also associated with increased bare ground and the potential for erosion, as well as an increase in perch sites for raptors. Juniper encroachment may also expand avian predation threats by providing nesting substrate for raptors and corvids. Studies have shown that GRSG incur population-level impacts as low as 4 percent of conifer encroachment (Baruch-Mordo et al. 2013)

VDDT modeling is described further in **Appendix X**. Stand replacement wildfire, mosaic wildfire, overgrazing, insects and disease, and conifer encroachment were incorporated into the model to quantify changes in GRSG habitat. Modeling did not include changes in habitat conditions associated with climate change or with permitted activities, such as infrastructure development, travel management, or mineral development. The model also estimated treatment acres required to meet target sagebrush habitat quality goals. Based on guidelines provided by the GRSG National Technical Team Report (NTT 2011), 70 percent of an area should be in 10 to 30 percent sagebrush canopy cover to meet GRSG sagebrush habitat objectives. The tables included as part of the vegetation impacts for each alternative present the percentage of a given GRSG analysis area meeting GRSG sagebrush habitat objectives by alternative after 10 years and 50 years.

Livestock Grazing Management

Livestock grazing is the most widespread land use across the sagebrush biome (Connelly et al. 2004, pp. 7-29). Livestock grazing can affect soils, biological soil crust, vegetation, riparian habitat conditions, water, and nutrient availability by consuming or altering vegetation, redistributing nutrients and plant seeds, trampling soils and vegetation, and disrupting microbial composition (Connelly et al. 2004). Livestock may also trample nests and disturb GRSG behavior (NTT 2011, p. 14). Livestock grazing is a diffuse form of biotic disturbance that exerts repeated pressure on a system over many years; unlike point sources of disturbance (e.g., fires), the effects of grazing are not likely to be detected as disruptions but as differences in the processes and functioning of the sagebrush system. Grazing effects are not distributed evenly because historic practices, management, and animal behavior all lead to differential use of the range (Manier et al. 2013, pp. 157-168).

At improper levels of grazing, impacts can lead to loss of vegetation cover, reduced nesting habitat quality forage availability, and water infiltration rates, change in vegetation composition, decreased plant litter, increased bare ground, reduced nutrient cycling, decreased water quality, increased soil erosion, and reduced overall habitat quality for wildlife, including GRSG (Manier et al. 2013, pp. 157-159). Grazing may contribute to the spread of invasive weeds in sagebrush ecosystems by reducing cover of native bunchgrass (Reisner et al. 2013). It may increase desertification or worsen the impacts of climate change on rangeland (Beschta et al. 2014). However properly managed grazing may be compatible with GRSG habitat, does not preclude healthy rangelands, and may reduce wildfire in GRSG habitat by reducing fuel loads in certain circumstances (Strand and Launchbaugh 2013; Svejcar et al. 2014; NTT 2011, p. 14).

Structural range improvements, such as fences (especially woven-wire fences) represent potential movement barriers or predator perches and are a potential cause of direct mortality to GRSG due to collision (Stevens et al. 2012; Manier et al. 2013, p. 50).

Grazing strategies that promote sagebrush ecosystem health would help to maintain the desired seasonal GRSG habitat management objectives on the landscape, including herbaceous cover and height metrics, thereby enhancing habitat for GRSG populations (**Table 2-3**, Seasonal Habitat Desired Conditions for Greater Sage-Grouse).

Fire and Fuels Management

Fire is recognized as a primary threat to GRSG populations in the western half of their distribution (see Secretarial Order 3336). Within the Snake River Plain floristic province, which comprises a substantial portion of the sub-region, approximately 37 percent of the sagebrush area burned between 1980 and 2007 (Baker 2011). Fire is particularly problematic in sagebrush systems because it kills sagebrush plants and, in some cases, re-burns before sagebrush has a chance to become reestablished.

Fuels treatment methods should take into consideration habitat conditions and the presence or absence of cheatgrass or other invasive species. Avoiding treatments and activities that remove sagebrush, degrade native herbaceous species, and promote cheatgrass expansion likely requires a combination of different treatment methods or management actions (Manier et al. 2013, p.81).

Actions to reduce the spread of fire in sagebrush can also benefit GRSG. For example, vegetative fuel breaks have characteristics that disrupt fuel continuity, harbor lower fuel loads, and have lower volatile compounds and increased moisture content (Pellant 1992). Fuel breaks help provide defensible anchor points for facilitating fire suppression and can allow fires to be compartmentalized, ultimately reducing potential fire size.

Fire is a primary threat to GRSG populations, where increasing exotic annual grasses, primarily cheatgrass, are resulting in sagebrush loss and degradation (USFWS 2010a, p. 13932). Cheatgrass can more easily invade and create its own feedback loop in areas that are dry with understory vegetation cover that is not substantial or are experiencing surface-disturbing activities (e.g., road construction). It can facilitate short fire return intervals by

outcompeting native herbaceous vegetation with early germination, early moisture and nutrient uptake, prolific seed production, and early senescence (Hulbert 1955; Mack and Pyke 1983; Pellant 1996). Furthermore, by providing a dry, fine fuel source during the peak of fire season, cheatgrass increases the likelihood of fire, which increases the likelihood of further cheatgrass spread (Pellant 1990). Cheatgrass dominance can also exclude sagebrush seedlings from establishing due to competition. Fire contributes to the problem by accelerating the conversion of native perennial plant communities to annual grasslands, where those species have a foothold. Without shrubs and a healthy diversity of grasses and forbs, such annual grasslands will not support GRSG, and populations would likely be displaced or suffer declines due to increased exposure to predators, loss of forage and cover, and other factors in burned habitat.

Fire risk and the likelihood of perpetuating the cheatgrass-fire cycle in GRSG habitat is highest in arid, low-elevation areas with Wyoming big sagebrush (*Artemisia tridentata* ssp. *tridentata*), which dominates the planning area. Ground disturbance, such as roads, facilitates the establishment and spread of cheatgrass and other invasive weeds (Gelbard and Belnap 2003). While fires do occur in higher elevation mountain big sagebrush habitats (e.g. *Artemisia tridentata* ssp. *vaseyana*), they are typically smaller and more variable in intensity and these ecological communities typically have a higher resilience to disturbance and a lower risk of cheatgrass establishment, resulting in a shorter recovery time and less effect on GRSG compared to lower elevations (Chambers et al. 2014, **Appendix D** of this EIS). Grazing may have a limited ability to reduce the types of fuels (e.g., cheatgrass), as described in **Section 4.3**, Vegetation.

Another factor affecting fire in some sagebrush sites is the encroachment of juniper trees or other conifers, such as Douglas-fir from higher elevations downslope into sagebrush habitats (Baker 2011; Balch et al. 2012). Wildfires that start in conifer stands can increase in size and severity with the available heavier fuel, facilitating their spread into Wyoming big sagebrush stands. Wyoming sagebrush can take 150 years to recover from fire (Cooper et al. 2007). Following fire, sagebrush areas can be opened to invasion by cheatgrass and other annual grasses, which limit the reestablishment of sagebrush. Increased fire severity leads to increased soil loss, which in turn facilitates an increase in the abundance of invasive annuals, resulting in decreased success of rehabilitation. In the Idaho and southwestern Montana sub-region, several population areas or portions thereof have experienced substantial declines in habitat due to fire: the Jarbidge portion of South Snake River, North Snake River, and Weiser. Depending on the extent of habitat available to the birds, a single fire can influence a local population's distribution, migratory patterns, and overall habitat availability (Fischer et al. 1997, p. 89).

In degraded GRSG habitats where cheatgrass is dominant under the sagebrush canopy, the sagebrush may still likely provide adequate winter habitat. However, these areas lack the understory forb diversity and insect abundance necessary for brood-rearing and could result in lower chick survival during summer. These areas would also lack the necessary cover for suitable nesting due to the absence of perennial grasses and forbs. As GRSG habitats become smaller in scale and less connected to adjacent populations, they become increasingly susceptible to random events and local extirpation (Knick and Hanser 2011;

Wisdom et al. 2011). In addition, genetically isolated populations could suffer a decrease in fitness from inbreeding.

Fire causes annual GRSG habitat loss and degradation in portions of the Idaho and southwestern Montana sub-region. Cheatgrass dominance in portions of the sub-region has shortened the fire return interval and exacerbated the loss and degradation of GRSG habitat. While research and management are focused on developing means of controlling cheatgrass on a large scale, the only current management actions under the fire program to minimize the spread of fire in GRSG habitat are fuels treatments, planning, and effective fire suppression geared toward protecting GRSG habitat. Reducing the spread of cheatgrass and the scale of wildfire through BLM and Forest Service post-fire programs, such as ES&R or BAER, could also result in more or improved habitat for GRSG.

Wild Horse and Burro Management

Six horse herd management areas (HMAs) and portions of HMAs occur in or next to four GRSG population areas in the sub-region: Southwest Idaho, Weiser, Mountain Valleys, and South Snake. HMAs occur on 269,800 acres of GRSG habitat in the sub-region. In each HMA, an appropriate management level (AML) was established under which wild horse population levels are managed to meet a Thriving Natural Ecological Balance (BLM Handbook H-4700-1) and prevent deterioration of the range.

Wild horses may alter habitat conditions for GRSG, including reduced total vegetation and grass abundance and cover, lowered sagebrush canopy cover, increased shrub canopy fragmentation, lowered species richness, increased compaction in surface soil horizons, and increased dominance of unpalatable forbs (Manier et al. 2013, p. 100). In addition, horse populations over AML can degrade riparian areas, decrease water quantity and quality, and increase soil erosion. Cumulatively, this can reduce habitat quality for wildlife, including GRSG. Effects of wild horses on habitats may also be more pronounced during periods of drought or vegetation stress (NTT 2011, p. 18).

Fences used to manage horse distribution represent a potential source of direct mortality to GRSG (Manier et al. 2013). In addition, water must be available year-round in HMAs and wild horse territories, in compliance with the Wild and Free-Roaming Horses and Burros Act of 1971. This can lead to riparian areas receiving year-long use by wild horses and could modify riparian areas with additional fencing and troughs in order to accommodate year-long horse use. The range improvements would increase potential perch sites for avian predators (fences) and potential drowning hazards (troughs). They could have negative effects on riparian habitat, depending on how each facility is constructed. Moreover, there would be less water available for wildlife.

Locatable, Leasable, and Salable Minerals Management

Locatable minerals development in the sub-region consists of three tiers based on level of disturbance and type of mining: casual use, notice-level operations, and Plan-level operations. In general, casual use operations are activities that result in "no or negligible disturbance". Exploration activities that will disturb less than 5 acres require the filing of a notice. All other mining activities, including exploration with disturbance over 5 acres,

require an approved Plan of Operations. Certain operations that would normally not require a plan may be required to do so when certain criteria are met or when the operation is proposed for certain special management areas (43 CFR 3809.11). On National Forest System lands, an operator is required to submit a Notice of Intent to the District Ranger to conduct operations that might cause significant disturbance of surface resources. Activities such as prospecting and sampling where reasonable amounts of the mineral deposit are removed, or marking and monumenting claims, do not require a Notice of Intent. If the District Ranger determines the operation is likely to cause significant disturbance of surface resources, the District Ranger will notify the Operator that a propose Plan of Operations must be submitted 36 CFR 228.4). Salable mineral mining in the sub-region is primarily for gravel and stone. Locatable mineral mining is primarily for gold, silver, and copper but includes other minerals, such as barite and Oakley stone. Leasable minerals in the sub-region include commodities such as potash and phosphate. With the exception of the Bear Lake area, the potential for oil and gas development is low in the sub-region. Development of locatable and leasable mineral resources typically requires significant infrastructure and human activity for construction, operation, and maintenance.

Mineral extraction of all types in GRSG habitat results in habitat loss from construction of infrastructure and the footprint of the surface facilities and pits or aboveground facilities associated with subsurface operations. Sagebrush communities that are lost or modified in locations where mine reclamation is not compromised by the presence or introduction of invasive grasses still may not regain suitable sagebrush cover suitable for GRSG use for 20 to 30 years or longer following interim or final reclamation, depending on scale and site factors (Knick et al. 2013).

GRSG population reestablishment in reclaimed areas may take upwards of 30 years (Braun 1998). Where compromised by invasive grasses, reclamation may be only minimally effective, without additional intervention. Necessary infrastructure, including location, construction, and use of ancillary facilities, staging areas, roads, railroad tracks, buildings and power lines cause additional direct and indirect impacts on GRSG. This is from noise and light pollution, fugitive dust, human disturbance, increases in predator perch sites, and weed proliferation, any of which leads to habitat degradation.

The industrial activity associated with energy and mineral development produces noise and human activity that can disrupt the habitat and life cycle of GRSG. Many studies assessing impacts of energy development on GRSG have found negative effects on populations and habitats (Naugle et al. 2011; Taylor et al. 2012). Walker et al. (2007) found that up to one mile buffers result in an estimated lek persistence of approximately 30 percent, while lek persistence in areas without oil and gas development averaged 85 percent. Holloran (2005) found impacts on abundance at between 3 and 4 miles. Coates et al. (2013) recommended a minimum buffer of 3 miles to protect GRSG from energy development impacts. The USGS recently published a scientific review of conservation buffer distances for GRSG protection from different types of human disturbance (USGS 2014a, see **Appendix DD** of this EIS).

Noise from industrial activity may disrupt GRSG communication, which is at low frequency and potentially masked by low-frequency noise from equipment and vehicles, resulting in

reduced female attendance and yearling recruitment, as seen in sharp-tailed grouse (*Pedioecetes phasianellus*; Amstrup and Phillips 1977). The mechanism of how low-frequency noise affected the birds was not known, but it is known that GRSG depend on acoustical signals to attract females to leks (Gibson and Bradbury 1986; Gratson 1993; Blickley et al. 2012). Noise associated with oil and gas development may have played a factor in habitat selection and a decrease in lek attendance by GRSG in western Wyoming (Holloran 2005). Recent studies in oil and gas areas suggest that GRSG avoid leks exposed to human noise (Blickley et al. 2012; Blickley and Patricelli 2012). Chronic noise pollution can also cause GRSG to avoid otherwise suitable habitat (Patricelli et al. 2013) and can cause elevated stress levels in the birds that remain in noisy areas (Blickley et al. 2012). Given the factors described above, such as the time required to reclaim sagebrush, as well as disturbance from light and noise, avoidance and minimization of impacts, as well as compensatory mitigation of impacts from mineral development may not be sufficient to protect GRSG and sagebrush habitat.

Infrastructure for mining is similar to that required for oil and gas but is more localized in extent. As revealed by studies on oil and gas development, the interaction and intensity of effects of habitat loss could cumulatively or individually lead to habitat fragmentation in the long term (Connelly et al. 2004; Holloran 2005). This would have negative impacts of fragmentation from development and associated infrastructure on lek persistence, lek attendance, winter habitat use, recruitment, yearling annual survival rate, and female nest site choice (Holloran 2005; Aldridge and Boyce 2007; Walker et al. 2007; Doherty et al. 2008).

Land Uses and Realty Management

Transmission lines and major power lines are widespread throughout GRSG range. GRSG generally respond negatively to increased human infrastructure in sagebrush habitats, including roads, power lines, and communication towers (Manier et al. 2013, pp. 71-74). Although transmission and power line construction does not generally result in substantial direct habitat loss, it would temporarily disturb individual GRSG and habitat along the ROW due to the associated human activity, equipment, and noise, and would contribute to habitat fragmentation. In addition, transmission lines can provide perches and nest sites for ravens and raptors, resulting in indirect negative impacts on GRSG survival and reproduction (Gillan et al. 2013; Gibson et al. 2013; Lockyer et al. 2103; Coates et al. 2014; Howe et al. 2014). Collocation of transmission lines could reduce impacts by siting new developments in areas that are previously disturbed. However, collocating new lines can have indirect impacts on GRSG, such as impeding movement and reducing habitat connectivity (Shirk et al. in review; Washington Wildlife Habitat Connectivity Working Group 2012). Roads associated with energy transmission facilities can also reduce the extent and quality of GRSG habitat or serve as inroads for invasive plants to establish.

Following construction, potential GRSG avoidance of tall vertical structures, due to avian predators perching and nesting on the structures, or due to the presence of the structure itself, may result in habitat exclusion via behavioral response. Although not all studies have found that tall structures affect GRSG (Messmer et al. 2013), the tendency of GRSG to fly relatively low and in low light puts them at high risk of collision with power lines (Manier et al. 2013, pp. 50-51). The frequency of raptor/GRSG interactions during the breeding season

increased 65 percent, and golden eagle interactions alone increased 47 percent in an area following installation of transmission lines; nearby lek use declined 72 percent (Ellis 1985, cited in Manier et al. 2013, pp. 50-51). A study of raven occurrence near transmission lines in southern Idaho found increased raven presence near transmission lines up to 1.4 miles from the corridor. Ravens preferred sagebrush edge habitats of patchy, exotic vegetation that occurs following disturbance (Coates et al. 2014; Howe et al. 2013).

Perch deterrents are often used to reduce the impact of avian predation. Prather and Messmer (2010) determined that the effectiveness of perch deterrents was limited by the structure of the power poles and the design and placement of deterrents. In other studies, equipping poles with perch deterrents has been observed to reduce but not eliminate perching by corvids and raptors to prey on GRSG (Lammers and Collopy 2007; Slater and Smith 2010). Similarly, perch-deterrent devices installed following construction of an 18-mile power transmission line significantly reduced raptor use in Wyoming (Oles 2007).

A west-central Idaho study using spatial statistics and point-pattern simulations found that GRSG avoided power transmission lines by approximately 0.37 mile (Gillan et al. 2013). A study of the long-term impacts of the Falcon-Gondor transmission line in Nevada found strong support for an effect of distance from the power line on nest survival and female survival, suggesting an impact from increased predation. The study concluded that placing transmission lines in GRSG habitat areas may negatively influence long-term population dynamics (Gibson et al. 2013).

In areas managed as ROW/SUA exclusion, the BLM and Forest Service would prohibit all development of ROWs/SUAs, with some exceptions provided; in areas managed as ROW/SUA avoidance, the BLM and Forest Service would consider allowing ROW/SUAs on a case-by-case basis. This flexibility may be advantageous where federal and private landownership areas are mixed and exclusion areas may result in more widespread development on private lands if BLM-administered or National Forest System lands could not be used. Land tenure adjustments or withdrawals made in GRSG habitat could reduce the habitat available to sustain GRSG populations, unless provisions were made to ensure that GRSG conservation remained a priority under the new land management regime. Land tenure actions designed to decrease fragmentation of GRSG habitat would help GRSG populations (NTT 2011, p. 12).

Collisions with power lines, vehicles, and property fencing and increased predation by raptors may increase bird deaths at leks (Connelly et al. 2000a; Lammers and Collopy 2007). Roads and power lines may also indirectly affect lek persistence by altering productivity of local populations or survival at other times of the year. GRSG deaths associated with power lines and roads occurs year-round (Aldridge and Boyce 2007). Artificial ponds created by development (Zou et al. 2006) can support breeding mosquitoes known to carry West Nile virus (Walker et al. 2007) and elevate the risk of deaths in late summer (Walker and Naugle 2011). GRSG may also avoid otherwise suitable habitat as development increases (Lyon and Anderson 2003; Holloran 2005; Kaiser 2006; Doherty et al. 2008).

Avoidance of developed areas should not be considered a simple shift in habitat use but a reduction in the distribution of GRSG (Walker et al. 2007). This is because avoidance is likely to result in true population declines when density dependence, competition, or displacement of birds into poorer-quality adjacent habitat lowers survival or reproduction (Holloran and Anderson 2005; Aldridge and Boyce 2007; Holloran et al. 2010). GRSG exhibit extremely high site fidelity, which strongly suggests that unfamiliarity with new habitats may also reduce survival (Baxter et al. 2008), as evidenced in other grouse species (Yoder et al. 2004). GRSG avoid other developments, such as roads, power lines, oil and gas wells, and buildings (Lyon and Anderson 2003; Pruett et al. 2009). Augmentation of dwindling GRSG populations by introducing translocated birds or supplementing existing populations is often unsuccessful (Naugle et al. 2011; Baxter et al. 2008).

Renewable Energy

Because large-scale development of renewable energy resources is recent compared to oil and gas, many of the potential impacts of renewable energy on GRSG have not been studied. However, potential development impacts on GRSG can be anticipated from studies of oil and gas development on the species (Becker et al. 2009). Recent research has found that nest and brood survival are negatively affected with proximity to wind turbines, likely as a result of increased predation (LeBeau 2012; LeBeau et al. 2014). Because GRSG have evolved in habitats with little vertical structure or other man-made features, tall vertical structures such as wind turbines may displace GRSG from their usual habitat (Johnson and Stephens 2011).

Impacts from energy development accrue both locally and cumulatively at the landscape scale. Accumulated evidence across landscape-scale studies show that GRSG populations typically decline following oil and gas development (Holloran 2005; Walker et al. 2007; Doherty et al. 2008). Oil and gas infrastructure and associated human activity have been shown to adversely affect GRSG populations collectively and in some instances, impacts have been directly attributed to certain man-made features (e.g., roads, power lines, noise, and associated infrastructure; Walker et al. 2007; Doherty et al. 2008; Lyon and Anderson 2003; Holloran 2005; Kaiser 2006; Aldridge and Boyce 2007). Direct impacts of energy development on GRSG habitats and populations are from loss of sagebrush canopy or nest failure; these effects have been estimated to occur within a 68-yard radius of leks. Indirect effects are habitat degradation or utilization displacement. These effects have been estimated to occur out to 11.8 miles from leks (Naugle et al. 2011). Population impacts have been observed when leks occur within 2.5 miles of a producing well, when greater than eight active wells are within 3.1 miles of leks, or when more than 200 active wells are within 11 miles of leks. Other impacts have been documented within varying distances from energy infrastructure and at different well densities (USGS 2014a).

Renewable energy development and its infrastructure (e.g., power lines, roads, and construction activities) may negatively affect GRSG populations via several different mechanisms. For example, concerns with wind energy development are noise produced by rotor blades, GRSG avoidance of structures, GRSG killed by flying into rotors, and the presence of new roads and power lines (Connelly et al. 2004; Manier et al. 2013).

Mechanisms responsible for cumulative impacts that lead to population declines depend on the magnitude, frequency, and duration of human disturbance. GRSG may abandon leks if repeatedly disturbed by raptors perching on power lines or other tall vertical structures near leks (Ellis 1984), by vehicular traffic on roads (Lyon and Anderson 2003), or by noise and human activity associated with energy development (Braun et al. 2002; Holloran 2005; Kaiser 2006).

Travel and Transportation Management

The travel and transportation program is principally focused on road networks in the GRSG range. The three types of linear features that comprise the transportation system are roads, primitive roads, and trails. Because roads accommodate year-round passenger vehicles and volume of traffic is the highest, roads by comparison translate into the greatest potential for impacts on GRSG and its habitat. Primitive roads are seasonally passable in many areas and, compared to roads, have a lower traffic volume, lower travel speeds, and fewer impacts on GRSG. Trails are seasonally passable, have the lowest traffic volume, and are typically used only by foot travelers, mountain cyclists, equestrians, and all-terrain vehicle operators; thus the fewest impacts on GRSG are expected from trails.

BLM and Forest Service travel management primarily applies to public use levels within travel management zones under the following designations: closed, limited (to existing or designated roads and trails), or open. Use of roads is predominantly associated with recreation on BLM-administered or National Forest System lands and permitted uses, such as by livestock grazing. Areas currently open to cross-country OHV use would have greater impacts on GRSG than those where travel is limited to existing roads and trails or closed to OHV use. This is because there would be a considerably higher likelihood of disturbance to vegetation, flushing of GRSG, nest abandonment or destruction, increased wildfire risk, and spread of invasive plants and noxious weeds.

GRSG persistence is inversely correlated with road density. Compared with occupied GRSG range, extirpated range was 60 percent closer to highways and had 25 percent higher road densities (Manier et al. 2013, citing Wisdom et al. 2011). Within the GRSG range, 95 percent of the mapped sagebrush habitats are within 1.6 miles of a mapped road; density of secondary roads exceeds 3.1 miles per 247 acres in some regions (Knick et al. 2011). Incremental effects of accumulating length of roads in proximity to leks were apparent range-wide although limited to major roads (state and federal highways and interstates). This effect was demonstrated by decreasing lek counts when there were more than 3.1 miles of federal or state highway within 3.1 miles of leks and when more than 12.4 miles of highway occurs within an 11.2-mile window (Johnson et al. 2011).

Roads have multiple impacts on wildlife in terrestrial ecosystems, including increased deaths from collision with vehicles, changes in behavior, loss, fragmentation, and alteration of habitat, spread of exotic species, and increased human access. These situations facilitate additional human alteration and use of habitats (Forman and Alexander 1998; Jackson 2000; Trombulak and Frissel 2000). The effect of roads can be expressed directly through changes in habitat and GRSG populations and indirectly through avoidance behavior because of

traffic noise (Lyon and Anderson 2003; USFWS 2010a; See **Section 4.2.1** regarding interstates and primary routes).

Roads fragment habitat by the following activities (Formann and Alexander 1998, pp. 207-231):

- Impeding use of migration corridors or seasonal habitats
- Facilitate habitat degradation in the remaining habitats by creating a corridor along which invasive plants can spread
- Allow for increased human noise disturbance, which can result in GRSG avoiding habitat (i.e., functional habitat loss)
- Increase mammalian and avian predator abundance

Connelly and others (2004) suggest road traffic within 4.7 miles of leks negatively influences male lek attendance. Similarly, lek count trends are lower near interstate, federal, or state highways compared with secondary roads (Johnson et al. 2011), and Connelly and others (2004) reported no leks within 1.25 miles of an interstate. In general, leks closer to the interstate had higher rates of decline than leks farther away from the interstate. In Montana and southern Canada, as the length of roads within 2 miles of a lek increased, the likelihood of lek persistence decreased (Manier et al. 2013).

Motorized activities are expected to have a larger footprint on the landscape than nonmotorized users. OHV travel would increase the potential for soil compaction and loss of perennial grasses and forbs and would reduce canopy cover of sagebrush (Payne et al. 1983). Long-term losses in sagebrush canopy would likely be the result of repeated, high frequency, long duration use by cross-country OHV use. Impacts on vegetation communities would likely be greater during the spring and winter, when soil conditions are wet and more susceptible to compaction and rutting. In addition, the chances of wildfire are increased during the summer when fire dangers and recreation are highest. Noise and increased human presence associated with construction, use, and road maintenance may change GRSG behavior, based on the proximity, magnitude, intensity, and duration.

Special Designations

Special designation areas (e.g., ACECs) may be established to protect GRSG and their habitat as a relevant or important value. While existing ACECs do not have GRSG as a relevant or important value, and thus management is not tailored to protect GRSG, some incidental protection may be conferred in existing ACECs by restricting resource uses intended to protect other values.

4.2.3 Impacts on GRSG and GRSG Habitat Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative.

Impacts from Vegetation and Soils Management

Vegetation dynamics were modeled to describe vegetation changes across all the alternatives in the short term (10 years) and in the long term (50 years). **Tables 4-1** and **4-2** display these comparisons. Vegetation dynamics modeling is presented separately for the Proposed Plan in **Section 4.2.7**.

Impacts from Renewable Energy Management

The magnitude of impacts is different for all alternatives as the acreages of lands managed for ROWs and zoning designations vary across the alternatives (see **Table 2-3**, Comparative Allocation Summary of Alternatives, in **Chapter 2**). Acres of avoidance and exclusion areas for ROWs and SUAs in GRSG habitat would vary by alternative. **Table 4-3**, GRSG Habitat within Avoidance Areas for ROWs and SUAs in the Idaho and Southwestern Montana Sub-region, and **Table 4-4**, GRSG Habitat within Exclusion Areas for ROWs and SUAs in the Idaho and Southwestern Montana Sub-region, show the acreage where ROWs and SUAs would be restricted under each alternative.

Impacts from Livestock Grazing Management

Acres available or unavailable (closed) to grazing for each of the alternatives are described in **Table 4-5**, GRSG Habitat Acres Closed to Grazing in the Idaho and Southwestern Montana Sub-region.

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Table 4-1
GRSG Habitat Condition[1] and Trend Analysis within the Idaho and Southwestern Montana Sub-region after 10 Years[2, 4]

Analysis Area	Total Acres	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Southwest Idaho	5,600,000	62%	63%	61%	63%	63%	63%
South Side Snake	6,768,000	61%	60%	58%	60%	60%	60%
North Side Snake	3,854,000	70%	71%	71%	71%	71%	71%
Mountain Valleys 1[3]	717,000	82%	82%	82%	82%	82%	82%
Mountain Valleys 2[3]	2,537,000	87%	87%	87%	87%	87%	87%
Bear Lake	2,022,000	76%	77%	75%	77%	77%	77%
East-Central Idaho	320,000	90%	90%	91%	90%	90%	90%
Sawtooth	1,186,000	81%	81%	82%	81%	81%	82%
Weiser	799,000	76%	76%	75%	76%	76%	76%
Southwest Montana	1,977,000	85%	85%	86%	85%	85%	85%
All	25,780,000	70%	71%	70%	71%	71%	71%

Source: Forest Service 2013a

[1]Percent of analysis area meeting GRSG sagebrush habitat objectives

[2]Existing habitat conditions are estimated from a combination of LANDFIRE and ReGap data sets. These data sets are the best available across both National Forest System and BLM-administered lands, but they include some inaccuracy and error. Interpretation of and evaluation of trends in each population area should consider this. Vegetation modeling data is intended to be an approximation of expected conditions in 50 years. In areas where existing habitat conditions are high, such as 80 to 90 percent, it is not unexpected to see a declining trend in habitat conditions. These conditions can be either a result of overestimating existing conditions or vegetation dynamics driving the trends. The vegetation modeling for each alternative assumes the vegetation treatment rates from Alternative A – No Action. For a description of analysis inputs, see **Appendix X**.

[3]The Mountain Valleys population was divided and modeled as two separate components of the vegetation dynamics model. See **Appendix X** for more details.

[4]Conditions for the Proposed Plan are presented in **Table 4-47**.

Table 4-2
GRSG Habitat Condition[1] and Trend Analysis within the Idaho and Southwestern Montana Sub-region after 50 Years[2, 4]

Analysis Area	Total Acres	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Southwest Idaho	5,600,000	62%	65%	59%	65%	65%	66%
South Side Snake	6,768,000	70%	68%	58%	68%	68%	68%
North Side Snake	3,854,000	74%	78%	68%	76%	76%	78%
Mountain Valleys 1[3]	717,000	73%	73%	73%	73%	73%	72%
Mountain Valleys 2[3]	2,537,000	73%	73%	74%	73%	73%	74%
Bear Lake	2,022,000	67%	69%	59%	69%	69%	69%
East-Central Idaho	320,000	78%	80%	80%	78%	78%	80%
Sawtooth	1,186,000	71%	71%	72%	71%	71%	72%
Weiser	799,000	76%	79%	72%	79%	79%	79%
Southwest Montana	1,977,000	74%	74%	74%	74%	74%	74%
All	25,780,000	70%	71%	64%	70%	70%	71%

Source: Forest Service 2013a
[1]Percent of analysis area meeting GRSG sagebrush habitat objectives
[2]Existing habitat conditions are estimated from a combination of LANDFIRE and ReGap data sets. These data sets are the best available across both National Forest System and BLM-administered lands, but they include some inaccuracy and error. Interpretation of and evaluation of trends in each population area should consider this. Vegetation modeling data is intended to be an approximation of expected conditions in 50 years. In areas where existing habitat conditions are high, such as 80 to 90 percent, it is not unexpected to see a declining trend in habitat conditions. These conditions can be either a result of overestimating existing conditions or vegetation dynamics driving the trends. The vegetation modeling for each alternative assumes the vegetation treatment rates from Alternative A – No Action. For a description of analysis inputs, see **Appendix X**.
[3]The Mountain Valleys population was divided and modeled as two separate components of the vegetation dynamics model. See **Appendix X** for more details.
[4]Conditions for the Proposed Plan are presented in **Table 4-47**.

Table 4-3
GRSG Habitat within Avoidance Areas for ROWs and SUAs in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D[1]			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA[1]	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**12,200**	**67,600**	**0**	**0**	**94,200**	**7,600**	**4,670**	**8,420**	**0**	**0**	**67,600**	**0**	**0**	**33,900**	**0**	**0**
BLM	4,760	23,500	0	0	23,500	7,600	4,670	4,760	0	0	23,500	0	0	4,120	0	0
Forest Service	7,420	44,100	0	0	70,700	0	0	3,660	0	0	44,100	0	0	29,800	0	0
Mountain Valleys	**411,400**	**521,900**	**0**	**0**	**522,000**	**422,300**	**1,884,300**	**144,900**	**938,500**	**1,372,300**	**521,900**	**0**	**0**	**49,200**	**993,500**	**1,338,500**
BLM	215,900	196,500	0	0	196,500	232,100	1,621,800	35,700	759,900	1,126,100	196,500	0	0	6,090	802,400	1,070,500
Forest Service	195,400	325,400	0	0	325,500	190,300	262,500	109,300	178,600	246,200	325,400	0	0	43,200	191,100	268,000
Southwest Montana	**380,600**	**363,100**	**0**	**0**	**493,400**	**160**	**536,500**	**166,000**	**0**	**124,300**	**363,100**	**0**	**0**	**166,500**	**0**	**536,700**
BLM	57,300	212,700	0	0	257,200	80	447,300	16,200	0	36,000	212,700	0	0	16,200	0	447,400
Forest Service	323,400	150,300	0	0	236,100	70	89,200	149,800	0	88,300	150,300	0	0	150,300	0	89,300
North Side Snake	**368,200**	**526,200**	**0**	**0**	**526,200**	**185,500**	**1,414,200**	**163,300**	**402,000**	**792,500**	**526,200**	**0**	**13,200**	**127,900**	**605,600**	**928,100**
BLM	255,800	440,300	0	0	440,300	167,600	1,403,400	78,600	374,000	792,600	440,300	0	13,200	41,200	577,600	928,100
Forest Service	112,400	85,900	0	0	85,900	17,900	10,800	84,700	28,000	0	85,900	0	0	86,700	28,000	0
South Side Snake	**483,800**	**615,400**	**0**	**0**	**615,400**	**552,900**	**1,034,200**	**190,100**	**741,600**	**680,600**	**615,400**	**0**	**1,900**	**175,500**	**936,600**	**608,200**
BLM	47,800	446,000	0	0	446,000	505,800	767,300	16,800	578,800	548,500	446,000	0	1,910	10,400	745,600	477,500
Forest Service	435,900	169,400	0	0	169,400	47,100	266,900	173,300	162,800	132,100	169,400	0	0	165,100	191,000	130,700
Southwest Idaho	**184,200**	**330,200**	**0**	**0**	**330,200**	**72,200**	**1,346,900**	**34,800**	**454,400**	**978,600**	**330,200**	**0**	**1,900**	**2,620**	**439,300**	**1,171,500**

Table 4-3
GRSG Habitat within Avoidance Areas for ROWs and SUAs in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D[1]			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA[1]	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
BLM	184,200	330,200	0	0	330,200	72,200	1,346,900	34,800	454,400	978,600	330,200	0	1,900	2,620	439,300	1,171,500
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**190**	**5,300**	**0**	**0**	**27,300**	**1,130**	**43,700**	**0**	**16,600**	**26,000**	**5,300**	**0**	**0**	**0**	**19,900**	**30,800**
BLM	190	4,690	0	0	4,700	740	42,500	0	15,200	26,000	4,690	0	0	0	18,400	30,800
Forest Service	0	610	0	0	22,600	390	1,230	0	1,370	0	610	0	0	0	1,580	0
Weiser	**87,700**	**87,900**	**0**	**0**	**87,900**	**0**	**10**	**87,700**	**0**	**0**	**87,900**	**0**	**200**	**87,400**	**0**	**0**
BLM	87,700	87,900	0	0	87,900	0	10	87,700	0	0	87,900	0	60	87,400	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	140	0	0	0
Sawtooth	**20,900**	**21,400**	**0**	**0**	**21,400**	**0**	**0**	**20,900**	**0**	**0**	**21,400**	**0**	**0**	**21,400**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	20,900	21,400	0	0	21,400	0	0	20,900	0	0	21,400	0	0	21,400	0	0
Total	**1,949,100**	**2,539,000**	**0**	**0**	**2,717,990**	**1,241,800**	**6,264,600**	**816,100**	**2,553,100**	**3,974,200**	**2,539,000**	**0**	**17,300**	**664,500**	**2,994,900**	**4,613,900**

Source: BLM GIS 2015
[1]Includes avoidance areas with limited exclusions.

Table 4-4
GRSG Habitat within Exclusion Areas for ROWs and SUAs in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alt. C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**580**	**0**	**12,300**	**79,800**	**550**	**20**	**0**	**20**	**0**	**0**	**0**	**12,300**	**0**	**20**	**0**	**0**
BLM	20	0	12,300	35,700	0	20	0	20	0	0	0	12,300	0	20	0	0
Forest Service	550	0	0	44,100	550	0	0	0	0	0	0	0	0	1,540	20,600	3,800
Mountain Valleys	**44,100**	**18,900**	**2,331,800**	**2,872,600**	**18,900**	**2,470**	**22,700**	**19,500**	**21,000**	**4,100**	**18,900**	**2,331,800**	**0**	**1,540**	**19,500**	**20**
BLM	25,000	1,660	1,877,200	2,075,400	1,660	1,800	21,600	2,100	19,700	3,860	1,660	1,877,200	0	0	1,150	3,770
Forest Service	19,000	17,200	454,600	797,200	17,200	670	1,120	17,400	1,250	240	17,200	454,600	0	84,100	0	73,600
Southwest Montana	**207,400**	**84,100**	**610,300**	**1,057,500**	**133,800**	**0**	**73,600**	**84,100**	**0**	**73,400**	**84,100**	**610,300**	**0**	**0**	**0**	**0**
BLM	0	0	447,400	660,100	0	0	0	0	0	0	0	447,400	0	84,100	0	73,600
Forest Service	207,400	84,100	162,900	397,300	133,800	0	73,600	84,100	0	73,400	84,100	162,900	0	50,800	82,800	20,000
North Side Snake	**137,400**	**31,200**	**1,705,900**	**2,263,400**	**31,200**	**60,500**	**45,700**	**35,400**	**86,600**	**15,500**	**31,200**	**1,705,900**	**19,700**	**50,800**	**82,800**	**20,000**
BLM	137,400	31,200	1,677,300	2,148,800	31,200	60,500	45,700	35,400	86,600	15,500	31,200	1,677,300	19,700	0	0	0
Forest Service	0	0	28,600	114,500	0	0	0	0	0	0	0	28,600	0	2,500	18,200	39,500
South Side Snake	**55,300**	**17,700**	**1,624,700**	**2,257,900**	**17,700**	**14,100**	**23,500**	**2,800**	**16,400**	**37,200**	**17,700**	**1,624,700**	**1,570**	**2,300**	**17,600**	**39,500**
BLM	54,600	17,400	1,310,400	1,773,700	17,400	14,100	23,200	2,600	15,900	37,200	17,400	1,310,400	1,570	170	610	0
Forest Service	660	310	314,400	484,100	310	0	350	170	490	0	310	314,400	0	56,800	10,700	412,600
Southwest Idaho	**458,500**	**93,600**	**1,784,000**	**2,207,800**	**93,600**	**7,660**	**357,300**	**43,800**	**54,100**	**360,600**	**93,600**	**1,784,000**	**5,320**	**56,800**	**10,700**	**412,600**
BLM	458,500	93,600	1,783,997	2,207,800	93,600	7,660	357,300	43,800	54,100	360,600	93,600	1,784,000	5,320	1,540	20,600	3,800

Table 4-4
GRSG Habitat within Exclusion Areas for ROWs and SUAs in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alt. C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**850**	**0**	**45,155**	**50,500**	**570**	**0**	**280**	**0**	**0**	**280**	**0**	**45,200**	**0**	**0**	**0**	**280**
BLM	280	0	43,532	48,200	0	0	280	0	0	280	0	43,500	0	0	0	280
Forest Service	560	0	1,623	2,240	560	0	0	0	0	0	0	1,620	0	0	0	0
Weiser	**124,300**	**47,100**	**77,224**	**212,200**	**47,100**	**55,500**	**21,700**	**124,300**	**0**	**0**	**47,100**	**77,200**	**12,800**	**135,800**	**0**	**0**
BLM	124,300	47,100	77,224	212,200	47,100	55,500	21,700	124,300	0	0	47,100	77,200	12,800	135,800	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sawtooth	**40**	**40**	**0**	**21,500**	**40**	**0**	**0**	**40**	**0**	**0**	**40**	**0**	**0**	**40**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	40	400	0	21,500	40	0	0	40	0	0	40	0	0	40	0	0
Total	**1,028,500**	**292,700**	**8,191,346**	**11,023,100**	**343,400**	**140,300**	**544,800**	**310,000**	**178,000**	**491,100**	**292,700**	**8,191,300**	**39,400**	**331,500**	**132,400**	**549,800**

Source: BLM GIS 2015

Table 4-5
GRSG Habitat Acres Closed to Grazing in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**1,600**	**900**	**700**	**79,800**	**900**	**700**	**0**	**1,600**	**0**	**0**	**900**	**700**	**0**	**1,500**	**0**	**0**
BLM	1,400	700	700	35,800	700	700	0	1,400	0	0	700	700	0	1,400	0	0
Forest Service	100	100	0	44,100	100	0	0	100	0	0	100	0	0	100	0	0
Mountain Valleys	**52,800**	**23,700**	**29,100**	**2,878,400**	**23,800**	**2,300**	**26,800**	**22,000**	**17,300**	**13,500**	**23,700**	**29,100**	**0**	**2,000**	**23,100**	**8,200**
BLM	22,500	1,000	21,500	2,079,200	1,000	400	21,100	100	11,800	10,600	1,000	21,500	0	200	15,400	6,000
Forest Service	30,300	22,700	7,600	799,300	22,700	1,900	5,700	21,900	5,500	2,900	22,700	7,600	0	1,800	7,700	2,200
Southwest Montana	**59,300**	**31,600**	**14,700**	**1,105,500**	**44,600**	**0**	**14,700**	**31,600**	**0**	**14,600**	**31,600**	**14,700**	**0**	**31,600**	**0**	**14,700**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	59,300	31,600	14,700	708,200	44,600	0	14,700	31,600	0	14,600	31,600	14,700	0	31,600	0	14,700
North Side Snake	**3,000**	**900**	**2,100**	**2,286,500**	**900**	**1,200**	**1,000**	**900**	**2,000**	**200**	**900**	**2,100**	**0**	**600**	**1,800**	**500**
BLM	600	200	400	2,172,000	200	0	400	200	200	200	200	400	0	0	100	500
Forest Service	2,400	700	1,700	114,500	700	1,200	600	700	1,700	0	700	1,700	0	600	1,700	0
South Side Snake	**17,100**	**6,100**	**11,000**	**2,274,300**	**6,100**	**1,600**	**9,400**	**6,000**	**11,100**	**0**	**6,100**	**11,000**	**0**	**5,100**	**13,300**	**1,100**
BLM	2,500	1,000	1,500	1,790,200	1,000	1,500	100	2,000	500	0	1,000	1,500	0	1,400	1,400	1,100
Forest Service	14,600	5,100	9,500	484,100	5,100	200	9,300	4,000	10,600	0	5,100	9,500	0	3,600	11,900	0
Southwest Idaho	**148,500**	**26,600**	**121,900**	**2,223,700**	**26,600**	**100**	**121,800**	**8,500**	**700**	**139,300**	**26,600**	**121,900**	**0**	**7,600**	**1,000**	**144,900**
BLM	148,500	26,600	121,900	2,223,700	26,600	100	121,800	8,500	700	139,300	26,600	121,900	0	7,600	1,000	144,900
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**600**	**0**	**300**	**50,500**	**300**	**0**	**300**	**0**	**0**	**200**	**0**	**300**	**0**	**0**	**0**	**200**
BLM	200	0	200	48,200	0	0	200	0	0	200	0	200	0	0	0	200
Forest Service	400	0	0	2,200	300	0	0	0	0	0	0	0	0	0	0	0
Weiser	**0**	**0**	**0**	**212,200**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table 4-5
GRSG Habitat Acres Closed to Grazing in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
BLM	0	0	0	212,200	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sawtooth	**4,800**	**4,800**	**0**	**21,500**	**4,800**	**0**	**0**	**4,800**	**0**	**0**	**4,800**	**0**	**0**	**4,800**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	4,800	4,800	0	21,500	4,800	0	0	4,800	0	0	4,800	0	0	4,800	0	0
Total	**287,600**	**94,500**	**179,800**	**11,132,500**	**107,800**	**5,900**	**173,900**	**75,200**	**31,100**	**168,000**	**94,500**	**179,800**	**0**	**53,100**	**39,200**	**169,800**

Source: BLM GIS 2015

Impacts from Travel Management

Acres designated as open, limited, or closed for OHV use are described in **Table 4-6**, GRSG Habitat Where OHV Travel Would Be Limited to Roads, Primitive Roads, and Trails in the Idaho and Southwest Montana Sub-Region.

Impacts from ACEC Management

Several alternatives identify the potential designation of new ACECs. These areas are described in **Table 4-7**, GRSG Habitat within BLM ACECs and Forest Service Zoological Areas in the Idaho and Southwestern Montana Sub-region.

4.2.4 Alternative A

Impacts from Vegetation and Soils Management

Under Alternative A, current management implements the Integrated Vegetation Management Handbook policies (DOI 2008-H-1740-2, Rel.1-1714), Land Health Standards, Vegetation Treatments Using Herbicides Programmatic EIS (BLM 2007a), and other policies and plans. The Integrated Vegetation Management Handbook requires an interdisciplinary and collaborative process to plan and implement vegetation treatments that improve biological diversity and ecosystem function while promoting and maintaining native plant communities that are resilient to disturbance and invasive species. Land-health standards are ecologically based goal statements which include watershed function, ecological processes, water quality, and habitat quality for threatened and endangered and special status species (43 CFR 4180.1). Land Health Standards Assessments are used to establish program priorities, determine the status of current conditions and set the stage for evaluations that are used to determine achievement or non-achievement of land-health standards.

Implementation of the above policies and plans would improve vegetation condition by decreasing invasive species, provide for native vegetation establishment in sagebrush habitat, reduce the risk of wildfire, restore fire-adapted ecosystems and repair lands damaged by fire. These policies also recognize the need to improve the diversity, resiliency and productivity of native vegetation health and persistence (BLM 2008g).

Conifer expansion is predominant in mountain sagebrush but also occurs within Wyoming and low sagebrush. Juniper dominance or encroachment is particularly problematic in portions of the Southwest Idaho and South Side Snake population areas. Douglas-fir or other conifer encroachment is also an issue locally in the Mountain Valleys, Sawtooth and Southwest Montana population areas, and possibly others. In all of the population areas, current treatment rates are not keeping pace with continued conifer encroachment.

Mechanical removal of encroaching conifers, primarily juniper species and others such as Douglas-fir would result in short-term disturbances of soils and sagebrush due to heavy equipment, skid trails, and temporary roads. Mechanical and manual treatments would also increase noise, vehicular traffic and human presence. However, once the disturbed area is recovered, there would be an increase in forage, vegetation cover quality and composition,

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Table 4-6
GRSG Habitat Where OHV Travel Would Be Limited to Roads, Primitive Roads, and Trails in the Idaho and Southwest Montana Sub-Region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**105,500**	**57,900**	**12,300**	**70,200**	**85,100**	**7,600**	**4,670**	**69,800**	**0**	**0**	**57,900**	**12,300**	**0**	**54,500**	**0**	**0**
BLM	25,800	13,900	12,300	26,100	13,900	7,600	4,670	25,700	0	0	13,900	12,300	0	24,700	0	0
Forest Service	79,700	44,100	0	44,100	71,300	0	0	44,100	0	0	44,100	0	0	29,800	0	0
Mountain Valleys	**2,286,700**	**529,200**	**2,314,800**	**2,844,000**	**529,200**	**426,800**	**1,888,000**	**493,100**	**749,900**	**1,360,700**	**529,200**	**2,314,800**	**0**	**218,300**	**1,005,400**	**1,328,600**
BLM	1,409,700	186,300	1,858,500	2,044,700	186,300	234,100	1,624,400	116,400	568,300	1,114,200	186,300	1,858,500	0	175,100	811,000	1,056,800
Forest Service	877,100	342,900	456,400	799,200	342,900	192,700	263,600	376,700	181,600	246,500	342,900	456,400	0	43,200	194,400	271,800
Southwest Montana	**1,266,300**	**473,400**	**621,300**	**1,094,700**	**644,700**	**160**	**621,200**	**473,800**	**0**	**620,500**	**473,400**	**621,300**	**0**	**473,400**	**0**	**621,400**
BLM	739,500	239,000	458,500	697,400	281,000	80	458,400	239,100	0	458,300	239,000	458,500	0	239,000	0	458,500
Forest Service	526,800	234,400	162,900	397,300	363,700	70	162,800	234,800	0	162,200	234,400	162,900	0	234,400	0	163,000
North Side Snake	**524,300**	**574,900**	**1,569,600**	**2,144,400**	**574,900**	**237,500**	**1,332,000**	**248,600**	**94,500**	**696,500**	**574,900**	**1,569,600**	**24,800**	**922,500**	**656,000**	**838,600**
BLM	408,500	489,400	1,541,700	2,031,200	489,400	220,500	1,321,300	162,600	67,300	696,500	489,400	1,541,700	24,800	836,200	628,800	838,600
Forest Service	115,800	85,400	27,800	113,300	85,400	17,100	10,800	86,100	27,200	0	85,400	27,800	0	86,300	27,200	0
South Side Snake	**1,952,100**	**611,000**	**1,588,700**	**2,199,700**	**611,000**	**551,700**	**1,037,000**	**640,900**	**616,700**	**691,900**	**611,000**	**1,588,700**	**32,800**	**497,800**	**929,700**	**615,400**
BLM	1,433,000	441,300	1,274,300	1,715,600	441,300	504,500	769,800	452,200	453,400	559,800	441,300	1,274,300	32,800	332,600	738,000	484,700
Forest Service	519,100	169,700	314,400	484,100	169,700	47,100	267,300	188,700	163,300	132,100	169,700	314,400	0	165,200	191,600	130,700
Southwest Idaho	**2,110,400**	**334,100**	**1,454,900**	**1,789,000**	**334,100**	**73,800**	**1,381,100**	**326,700**	**460,800**	**1,006,400**	**334,100**	**1,454,900**	**141,100**	**249,900**	**455,600**	**1,201,900**

Table 4-6
GRSG Habitat Where OHV Travel Would Be Limited to Roads, Primitive Roads, and Trails in the Idaho and Southwest Montana Sub-Region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
BLM	2,110,400	334,100	1,454,900	1,789,000	334,100	73,800	1,381,100	326,700	460,800	1,006,400	334,100	1,454,900	141,100	249,900	455,600	1,201,900
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**75,800**	**5,300**	**44,900**	**50,200**	**27,800**	**1,130**	**43,800**	**7,810**	**16,600**	**26,000**	**5,300**	**44,900**	**0**	**1,420**	**19,900**	**30,800**
BLM	51,000	4,690	43,300	47,900	4,700	740	42,500	6,880	15,200	26,000	4,700	43,300	0	1,420	18,400	30,800
Forest Service	24,800	610	1,620	2,240	23,100	390	1,230	940	1,370	0	610	1,620	0	0	1,580	0
Weiser	**100,400**	**134,200**	**77,000**	**211,300**	**134,200**	**55,400**	**21,700**	**60,000**	**0**	**0**	**134,200**	**77,000**	**36,100**	**274,100**	**0**	**0**
BLM	100,300	134,200	77,000	211,300	134,200	55,400	21,700	60,000	0	0	134,200	77,000	35,900	274,100	0	0
Forest Service	150	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0
Sawtooth	**21,500**	**21,500**	**0**	**21,500**	**21,500**	**0**	**0**	**21,500**	**0**	**0**	**21,500**	**0**	**0**	**21,500**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
Forest Service	21,500	21,500	0	21,500	21,500	0	0	21,500	0	0	21,500	0	0	21,500	0	0
Total	**8,443,000**	**2,741,400**	**7,683,500**	**10,425,000**	**2,962,500**	**1,354,100**	**6,329,400**	**23,42,300**	**1,938,500**	**4,402,000**	**2,741,400**	**7,683,500**	**234,900**	**2,713,500**	**3,066,700**	**4,636,600**
BLM Total	6,278,100	1,842,800	6,720,400	8,563,300	1,884,900	1,096,700	5,623,700	1,389,600	1,565,000	3,861,200	1,842,800	6,720,400	234,700	2,133,200	2,651,800	4,071,200
Forest Service Total	2,164,900	898,600	963,100	1,861,700	1,077,600	257,400	705,700	952,700	373,500	540,800	898,600	963,100	150	580,300	414,900	565,400

Source: BLM GIS 2015

Table 4-7
GRSG Habitat within BLM ACECs and Forest Service Zoological Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F—Option A			Alternative F—Option B			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**2,660**	**2,450**	**210**	**2,660**	**2,450**	**200**	**0**	**2,660**	**0**	**0**	**2,450**	**12,300**	**0**	**2,450**	**200**	**0**	**2,010**	**0**	**0**
Mountain Valleys	**105,000**	**18,100**	**86,800**	**434,200**	**18,100**	**11,300**	**75,500**	**8,240**	**35,600**	**67,000**	**18,100**	**2,336,900**	**0**	**18,100**	**303,500**	**0**	**15,900**	**52,600**	**30,200**
BLM	105,000	18,100	86,800	395,500	18,100	11,300	75,500	8,230	35,600	67,000	18,100	1,880,500	0	18,100	263,600	0	15,900	52,600	30,200
Forest Service	10	0	10	38,700	0	0	10	0	0	0	0	456,400	0	0	39,900	0	0	0	0
Southwest Montana	**42,200**	**1,490**	**35,200**	**36,700**	**7,030**	**0**	**35,200**	**1,490**	**0**	**35,200**	**1,480**	**623,500**	**0**	**1,480**	**35,200**	**0**	**1,490**	**0**	**35,200**
BLM	42,200	1,480	35,200	36,600	7,030	0	35,200	1,480	0	35,200	1,480	460,600	0	1,480	35,200	0	1,480	0	35,200
Forest Service	30	0	20	20	0	0	20	0	0	20	0	162,900	0	0	20	0	0	0	20
North Side Snake	**29,400**	**7,640**	**21,800**	**29,400**	**7,640**	**0**	**21,800**	**9,160**	**12,600**	**7,650**	**7,630**	**1,706,700**	**2,410**	**7,630**	**407,500**	**2,410**	**11,000**	**8,850**	**12,200**
BLM	29,400	7,630	21,800	29,400	7,630	0	21,800	9,140	12,600	7,650	7,630	1,678,100	2,410	7,630	407,500	2,410	11,000	8,850	12,200
Forest Service	20	20	0	20	20	0	0	20	0	0	0	28,600	0	0	0	0	20	0	0
South Side Snake	**71,500**	**34,800**	**36,700**	**801,000**	**34,800**	**11,700**	**25,000**	**15,200**	**13,200**	**43,700**	**34,800**	**1,638,100**	**1,050**	**34,800**	**487,100**	**1,050**	**10,900**	**16,400**	**46,700**
BLM	71,500	34,800	36,700	801,000	34,800	11,700	25,000	15,200	13,200	43,700	34,800	1,323,700	1,050	34,800	303,500	1,050	10,900	16,400	46,700
Forest Service	0	0	0	0	0	0	0	0	0	0	0	314,400	0	0	183,600	0	0	0	0
Southwest Idaho	**210,700**	**50,000**	**160,600**	**1,845,600**	**50,000**	**1,010**	**159,600**	**7,030**	**530**	**203,100**	**50,000**	**1,796,100**	**0**	**50,000**	**671,900**	**0**	**4,840**	**1,650**	**207,300**
Bear Lake	**280**	**0**	**280**	**280**	**0**	**0**	**280**	**0**	**0**	**280**	**0**	**45,200**	**0**	**0**	**39,000**	**0**	**0**	**0**	**280**

Table 4-7
GRSG Habitat within BLM ACECs and Forest Service Zoological Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F—Option A			Alternative F—Option B			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
BLM	280	0	280	280	0	0	280	0	0	280	0	43,500	0	0	38,800	0	0	0	280
Forest Service	0	0	0	0	0	0	0	0	0	0	0	1,620	0	0	200	0	0	0	0
Weiser	7,590	6,740	850	7,590	6,740	850	0	7,590	0	0	6,740	77,200	01	6,740	850	0	11,800	0	0
Total	**469,300**	**121,300**	**342,500**	**3,157,500**	**126,900**	**25,100**	**317,400**	**51,400**	**62,000**	**356,900**	**121,300**	**8,235,900**	**3,460**	**121,300**	**1,945,200**	**3,460**	**57,900**	**79,400**	**331,900**

Source: BLM GIS 2015

reduction in predator perches, decrease in heavier fuels and fire intensity and a potential increase in water availability at nearby springs meadows and seeps. Vegetation management would create mosaic vegetation patterns and natural fuel breaks by promoting healthy, diverse vegetation communities that generally fuel low-intensity fires.

Annual grass expansion and/or repeated fires in low-elevation sagebrush habitat in portions of the North and South Snake River population areas are outpacing existing treatment or restoration efforts.

Vegetation dynamics modeling shows that, under Alternative A, all of the eight GRSG analysis areas that are currently meeting GRSG sagebrush habitat objectives in terms of sagebrush cover on the landscape would continue to meet these objectives in 10 years, though most would show a decline in the percentage meeting the habitat objectives. This percentage would continue to drop for most of the GRSG analysis areas after 50 years. However, several analysis areas, including Southwest Idaho, South Side Snake, and Weiser, would increase their proportion meeting habitat objectives over this time frame (See **Tables 4-1** and **4-2**).

Impacts from Livestock Grazing Management

Under Alternative A, 11,073,800 acres of identified PPH and PGH are open for livestock grazing affecting 98 percent of GRSG habitat within the sub-region. Livestock grazing would continue to be managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health, which include maintaining healthy, productive and diverse populations of native plants and animals. Older LUPs do not contain specific language in regards to GRSG conservation and livestock management, although many offices are covered under various conservation strategies for GRSG. Recent LUPs have more specific language regarding the management of livestock and its relation to GRSG conservation, including references to state and local GRSG plans. National and state drought policies are in place and would be followed to minimize impacts on rangelands under drought conditions. Continuation of these policies would not specifically protect GRSG habitat, although the policies could provide indirect benefits through more conservative use of existing sagebrush habitat. Direct impacts on GRSG have been reduced in some areas due to GRSG-specific management found in some conservation strategies or LUPs.

According to National BLM policy, riparian habitats would be managed to achieve PFC. On National Forest System lands, riparian areas are managed through a combination of utilization standards and design features discussed/documented each year in the Annual Operating Instructions. Functional condition of riparian areas and wetlands are considered in the development of riparian utilization standards. In some cases this management would require livestock removal or restrictions in riparian areas to reduce impacts caused by livestock, such as trampling and overuse of riparian areas. Managing for PFC helps to improve riparian vegetation health through increased production and diversity of vegetation and helps to improve water retention on those sites. As a result, brood-rearing habitats for GRSG would be improved or preserved where they are applied.

Range improvements would be designed to meet both wildlife and range objectives, and would include building, modifying or marking fences to permit passage of wildlife and reduce the chance of bird strikes, use of off-site water facilities, and in some cases modification or removal or improvements not meeting resource needs. Modifications may involve moving troughs, adding or changing wildlife escape ramps, or ensuring water is available on the ground for a variety of different wildlife species. Although not directly created to protect GRSG, these approaches would protect and enhance GRSG habitat by reducing the likelihood of surface disturbance in sensitive areas and ensuring brood-rearing habitat is available to GRSG.

Impacts from Fire and Fuels Management

Within the planning area, all LUPs address fire suppression and fuels management and all federal lands (Forest Service and BLM) are covered under fire management plans, most of which address GRSG habitat. The more recent LUPs contain more specific objectives and management action for suppression and management of fires within sagebrush vegetation communities and GRSG habitat in accordance with local conservation strategies. Each LUP supports the development and adherence to a more detailed fire management plan that outlines priorities and levels of suppression for particular vegetation classes, or resource protection. Most plans support the objective of re-introducing fire into fire-dependent ecosystems and utilize the FRCC framework to aid in prioritizing response to wildfires and determining where fire can be used to meet land management plan objectives. Plans place priority for suppression on the protection of human life, followed by property and other important resource values including wildlife, including GRSG and big game.

In general, current fire suppression activities, fuels management, post-fire emergency stabilization and fire restoration efforts focus to a large degree on the protection or improvement of GRSG habitat. Some LUPs promote the use of native seed for stabilization and restoration, which may help increase native plant diversity and thereby benefit GRSG, but this guidance is not consistently applied across the decision area. More direction for the BLM has been provided in IM 2013-128, which provides habitat maps, guidelines, and BMPs for wildland fire suppression and fuels management in GRSG habitat.

Under Alternative A, wildfires would continue to be especially problematic in several of the population areas, including North Side Snake, South Side Snake, and Southwest Idaho, primarily due to lightning and spread of cheatgrass. GRSG habitat would subsequently continue to be degraded or lost. Small and heavily disturbed populations with dominance of invasive annual grass understory would be particularly susceptible to these impacts. Additionally, there may be some direct and indirect effects on individual GRSG from direct morality or disturbance due to fire suppression or fuels treatment activities in sagebrush areas, but this is assumed to be relatively minor, given the tradeoffs.

Impacts from Wild Horse and Burro Management

The Idaho and southwestern Montana sub-region does not contain wild burros but does contain six wild horse HMAs. Under Alternative A, overall management direction is to manage populations of wild horses to achieve a thriving natural ecological balance with respect to wildlife and other uses. Wild horses would continue to be managed on 378,200

acres of HMAs, which overlap 228,500 acres of PPH and 41,300 acres of PGH in the sub-region. Wild horses would be managed at AML, with gathers based on gather schedules, budgets, or other priorities such as emergency gathers during drought periods. Keeping horses at AML would reduce overall impacts on vegetation, especially nesting cover and riparian brood-rearing habitats during periods of drought.

Impacts from Leasable Minerals Management

Within the sub-region, most BLM-administered and National Forest System lands are open to oil and gas leasing. Specific closures of areas to leasing, such as ACECs or crucial or essential wildlife habitat, exist throughout the sub-region.

Currently, over 9.5 million acres of GRSG habitat are managed as open to fluid minerals leasing and over 2.7 million acres of GRSG habitat are closed to fluid minerals leasing. Lands closed to fluid minerals leasing comprise over 1.7 million acres of PPH and nearly 1 million acres of PGH. Closed areas provide an increased level of protection to GRSG seasonal habitats because they remove the potential for disturbance and impacts on habitat, as described in **Section 4.2.2** (see **Table 4-8**).

Table 4-8
Alternative A: Percent of GRSG Habitat and Occupied Leks in Areas Closed or with NSO Stipulations for Oil and Gas Leasing by Population Area

Population Area	Habitat Area	Number of Occupied Leks
East-central Idaho	35.8	2
Mountain Valleys	36	30
Southwest Montana	54.5	42
North Side Snake	36.2	83
South Side Snake	21.7	11
Southwest Idaho	23.6	34
Sawtooth	75.8	0
Bear Lake	58.9	6
Weiser	28.9	0

Source: BLM GIS 2015

Currently, over 2.2 million acres of GRSG habitat are closed to nonenergy leasable mineral leasing. Lands closed to fluid minerals leasing comprise over 1.3 million acres of PPH and nearly 900,000 acres of PGH. Closed areas provide an increased level of protection to GRSG seasonal habitats because they remove the potential for disturbance and impacts on habitat, as described in **Section 4.2.2** (see **Table 4-8**).

Table 4-9
Alternative A: Percent of GRSG Habitat and Occupied Leks in Areas Closed to Nonenergy Leasable Mineral Leasing by Population Area

Population Area	Habitat Area	Number of Occupied Leks
East-central Idaho	25.5%	1
Mountain Valleys	26.4%	18
Southwest Montana	25.8%	1
North Side Snake	13.6%	12
South Side Snake	8.4%	7
Southwest Idaho	18.5%	29
Sawtooth	75.7%	0
Bear Lake	34.4%	3
Weiser	0.6%	0

Source: BLM GIS 2015

Impacts from Locatable Minerals Management

BLM-administered and National Forest System lands within the sub-region are generally open to mineral location, causing effects similar to those described in **Section 4.2.2**. There are specific locatable mineral withdrawals for particular ROWs, designated wilderness areas, ACECs, and other administrative needs, but none specific to protecting GRSG habitat. All locatable mineral activities are managed under the regulations at 43 CFR Part 3800 through approval of a Notice of Intent or a Plan of Operations. Mitigation of effects on GRSG and its habitat are identified through the NEPA process approving plans of operation. Goals and objectives for locatable minerals are to provide opportunities to develop the resource while preventing undue or unnecessary degradation of BLM-administered and National Forest System lands.

Lands closed to locatable mineral entry under the General Mining Act of 1872 comprise over 1.3 million acres of PPH and 433,200 acres of PGH. Current withdrawals provide an increased level of protection to GRSG seasonal habitats (see **Table 4-10**).

Impacts from Salable Minerals Management

Within the sub-region, most BLM-administered and National Forest System lands are open to salable mineral material development. Specific closures of areas to salable mineral materials such as ACECs or crucial or essential wildlife habitat exist throughout the sub-region.

Currently, there are over 1.8 million acres closed to material sales within PPH and PGH combined. Closed areas provide an increased level of protection to GRSG seasonal habitats from loss, fragmentation and other impacts discussed in **Section 4.2.2** (see **Table 4-11**).

Table 4-10
Alternative A: Percent of GRSG Habitat and Occupied Leks in Existing and Proposed Locatable Mineral Withdrawals by Population Area

Population Area	Habitat Area	Number of Occupied Leks
East-central Idaho	5.0	1
Mountain Valleys	12.7	30
Southwest Montana	2.5	3
North Side Snake	25	57
South Side Snake	7.7	8
Southwest Idaho	21.2	29
Sawtooth	10.6	0
Bear Lake	8.7	2
Weiser	5.0	0

Source: BLM GIS 2015

Table 4-11
Alternative A: Percent of GRSG Habitat and Occupied Leks Affected by Closure to Salable Minerals by Population Area

Population Area	Habitat Area	Number of Occupied Leks
East-central Idaho	25.3	1
Mountain Valleys	23.7	6
Southwest Montana	22.1	0
North Side Snake	15.7	23
South Side Snake	8.9	9
Southwest Idaho	18.9	29
Sawtooth	12.7	0
Bear Lake	14.4	1
Weiser	0	0

Source: BLM GIS 2015

Impacts from Lands Uses and Realty Management

Under Alternative A, all BLM-administered lands are held in retention unless identified for disposal. Disposal criteria typically include considerations of sensitive or crucial resources such as wildlife habitat. While older LUPs in the sub-region do not have specific goals related to GRSG, some newer plans, such as those in Pocatello and Dillon, do have specific measures related to GRSG disturbance and habitat. Land tenure adjustments would be subject to current disposal/exchange/acquisition criteria, which include retaining lands with threatened or endangered species, high quality riparian habitat, or plant and animal populations or natural communities of high interest. While not explicitly stated in some existing RMPs, this would likely include retention of areas with GRSG, and would thus retain occupied habitats under BLM administration. This would reduce the likelihood of habitat conversion to agriculture, urbanization, or other uses that would remove sagebrush

habitat. Mitigation is typically developed under the NEPA process, and most ROW and surface developments are subject to limited operation periods or other stipulations in local GRSG conservation strategies.

This alternative designates 1.9 million acres of ROW avoidance areas within existing PPH/PGH where certain actions would be considered on a case-by-case basis through subsequent site specific NEPA analysis, including the consideration of mitigation measures to reduce impacts. This alternative designates over 1 million acres for ROW exclusion within PPH/PGH where all development would be prohibited. Acres identified as available for disposal total 749,900 acres of PPH and PGH under Alternative A. Under this alternative, avoidance areas provide an increased level of protection to habitat and exclusion areas provide an increased level of protection occupied leks in the sub-region. These management actions would be expected to reduce both direct and indirect impacts on GRSG.

Impacts from Renewable Energy Management

In 2005 and 2008, the BLM programmatically amended its LUPs for renewable energy resources through the Wind Energy PEIS and Geothermal PEIS, respectively. These programmatic documents outline BLM-administered or National Forest System lands available and unavailable for these resource uses and provide direction on processing ROWs and geothermal lease applications, as well as establishing BMPs for conducting these activities on BLM-administered lands. The BMPs contain some general guidance for addressing GRSG and its habitat. LUPs would continue to have different stipulations for geothermal resources and under Alternative A, over 7.9 million acres of PPH and PGH could be open for wind development.

Under Alternative A, 1.9 million acres are managed for exclusion and 1.3 million acres are managed for avoidance of wind energy in existing PPH/PGH. This represents nearly 30 percent of the available PPH and PGH in the planning area being excluded or avoided. Outside these areas, there would be more impacts on GRSG and their habitat than inside the areas excluded or avoided.

Impacts on GRSG and their habitat from construction and operation of wind energy facilities are discussed in **Section 4.2.2** above. Management under Alternative A identified more acres of GRSG habitat available for wind energy and could lead to more impacts, including habitat degradation, increased predation, and others discussed in **Section 4.2.2**, compared to the action alternatives (Alternatives B through F).

There are 1,028,500 acres of PPH and PGH managed as ROW exclusion and 1,956,200 acres of PPH and PGH managed as ROW avoidance within the sub-region. Proposed exclusion and avoidance areas provide an increased level of protection to GRSG seasonal habitats (see **Table 4-12**).

Table 4-12
Alternative A: Percent of GRSG Habitat and Occupied Leks Affected by ROW Exclusion or Avoidance by Population Area

Population Area	Percent of Habitat Area			Number of Occupied Leks		
	Exclusion	Avoid with Exclusions	Avoidance	Exclusion	Avoid with Exclusions	Avoidance
East-central Idaho	0.5	0	11.4	0	0	0
Mountain Valleys	1.5	0	14.3	1	0	17
Southwest Montana	16.4	0	30.2	0	0	1
North Side Snake	6	0	16.1	5	0	12
South Side Snake	2.4	0	21.3	3	0	27
Southwest Idaho	20.6	0	8.3	29	0	9
Sawtooth	0.2	0	97.2	0	0	0
Bear Lake	1.2	0	0.3	0	0	0
Weiser	58.6	0	41.3	1	0	0

Source: BLM GIS 2015

Impacts from Geothermal Energy Development

Within the sub-region, most BLM-administered and National Forest System lands are open to geothermal development. Specific closures of areas to geothermal such as ACECs or critical or essential wildlife habitat exist throughout the sub-region.

Under this alternative, over 9.5 million acres of PPH and PGH would be designated as open for geothermal development. This alternative leaves the remaining PPH and PGH closed or limited for geothermal development. Closed areas provide an increased level of protection to GRSG seasonal habitats (see **Table 4-13**Error! Reference source not found.**Error! Reference source not found.**).

Table 4-13
Alternative A: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Geothermal Energy by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	35.1	2
Mountain Valleys	36	30
Southwest Montana	54.4	42
North Side Snake	36.3	83
South Side Snake	21.9	12
Southwest Idaho	23.6	34
Sawtooth	75.8	0
Bear Lake	39.7	4
Weiser	28.7	0

Table 4-13
Alternative A: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Geothermal Energy by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks

Source: BLM GIS 2015

Impacts from Travel and Transportation Management

Under current management, Travel Management Areas have not been consistently identified in LUPs beyond the basic allocations of open, closed, and limited. Closed areas are comprised of congressionally designated areas, WSAs, and, as directed, some ACECs. Areas within PPH and PGH that are limited to existing designated roads include over 2 million acres of National Forest System lands. Under current management, over 700,000 acres of PPH/PGH are closed to OHVs, 7.7 million acres are limited to existing routes for motorized vehicles, and 2.8 million acres are open to all modes of cross country travel (see **Table 4-14**). Lands within the Dillon Field Office are currently restricted to designated routes only.

Table 4-14
Alternative A: Percent of GRSG Habitat and Occupied Leks Affected by Travel Management by Population Area

Population Area	Percent of Habitat Area			Number of Occupied Leks		
	Open	Limited	Closed	Open	Limited	Closed
East-central Idaho	0.37	91	9	0	2	0
Mountain Valleys	25	74	1	37	99	1
Southwest Montana	0	98	2	0	40	0
North Side Snake	74	20	6	163	46	5
South Side Snake	15	82	3	21	143	3
Southwest Idaho	0	80	20	0	126	27
Sawtooth	0	100	0	0	0	0
Bear Lake	0	100	0.39	0	7	0
Weiser	71	28	0.41	0	1	0

Source: BLM GIS 2015

Impacts from Special Designations Management

Under Alternative A, the BLM would continue to manage 59 ACECs within the sub-region (**Table 4-7**). The Forest Service would not manage any Zoological Areas under Alternative A. Existing ACECs likely protect GRSG habitat through use restrictions; these impacts are analyzed under each existing RMP within the planning area. As a result, there would be no additional effects from ACEC or Zoological Area management on GRSG under this alternative.

4.2.5 Impacts Common to All Action Alternatives

While the nature and type of effects listed below from each alternative are similar, the impacts may differ by intensity, extent, or context.

GRSG Habitat Designations

Each action alternative designates GRSG habitat. **Table 4-15**, Acres of Designated Habitat Types in the Idaho and Southwestern Montana Sub-region, displays the acres of each habitat designation within each alternative.

Impacts on USFWS Priority Areas for Conservation

In 2013, the USFWS identified GRSG priority areas for conservation (USFWS 2013a). The relation of priority areas for conservation to the GRSG habitat designations in each alternative is shown in **Table 4-16**, Acres of Priority Areas for Conservation within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region.

Mitigation

Each action alternative includes a mitigation framework. Mitigation does not eliminate direct project effects, its inclusion in projects at the site-specific level is designed to provide an associated benefit to GRSG and eliminate detrimental cumulative effects.

Alternatives B, C, D, and F address mitigation through a Regional Mitigation Strategy (**Appendix J**). As part of this mitigation strategy, the BLM would establish a Mitigation Implementation Team for each WAFWA MZ. These teams would develop a Mitigation Strategy consistent with the BLM Regional Mitigation Manual Section (1794). The teams will coordinate recommended mitigation strategies between LUP planning areas, WAFWA MZs, and local and state jurisdictions for mitigation consistency. In addition, one of the goals in Alternative D is to provide for no unmitigated loss to occupied GRSG habitat.

Alternative E would utilize an Implementation Task Force to assess project proposals and their mitigation packages to determine whether to recommend an exemption for the governor's consideration. This would primarily affect CHZ areas where additional infrastructure development is restricted with narrow exceptions. Mitigation would be assessed according to Idaho's Mitigation Framework (**Appendix J**).

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Table 4-15
Acres of Designated Habitat Types in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan			
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ[1]	IHZ	CHZ[1]	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA	SFA
East-central Idaho	**67,600**	**12,300**	**79,800**	**94,800**	**7,630**	**4,670**	**79,800**	**0**	**0**	**67,600**	**12,300**	**0**	**64,200**	**0**	**0**	**0**
BLM	23,500	12,300	35,800	23,500	7,630	4,670	35,800	0	0	23,500	12,300	0	34,400	0	0	0
Forest Service	44,100	0	44,100	71,300	0	0	44,100	0	0	44,100	0	0	29,800	0	0	0
Mountain Valleys	**541,600**	**2,336,900**	**2,878,400**	**541,600**	**427,300**	**1,909,500**	**566,100**	**964,000**	**1,377,000**	**541,600**	**2,336,900**	**0**	**218,400**	**1,019,300**	**346,400**	**996,500**
BLM	198,700	1,880,500	2,079,200	198,700	234,600	1,645,900	189,400	782,400	1,130,500	198,700	1,880,500	0	175,300	824,900	252,800	818,400
Forest Service	342,900	456,400	799,300	342,900	192,700	263,600	376,700	181,600	246,500	342,900	456,400	0	43,200	194,400	93,600	178,200
Southwest Montana	**456,400**	**623,500**	**1,079,900**	**638,100**	**160**	**623,300**	**456,800**	**0**	**622,700**	**456,400**	**623,500**	**0**	**456,381**	**0**	**623,600**	**0**
BLM	222,000	460,600	682,600	268,200	80	460,500	222,000	0	460,400	222,000	460,600	0	221,950	0	460,600	0
Forest Service	234,400	162,900	397,300	369,900	70	162,800	234,800	0	162,300	234,400	162,900	0	234,430	0	163,000	0
North Side Snake	**579,800**	**1,706,700**	**2,286,500**	**579,800**	**246,400**	**1,460,400**	**993,100**	**489,400**	**808,100**	**579,800**	**1,706,700**	**246,800**	**926,500**	**680,900**	**17,400**	**941,900**
BLM	493,900	1,678,100	2,172,000	493,900	228,500	1,449,600	906,600	461,300	808,100	493,900	1,678,100	246,800	839,747	652,800	17,400	941,900
Forest Service	85,900	28,600	114,500	85,900	17,900	10,800	86,500	28,000	0	85,900	28,600	0	86,700	28,000	0	0
South Side Snake	**636,200**	**1,638,100**	**2,274,300**	**636,200**	**567,900**	**1,070,300**	**791,200**	**759,100**	**729,100**	**636,200**	**1,638,100**	**36,300**	**504,700**	**957,500**	**75,600**	**580,400**
BLM	466,500	1,323,700	1,790,200	466,500	520,800	803,000	602,400	595,800	597,000	466,500	1,323,700	36,300	339,400	765,800	3,540	521,700
Forest Service	169,700	314,400	484,100	169,700	47,100	267,300	188,700	163,300	132,100	169,700	314,400	0	165,200	191,600	72,100	58,600
Southwest Idaho	**427,700**	**1,796,100**	**2,223,700**	**427,700**	**80,700**	**1,715,300**	**368,900**	**514,800**	**1,345,100**	**427,700**	**1,796,100**	**146,500**	**290,800**	**466,100**	266,900	**1,324,100**
BLM	427,700	1,796,100	2,223,700	427,700	80,700	1,715,300	368,900	514,800	1,345,100	427,700	1,796,100	146,500	290,800	466,100	266,900	1,324,100
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**5,310**	**45,200**	**50,500**	**27,800**	**1,130**	**44,000**	**7,810**	**16,600**	**26,300**	**5,300**	**45,200**	**0**	**1,420**	**19,900**	**31,100**	**0**
BLM	4,690	43,500	48,200	4,700	740	42,800	6,880	15,200	26,300	4,690	43,500	0	1,420	18,400	31,100	0
Forest Service	610	1,620	2,240	23,100	390	1,230	940	1,370	0	610	1,620	0	0	1,570	0	0
Weiser	**135,000**	**77,200**	**212,200**	**135,000**	**55,600**	**21,700**	**212,200**	**0**	**0**	**135,000**	**77,200**	**70,700**	**275,000**	**0**	**0**	**0**

Table 4-15
Acres of Designated Habitat Types in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan			
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ[1]	IHZ	CHZ[1]	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA	SFA
BLM	135,000	77,200	212,200	135,000	55,600	21,700	212,200	0	0	135,000	77,200	70,600	275,000	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0	0
Sawtooth	**21,500**	**0**	**21,500**	**21,500**	**0**	**0**	**21,500**	**0**	**0**	**21,500**	**0**	**0**	**21,500**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	21,500	0	21,500	21,500	0	0	21,500	0	0	21,500	0	0	21,500	0	0	0
Total	**2,870,900**	**8,235,900**	**11,106,900**	**3,102,400**	**1,386,800**	**6,849,200**	**3,497,400**	**2,743,800**	**4,908,100**	**2,870,900**	**8,235,900**	**500,300**	**2,758,800**	**3,143,700**	**1,361,000**	**3,842,900**

Source: BLM GIS 2015
[1]Acres in PHMA in Utah and Montana are included with PHMA acres for Idaho; acres in GHMA in Montana are included in GHMA for Idaho.

Table 4-16
Acres of Priority Areas for Conservation within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

GRSG Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-central Idaho	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mountain Valleys	**2,320,400**	**115,400**	**2,205,100**	**2,320,400**	**115,400**	**360,000**	**1,845,100**	**1,376,900**	**4,410**	**964,000**	**115,400**	**2,205,100**	**0**	**93,700**	**876,500**	**1,203,800**
BLM	1,895,900	76,100	1,819,800	1,895,900	76,100	212,200	1,607,600	1,130,500	1,520	782,400	76,100	1,819,800	0	90,900	758,900	1,007,000
Forest Service	424,500	39,300	385,300	424,500	39,300	147,800	237,500	246,500	2,890	181,600	39,300	385,300	0	2,700	117,600	196,900
Southwest Montana	**623,500**	**0**	**623,500**	**623,500**	**0**	**150**	**623,300**	**622,700**	**160**	**0**	**0**	**623,500**	**0**	**0**	**0**	**623,500**
BLM	460,600	0	460,600	460,600	0	80	460,500	460,400	80	0	0	460,600	0	0	0	460,600
Forest Service	162,900	0	162,900	162,900	0	60	162,800	162,300	80	0	0	162,900	0	0	0	162,900
North Side Snake	**1,293,500**	**16,800**	**1,276,700**	**1,293,500**	**16,800**	**148,500**	**1,128,200**	**808,100**	**60**	**489,400**	**16,800**	**1,276,700**	**1,290**	**17,900**	**367,800**	**910,200**
BLM	1,265,400	15,700	1,249,700	1,265,400	15,700	131,700	1,118,000	808,100	60	461,300	15,700	1,249,700	1,290	15,600	333,400	919,000
Forest Service	28,000	1,030	27,000	28,000	1,000	16,800	10,200	0	0	28,000	1,030	27,000	0	2,300	25,600	0
South Side Snake	**1,485,700**	**82,300**	**1,403,500**	**1,485,700**	**82,300**	**418,200**	**985,300**	**729,100**	**2,700**	**759,000**	**82,300**	**1,403,500**	**4,610**	**52,200**	**781,600**	**644,200**
BLM	1,190,100	61,400	1,128,700	1,190,100	61,400	402,600	726,100	597,000	2,390	595,700	61,400	1,128,700	4,610	51,700	616,600	513,500
Forest Service	295,600	20,900	274,800	295,600	20,900	15,600	259,200	132,100	300	163,300	20,900	274,800	0	440	164,900	130,700
Southwest Idaho	**1,867,600**	**106,300**	**1,761,300**	**1,867,600**	**106,300**	**71,400**	**1,689,900**	**1,345,100**	**10,800**	**514,800**	**106,300**	**1,761,300**	**0**	**7,020**	**323,300**	**1,537,500**
BLM	1,867,600	106,300	1,761,300	1,867,600	106,300	71,400	1,689,900	1,345,100	10,800	514,800	106,300	1,761,300	0	7,020	323,300	1,537,500
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**42,800**	**680**	**42,000**	**42,700**	**730**	**1,040**	**41,000**	**26,300**	**80**	**16,600**	**680**	**42,000**	**0**	**0**	**15,800**	**26,300**
BLM	41,400	680	40,800	41,400	680	680	40,100	26,300	80	15,200	680	40,800	0	0	14,900	26,300
Forest Service	1,340	0	1,290	1,300	50	360	930	0	0	1,370	0	1,290	0	0	860	
Weiser	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Sawtooth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total	**7,633,500**	**321,400**	**7,312,000**	**7,633,400**	**321,400**	**999,300**	**6,312,700**	**0**	**0**	**0**	**321,400**	**7,312,000**	**5,890**	**170,700**	**2,365,100**	**4,945,500**

Table 4-16
Acres of Priority Areas for Conservation within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

GRSG Analysis Area	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
BLM	6,721,100	260,200	6,460,900	6,721,100	260,200	818,700	5,642,200	**0**	**0**	**0**	260,200	6,460,900	5,890	165,200	2,047,200	4,464,000
Forest Service	912,400	61,200	851,200	912,400	61,200	180,600	670,600	**0**	**0**	**0**	61,200	851,200	0	5,500	309,000	490,400

Source: BLM GIS 2015

Adaptive Management

Each action alternative contains an adaptive management strategy. Effects of Alternatives D and E strategies are described in the associated section within the alternative impacts section below.

For Alternatives B, C, and F an adaptive management framework is described; however, specific triggers and resulting actions have not been described. A subsequent adaptive management plan would be developed that:

- Identifies science based soft and hard adaptive management triggers applicable to each population or subpopulation within the planning area
- Addresses how the multiple scale data from the Monitoring Framework Plan (**Appendix E**) would be used to gauge when adaptive management triggers are met
- Charters an adaptive management working group to assist with responding to soft adaptive management triggers

4.2.6 Alternative B

PHMA and GHMA would be designated under Alternative B (**Table 4-15**). The BLM and Forest Service would apply a maximum 3 percent disturbance cap to human activities in PHMA. The 3 percent disturbance cap was recommended in the NTT report and is designed to minimize impacts on GRSG habitat by limiting disturbances in sensitive habitat areas. The agencies would implement numerous conservation measures, as described under the resource headings below, to reduce impacts from human activities in PHMA. Restricting surface-disturbing activities would reduce the likelihood for habitat loss, fragmentation and direct disturbance to GRSG.

Impacts from Vegetation and Soils Management

Under Alternative B, restoration projects would be prioritized in seasonal GRSG habitats thought to be limiting the distribution and abundance of GRSG. Re-establishment of sagebrush cover and desirable understory plants would be the highest priority for restoration efforts. Restoration treatments would incorporate habitat parameters defined by Connelly et al. 2000, Hagen et al. 2007, and state GRSG conservation plans. Native seed would be required for restoration treatments and the establishment of designated seed harvest areas for sagebrush seed collection in fire prone areas. Climate change would be a consideration when proposing native seed collection. In addition, post-restoration management plans would be implemented to ensure long-term persistence of vegetation treatments.

Alternative B management prescriptions for vegetation and soil applied to PHMA and GHMA would provide greater protection and restoration efforts for GRSG habitat compared with those under Alternative A. This is because prescriptions under Alternative B are based on the NTT report recommendations, which were designed specifically for GRSG conservation.

Management under Alternative B would ensure the long-term availability and resiliency of native seed for restoration treatments by establishing native seed harvest areas which incorporate climate change effects. This and post-treatment management plans would improve the success of restoration treatments and the future persistence of GRSG and their habitat.

Vegetation treatment rates would be greater than under Alternative A and would further reduce the impacts of invasive grasses, affecting the population areas where invasive grasses are a substantial threat. Treatment rates would further reduce the impacts of conifer encroachment on the population areas where conifer is a substantial threat. Trends for habitat at 10 and 50 years would improve compared with Alternative A (See **Tables 4-1** and **4-2**).

Impacts from Livestock Grazing Management

Under Alternative B, the same number of acres would be open to livestock grazing as under Alternative A. Agencies, in coordination with permittees, would prioritize a number of management actions in PHMA to incorporate GRSG habitat objectives and management considerations into livestock grazing management, though there would be no change to the acreage open for grazing or available AUMs unless an allotment is retired from grazing. Management actions would include developing specific vegetation objectives based on Ecological Site Descriptions to conserve, enhance, or restore PHMA habitat and riparian areas would be managed for proper functioning condition. Vegetation treatments to increase livestock forage would only be allowed if they conserved, enhanced or restored GRSG habitat. This alternative would also implement modifications to season of use, numbers of livestock or livestock types to meet seasonal GRSG requirements based on site-specific conditions during permit renewal. New water developments would only be authorized when they would benefit PHMA. In PHMA, older developments would also be analyzed in order to determine if modifications of the system are necessary to maintain the integrity of the riparian area. Removal, modification, or marking of fences would be considered under this alternative.

This alternative would provide long-term benefits to GRSG through improvements in both upland and riparian GRSG habitats, and would reduce both short and long-term impacts by reducing direct impacts on GRSG on their seasonal ranges. However, restricting or removing water developments could reduce water availability for GRSG on a site-specific basis. Compared with Alternative A, Alternative B management actions would further reduce, but would not eliminate, impacts from grazing on GRSG and their habitat.

Impacts from Fire and Fuels Management

Under Alternative B, impacts on GRSG from fire suppression activities would be largely the same as Alternative A. On BLM-administered and National Forest System lands, 8.2 million acres of GRSG habitat would be designated as PHMA, and 2.8 million acres would be designated as GHMA. With regard to fuels management projects, GRSG would benefit from the direction provided to protect important aspects of habitat within PHMA (e.g., canopy cover). Hazardous fuels projects focused on protecting GRSG habitat would be prioritized in these areas. Any fuels treatment in sagebrush would carefully consider if there

is a net benefit for GRSG before implementation, and fuels treatments would not be allowed in winter habitat. Not allowing fuel treatment in winter habitat may greatly limit the ability to protect winter habitat from fire.

Prescribed fire in low precipitation areas (less than 12 inches) would generally not be allowed. Post-fire rehabilitation would be conducted using primarily native species, based on availability and adaptation. Rest from grazing would be required for two full growing seasons, unless vegetation recovery dictates otherwise. These activities may decrease the likelihood for fire in GRSG habitats and would help restore GRSG habitat in fire-affected areas. However, relative to the amount of GRSG habitat that is expected to burn based on current trends and is outside the control of the BLM or Forest Service, these actions may provide localized but minimal protections and improvements to the populations in the sub-region where fire contributes significantly to current declining trends.

Impacts from Wild Horse and Burro Management

Under Alternative B, wild horses would be managed at AML on the same number of acres as Alternative A, with gathers prioritized based on PHMA habitat and emergency environmental issues. HMA plans, when developed or updated, would incorporate GRSG habitat objectives. Implementation of any range improvements would follow the same guidance as identified for livestock grazing in this alternative, including designing and locating new improvements only where they "conserve, enhance, or restore GRSG habitat through improved grazing management." Design features could include developing or modifying water developments to mitigate for West Nile virus, removing or modifying fences to reduce the chance of bird strikes, or monitoring and treating invasive species associated with range improvements. Additional range improvements would specifically address the needs of GRSG. Compared with Alternative A, Alternative B would prioritize GRSG habitat objectives in HMA plans and base assessment of AMLs on achieving or maintaining GRSG habitat needs.

Impacts from Leasable Minerals Management

Management under Alternative B would close 9.1 million acres of PHMA to fluid mineral leasing. Closed lands would provide an increased level of protection to habitat associated with leks. (See **Table 4-17**).

Management under Alternative B would close over 8 million acres of PHMA to nonenergy leasable mineral leasing. Closed lands would provide an increased level of protection to habitat associated with leks (See **Error! Reference source not found.8**).

Table 4-17
Alternative B: Percent of GRSG Habitat and Occupied Leks in Areas Closed or with NSO Stipulations for Oil and Gas Leasing by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	40	3
Mountain Valleys	93.1	159
Southwest Montana	80.8	47
North Side Snake	82	261
South Side Snake	80.2	157
Southwest Idaho	85	152
Sawtooth	75.8	0
Bear Lake	93.3	7
Weiser	47.4	0

Source: BLM GIS 2015

Table 4-18
Alternative B: Percent of GRSG Habitat and Occupied Leks in Areas Closed to Nonenergy Leasable Mineral Leasing by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	26.2%	3
Mountain Valleys	82.6%	138
Southwest Montana	61.1%	45
North Side Snake	58%	226
South Side Snake	71.4%	157
Southwest Idaho	72%	152
Sawtooth	75.7%	0
Bear Lake	66.4%	8
Weiser	27.1%	0

Source: BLM GIS 2015

Impacts from Locatable Minerals Management

Management under Alternative B would include withdrawals and processes for management. In addition, PHMA would be recommended for mineral withdrawal and existing mining claims would be subject to validity exams. For these reasons, Alternative B would be more protective of GRSG than Alternative A.

Lands withdrawn or recommended for withdrawal are 9.3 million acres of PHMA. Withdrawn lands would provide an increased level of protection to habitat associated with leks (see **Table 4-19**).

Table 4-19
Alternative B: Percent of GRSG Habitat and Occupied Leks Affected by Mineral Withdrawal by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	25.9	4
Mountain Valleys	83	138
Southwest Montana	52.2	70
North Side Snake	78.3	228
South Side Snake	75.3	167
Southwest Idaho	85.1	152
Sawtooth	17.2	0
Bear Lake	85.5	8
Weiser	43.5	0

Source: BLM GIS 2015

Impacts from Salable Minerals Management

Management under Alternative B would be more protective than Alternative A and would close PHMA to mineral material sales.

Alternative B closes 8.7 million acres of PHMA to mineral material sales. Closed lands would provide an increased level of protection to habitat associated with leks (see **Table 4-20**).

Table 4-20
Alternative B: Percent of GRSG Habitat and Occupied Leks Affected by Closure to Salable Minerals by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	8.6	3
Mountain Valleys	68.9	159
Southwest Montana	31.9	45
North Side Snake	60.8	252
South Side Snake	58.2	155
Southwest Idaho	69.9	152
Sawtooth	7.8	0
Bear Lake	42.7	7
Weiser	18.6	0

Source: BLM GIS 2015

Impacts from Land Uses and Realty Management

Under Alternative B, more habitat would be managed as ROW avoidance (2.5 million acres) and exclusion (8.4 million acres) areas than under Alternative A. There is an approximate 503,600-acre difference between Alternatives A and B in terms of acres for disposal in

GRSG habitat, with Alternative B having fewer acres available for disposal within PHMA and GHMA compared to the acres in PPH and PGH. PHMA would be managed as exclusion areas for new ROW permits, with some exceptions. Mitigation and restoration efforts would take place related to existing ROWs in PHMA. In GHMA, avoidance areas would be set up in relation to new ROWs, collocating ROWs as much as possible. Under Alternative B, PHMA would be retained unless mitigation or land tenure adjustment would better benefit GRSG habitat. Avoidance areas provide an increased level of protection to modeled nesting habitat associated with leks representing 64 percent of the sub-regional population, and exclusion areas provide an increased level of protection to 30 percent of the sub-regional population. In relation to Alternative A, management under Alternative B would provide fewer direct impacts on GRSG by greatly increasing acreage subject to ROW avoidance and exclusion and by protection and acquisition of important GRSG habitats.

Impacts from Renewable Energy Management

Under Alternative B, impacts from management of lands for wind and solar energy development would be the same as for Alternative A.

Impacts from Wind Energy Development on Sub-populations

Alternative B does not specify acreages to set aside specifically for GRSG conservation. Because no action is specified under Alternative B, the default is that the same action would be taken for Alternative B as proposed for Alternative A.

Within the sub-region, 8.5 million acres of PHMA and GHMA would be excluded and 2.3 million acres of PHMA and GHMA would have ROW avoidance for wind energy development. This represents 97 percent of the available PHMA and GHMA in the planning area being excluded or avoided in the planning area. Proposed ROW exclusion and avoidance areas provide an increased level of protection to habitat associated with leks (see **Table 4-21**).

Table 4-21
Alternative B: Percent of GRSG Habitat and Occupied Leks Affected by ROW Exclusion or Avoidance by Population Area

Population Area	Percent of Habitat Area			Number of Occupied Leks		
	Exclusion	Avoid with Exclusions	Avoidance	Exclusion	Avoid with Exclusions	Avoidance
East-central Idaho	0	15.4	84.6	0	1	1
Mountain Valleys	1.5	80.1	18.1	1	131	5
Southwest Montana	33.6	49.3	33.6	0	38	1
North Side Snake	6.1	69.9	23	5	207	2
South Side Snake	27.1	69.8	27.1	3	157	7
Southwest Idaho	14.8	63.8	14.8	29	123	1
Sawtooth	0.2	0	99.8	0	0	0
Bear Lake	0.6	88.9	10.5	0	6	0
Weiser	41.4	0	41.4	1	0	0

Source: BLM GIS 2015

Impacts from Geothermal Energy Development on Sub-populations
Alternative B does not specify acreage to set aside specifically for GRSG conservation. Because no action is specified under Alternative B, the default is that the same action would be taken for Alternative B as proposed for Alternative A.

Within the sub-region, most BLM-administered and National Forest System lands are open to geothermal development. Specific closures of areas to geothermal such as ACECs or crucial or essential wildlife habitat exist throughout the sub-region.

Under this alternative, 2.3 million acres of GHMA would remain open for geothermal development. PHMA would be closed to geothermal development (**Table 4-22**).

Table 4-22
Alternative B: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Geothermal Energy by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	39.3%	3
Mountain Valleys	93.2%	159
Southwest Montana	80.8%	46
North Side Snake	82.2%	261
South Side Snake	80.3%	157
Southwest Idaho	85%	152
Sawtooth	75.8%	0
Bear Lake	90.3%	7
Weiser	47.4%	0

Source: BLM GIS 2015

Impacts from Travel and Transportation Management
Under Alternative B, any designated open roads within PHMA would be managed as limited to existing roads for OHV travel, with the exception of existing closed areas within PHMA or GHMA.

Under Alternative B, over 700,000 acres of PHMA and GHMA would be closed to OHVs, over 10 million acres would be limited to existing roads, and 1,350 acres would be open to all modes of cross-country travel (see **Table 4-23**).

Table 4-23
Alternative B: Percent of GRSG Habitat and Occupied Leks Affected by Travel Management Designations by Population Area

Population Area	Habitat Area			Occupied Leks		
	Open[1]	Limited	Closed	Open[1]	Limited	Closed
East-central Idaho	0.5%	87.4%	12.1%	0	2	0
Mountain Valleys	1.5%	97.4%	1.2%	3	133	1
Southwest Montana	0%	99%	1%	0	40	0
North Side Snake	18.4%	75.5%	6.2%	2	207	5
South Side Snake	0%	80.4%	19.6%	2	162	3
Southwest Idaho	5.1%	91.6%	3.3%	0	126	27
Sawtooth	0%	100%	0%	0	0	0
Bear Lake	0%	99.4%	0.6%	0	6	0
Weiser	41.6%	58.0%	0.4%	0	1	0

Source: BLM GIS 2015
[1]Acres closed to OHV travel represent existing acres closed. No additional areas would be closed under any alternative.

Impacts from Special Designations Management
Impacts from ACEC management under Alternative B are the same as those described for Alternative A (**Table 4-7**).

4.2.7 Alternative C

Under Alternative C, the BLM and Forest Service would manage lands to conserve, enhance, and restore sagebrush ecosystems. Management actions would be applied to all occupied GRSG habitats (**Table 4-15**). Management would focus on removing livestock grazing from occupied habitats, with most other management similar that to Alternative A. The 3 percent disturbance cap would be the same as under Alternative B, but would apply to all occupied habitat.

Impacts from Vegetation and Soils Management
Given the limited current distribution of suitable GRSG habitat, management plans that strategically protect intact sagebrush and restore impacted areas to enhance existing habitats have the best chance of increasing the amount and quality of GRSG habitat (Manier et al. 2013, p. 171). Management under Alternative C would decrease vegetation treatments needed to increase the amount and quality of GRSG habitat, compared with Alternative A. Habitat trends for 10 and 50 years indicate a slight decline, from increased influence of invasive grasses and continued dominance of conifer, in impacted populations and subpopulations as compared with Alternative A.

Under Alternative C, vegetation management would prioritize the restoration of crested wheat seedings and focus fuels treatments in areas of urban interface and significant existing disturbances, establish monitoring sites, require risk assessments, minimize or eliminating the

use of herbicides, address vectors of weed infestations, and require the use of mowers to remove thatch from meadows and to manage existing fuel breaks.

Management prescriptions under Alternative C would focus vegetation treatments in unoccupied GRSG habitats (e.g., crested wheat grass seeding, urban interface, areas where livestock management infrastructure is removed, and other areas of significant disturbances). Broad-scale treatment of invasive grasses would be achieved through natural recovery following the removal of livestock, and juniper removal projects would be limited.

Impacts from Livestock Grazing Management

Under Alternative C, all PHMA would be unavailable to livestock use. About 100 percent of the GRSG populations in the sub-region would be affected. Under this alternative, both passive and active restoration would occur, including removal of livestock, roads, water developments, fences, and other range infrastructure that may contribute to GRSG predators or increase habitat for mosquitoes that may carry the West Nile virus. Additional active restoration would include reseeding of roads and crested wheatgrass seedings with native shrubs and grasses.

Under Alternative C, impacts on GRSG would be reduced compared with Alternative A in upland sites. This is because of reduced trampling of nests by livestock during nesting season and increased herbaceous understory vegetation. Under this alternative, the removal of livestock would result in greater amounts of residual upland cover both in the short term and long term. Reseeding of crested wheatgrass seedings and roads would reduce and minimize impacts from invasive species and increase cover of native plant species. Removal of fencing would reduce the potential of GRSG direct strikes, but in areas where wild horses are present, riparian damage or nest trampling in brood-rearing habitats may increase from horses accessing riparian sites. Removal of troughs and other artificial watering devices would make more water available on the ground for GRSG, their habitats, and other wildlife species. Additional fencing might be required to separate federal no-grazing areas from private ranchlands, leading to increased risk of GRSG strikes along those boundaries.

A complete grazing exclusion can also promote exotic annual grass invasion in some situations. Davies et al. (2009) determined that long-term grazing exclusion followed by fire resulted in exotic annual grass invasion, while fire following moderate levels of grazing did not promote invasion. Moderate grazing made the perennial herbaceous component of the sagebrush plant communities more tolerant of fire (Davies et al. 2009), perhaps due to a reduction in crown litter (Davies et al. 2010a). Targeted grazing may be a critical tool for breaking the exotic annual grass-fire cycle by decreasing the probability of fire disturbance (Diamond et al. 2009). Well-managed livestock grazing may have limited impact (Courtois et al. 2004) or beneficial effects, including decreased risk of conversion to exotic annual grass communities (Davies et al. 2009, 2010a). If management under Alternative C were to reduce ranchers' ability to keep ranches maintained or profitable, they may be sold and developed, causing loss of habitat (Wilkins et al. 2003). Ultimately, the effects of removing grazing in GRSG habitats on a landscape scale are unknown, and it is unclear whether complete removal would improve GRSG habitat or increase population levels.

Impacts from Fire and Fuels Management

Under Alternative C, impacts on GRSG from wildfire suppression and fuels management would be the same as Alternative B; 11.1 million acres of GRSG habitat would be designated as PHMA. However, this alternative adopts a passive restoration approach relying on a long-term improvement of habitat conditions by closing PHMA to livestock grazing. The alternative does not rely on fuel treatments, such as fuel breaks, to limit the impacts of fire and limits cheatgrass control to natural restoration over chemical treatment, which is restricted. The combination of reducing the direct measures to combat invasive species and limit fire spread would increase the likelihood of continued GRSG habitat decline within the GRSG populations where fire is a threat.

Impacts from Wild Horse and Burro Management

Under Alternative C, wild horses would be managed on the same HMA acreage as under Alternative A. Wild horses would be managed at AML. Use of contraceptives and other population growth suppression to manage wild horse numbers would be similar to actions under Alternative A. Management under Alternative C would not allow the use of helicopters for gathers and would be expected to lead to decreased gather efficiency resulting in increases of wild horses, making it more difficult to manage wild horses at AML. Combined with the removal of some fences during active restoration processes related to livestock grazing, wild horses would be expected to range over a larger area than under Alternative A and would necessitate the need for increased gather outside of HMA boundaries. To the extent wild horses are present in an area, the increase in access to fenced riparian and upland habitats and the expected temporary increases in horses over AML would reduce food and cover for GRSG over time. These increases also would change water-holding capacities of riparian brood-rearing sites compared with Alternative A.

Impacts from Leasable Minerals Management

Leasable Minerals Management under Alternative C would afford the highest level of protection of all alternatives. Leasable mineral entry would be precluded for all ACECs, including all PHMA, under this alternative. Closed acreage would include all PMUs in the sub-region, protecting all occupied or potentially occupied GRSG habitat and increasing the level of protection to all associate, populations and sub-populations.

Management under Alternative C would close PHMA, including split-estate (over 20 million acres in total) to oil and gas leasing. Closure would increase protection of all acres of PHMA within habitat associated with leks (see **Table 4-24**).

Management under Alternative C would close PHMA to nonenergy leasable mineral leasing. Closure would increase protection of all acres of PHMA within habitat associated with leks (see **Table 4-25**).

Table 4-24
Alternative C: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Oil and Gas Leasing by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	100%	5
Mountain Valleys	100%	164
Southwest Montana	100%	47
North Side Snake	100%	263
South Side Snake	100%	162
Southwest Idaho	100%	153
Sawtooth	100%	0
Bear Lake	100%	7
Weiser	100%	0

Source: BLM GIS 2015

Table 4-25
Alternative C: Percent of GRSG Habitat and Occupied Leks Within Areas Closed to Nonenergy Leasable Mineral Leasing by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	96.2%	5
Mountain Valleys	100%	143
Southwest Montana	100%	46
North Side Snake	100%	229
South Side Snake	100%	162
Southwest Idaho	100%	153
Sawtooth	100%	0
Bear Lake	99.9%	7
Weiser	100%	0

Source: BLM GIS 2015

Impacts from Locatable Minerals Management

Management under Alternative C would afford the highest level of protection of all alternatives. Mineral entry withdrawal would be recommended for all ACECs, including all PHMA, under this alternative, protecting all occupied or potentially occupied GRSG habitat and increasing the level of protection to all associated GRSG populations and sub-populations.

Management under Alternative C would recommend withdrawing PHMA, including split-estate, from locatable mineral entry (13.3 million acres). Closure would increase protection of all acres of PHMA within habitat associated with leks (see **Table 4-26**).

Table 4-26
Alternative C: Percent of GRSG Habitat and Occupied Leks Affected by Mineral Withdrawal by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	100%	9
Mountain Valleys	100%	143
Southwest Montana	100%	79
North Side Snake	100%	230
South Side Snake	100%	173
Southwest Idaho	100%	153
Sawtooth	100%	0
Bear Lake	100%	8
Weiser	100%	0

Source: BLM GIS 2015

Impacts from Salable Minerals Management

Management under Alternative C would close PHMA to mineral materials sales, providing the highest level of protection among the alternatives (same as Alternative B).

Management under Alternative C would close PHMA, including split-estate, to mineral materials sales (19.4 million acres in total). Closure would increase protection of all acres of PHMA habitat associated with leks (**Table 4-27**).

Table 4-27
Alternative C: Percent of GRSG Habitat and Occupied Leks Affected by Closure to Salable Minerals by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	100%	5
Mountain Valleys	100%	164
Southwest Montana	100%	46
North Side Snake	100%	263
South Side Snake	100%	162
Southwest Idaho	100%	153
Sawtooth	100%	0
Bear Lake	100%	7
Weiser	100%	0

Source: BLM GIS 2015

Impacts from Land Uses and Realty Management

Under Alternative C, ROW avoidance acres would remain the same as under Alternative A. Within PHMA, there are more acres managed as ROW exclusion under Alternative C (11 million acres) than under Alternative A (1 million acres). This difference would provide

protections to more of the sub-regional GRSG population than Alternative A. This difference is due to resource use restrictions in all PHMA as well as potential ACECs. Required buffers of 5 to 10 miles between occupied habitats and wind development in the alternative are also part of the increased acreage. Acres identified for disposal are less than Alternative A. Under Alternative C, all BLM-administered and National Forest System lands in proposed ACECs (all PHMA) and identified restoration and rehabilitation lands would be retained in public ownership. New corridors or facilities including communication towers would only be allowed in nonhabitat areas, with existing towers undergoing reviews for adverse effects. All existing transmission or pipeline corridors would be assessed under this alternative, and ROWs would be amended to require features that enhance GRSG habitat security. This alternative would result in fewer direct or indirect impacts on GRSG and their habitats compared with Alternative A because most effects from the land and realty program would be outside of occupied habitat, and effects within current ROWs would be minimized over time. Additionally, this alternative would prioritize more areas for acquisition compared with Alternative A (see **Table 4-28**).

Table 4-28
Alternative C: Percent of GRSG Habitat and Occupied Leks Affected by ROW Exclusion or Avoidance by Population Area

Population Area	Habitat Area			Occupied Leks		
	Exclusion	Avoid with Exclusions	Avoidance	Exclusion	Avoid with Exclusions	Avoidance
East-central Idaho	100%	0	0	2	0	0
Mountain Valleys	99.8%	0	0	137	0	0
Southwest Montana	97.9%	0	0	39	0	0
North Side Snake	99%	0	0	214	0	0
South Side Snake	99.3%	0	0	167	0	0
Southwest Idaho	99.3%	0	0	153	0	0
Sawtooth	100%	0	0	0	0	0
Bear Lake	100%	0	0	6	0	0
Weiser	100%	0	0	1	0	0

Source: BLM GIS 2015

Impacts from Renewable Energy Management

Under Alternative C, management of lands for renewable energy development would be the same as for Alternative B.

Impacts from Wind Energy Development on Sub-populations
Under Alternative C, management of lands for wind energy development would be the same as for Alternative B.

Impacts from Geothermal Energy Development on Sub-populations
Under this alternative, over 20 million acres of PHMA, including split-estate, would be closed to geothermal leasing (**Table 4-29**).

Table 4-29
Alternative C: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Geothermal Energy by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	100%	5
Mountain Valleys	100%	164
Southwest Montana	100%	46
North Side Snake	100%	263
South Side Snake	100%	162
Southwest Idaho	100%	153
Sawtooth	100%	0
Bear Lake	100%	7
Weiser	100%	0

Source: BLM GIS 2015

Impacts from Travel and Transportation Management
Under Alternative C, any designated open areas within PHMA would be managed as limited for OHVs with the exception of existing closed areas within PHMA (see **Table 4-30**).

Table 4-30
Alternative C: Percent of GRSG Habitat and Occupied Leks Affected by Travel Management Designations by Population Area

Population Area	Habitat Area			Occupied Leks		
	Open[1]	Limited	Closed	Open[1]	Limited	Closed
East-central Idaho	0%	87.9%	12.1%	0	2	0
Mountain Valleys	0%	98.8%	1.2%	0	136	1
Southwest Montana	0%	99%	1%	0	40	0
North Side Snake	0.1%	93.8%	6.2%	0	209	5
South Side Snake	0%	80.4%	19.6%	0	126	27
Southwest Idaho	0%	96.7%	3.3%	0	2	0
Sawtooth	0%	100%	0%	0	0	0
Bear Lake	0%	99.4%	0.6%	0	6	0
Weiser	0%	99.6%	0.4%	0	1	0

Source: BLM GIS 2015
[1]Acres closed to OHV travel represent existing acres closed. No additional areas would be closed under any alternative.

Impacts from Special Designations Management
Under Alternative C, the BLM would designate 39 new ACECs (**Table 4-7**). Impacts from management of ACECs are as described under **Section 4.2.2**.

4.2.8 Alternative D

Alternative D would delineate GRSG management areas into PHMA, IHMA, and GHMA within the sub-region (see **Table 4-15**). GRSG habitat in Idaho would include all three management areas, while habitat in Montana includes only PHMA and GHMA. Management areas in Utah would be all PHMA. PHMA would receive the highest degree of protection from impacts caused by resource uses. The goal would be to retain priority GRSG habitats for each WAFWA management zone (Stiver et al. 2006) across the current geographic range of GRSG, including no net unmitigated loss of GRSG habitat. These habitats would have to be large enough to stabilize populations in the short term and to enhance populations over the long term. There would be additional provisions to protect larger intact areas of sagebrush to reduce fragmentation.

Impacts from Vegetation and Soils Management
Vegetation dynamics modeling shows the same general trend under Alternative D compared with Alternative A (see **Tables 4-1** and **4-2**).

Under Alternative D, the BLM and Forest Service would prioritize vegetation treatment projects to further improve GRSG abundance and distribution. Factors contributing to higher emphasis include the likelihood of conifer encroachment into GRSG habitat. In addition, the vegetation management tools described in Alternative B would help to reduce encroachment in PHMA and avoid the impacts discussed under **Section 4.2.2**.

Impacts from Livestock Grazing Management
Management under Alternative D includes the same provisions as Alternative B, and also prioritizes land health assessments and managing riparian areas and wet meadows toward PFC in priority and medial habitat. These efforts would improve forage and cover in PHMA and IHMA, to sustain nesting GRSG and protect them from population loss due to predation. Together, these efforts would reduce impacts on GRSG from grazing, such as loss of nesting cover, described in **Section 4.2.2**, compared with Alternative A. Acreage closed to grazing under each alternative is shown in **Table 4-5**.

Impacts from Fire and Fuels Management
Alternative D would implement the same policies as Alternative B to prioritize fire suppression and restoration in sagebrush areas by using native plants and limiting damage to sagebrush habitat from wildfire. Alternative D includes additional measures and planning such as ES&R guidance, preparations in high-risk areas, and additional training for firefighters to better prepare for fire outbreaks in high-risk areas such as sagebrush. Adaptive management under Alternative D would expand more restrictive management from PHMA to less restrictive IHMA based on specific and measurable triggers relating to habitat and population metrics. Overall, Alternative D would reduce impacts from wildfire, similar to Alternative B.

Impacts from Wild Horse and Burro Management
Impacts would be the same as described for Alternative B.

Impacts from Leasable Minerals Management
Management would be similar to Alternative B but would apply to PHMA, IHMA, and GHMA (see **Table 2-9**). In unleased areas of PHMA and IHMA, no exploration or leasing of fluid minerals would be allowed. GHMA would be open to leasing with stipulations. Policies for locatable and salable minerals are otherwise the same as under Alternative B.

Management under Alternative D would close 8.8 million acres of PHMA, IHMA and GHMA to fluid mineral leasing. Closure would increase protection of habitat associated with leks, which would impact 13 percent of the GRSG population for the sub-region, and by sub-population (**Table 4-31**). These approaches would reduce the impacts of mining on GRSG habitat, as described in **Section 4.2.2**, in ways similar to Alternative B, by closing nearly 9 million acres to fluid mineral leasing and protecting additional acreage using timing limitations.

Table 4-31
Alternative D: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Oil and Gas Leasing by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	44.4%	4
Mountain Valleys	93.1%	163
Southwest Montana	72.7%	46
North Side Snake	82.2%	263
South Side Snake	80.7%	160
Southwest Idaho	85.2%	153
Sawtooth	76.5%	0
Bear Lake	75%	8
Weiser	48.1%	0

Source: BLM GIS 2015

Management under Alternative D would close 2.2 million acres of PHMA, IHMA and GHMA to future nonenergy leasable mineral leasing. Impacts would be similar to those described for Alternative A, though would be reduced under Alternative D by requiring timing restrictions, BMPs, and restoration for existing leases (**Table 4-32**).

Impacts from Locatable Minerals Management
Alternative D would leave areas open for locatable mineral removal and would require operators to include measures to avoid or minimize adverse effects on GRSG and GSG habitat when 3809 Plans and notices are required (**Table 4-33**). RDFs for locatable minerals removal would be applied to PHMA, IHMA, and GHMA consistent with applicable law. As no additional habitat would be withdrawn from mineral entry, there would continue to be

Table 4-32
Alternative D: Percent of GRSG Habitat and Occupied Leks Within Areas Closed to Nonenergy Leasable Mineral Leasing by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	36.8%	3
Mountain Valleys	90.9%	138
Southwest Montana	66.3%	45
North Side Snake	78%	226
South Side Snake	76.1%	156
Southwest Idaho	83.7%	152
Sawtooth	75.7%	0
Bear Lake	84.6%	8
Weiser	37.2%	0

Source: BLM GIS 2015

Table 4-33
Alternative D: Percent of GRSG Habitat and Occupied Leks Affected by Mineral Withdrawal by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	5%	1
Mountain Valleys	12.7%	30
Southwest Montana	2.5%	3
North Side Snake	25%	57
South Side Snake	7.7%	8
Southwest Idaho	21.2%	29
Sawtooth	17.2%	0
Bear Lake	10.6%	2
Weiser	8.7%	0

Source: BLM GIS 2015

effects on GRSG and their habitat, as described in **Section 4.2.2**. Use of RDFs to the extent consistent with applicable law (see **Appendix B**) under this alternative might reduce these impacts as compared with Alternative A.

Impacts from Salable Minerals Management

Management under Alternative D would close acres to salable minerals removal. Closure would increase protection on habitat associated with leks (see **Table 4-34**).

Table 4-34
Alternative D: Percent of GRSG Habitat and Occupied Leks Affected by Closure to Salable Minerals by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	36.4%	4
Mountain Valleys	38.0%	135
Southwest Montana	32.3%	43
North Side Snake	40.5%	250
South Side Snake	34.5%	153
Southwest Idaho	40.7%	147
Sawtooth	12.7%	0
Bear Lake	42.8%	7
Weiser	7.0%	0

Source: BLM GIS 2015

Impacts from Land Uses and Realty Management (Wind and Geothermal Energy)

Under Alternative D, PHMA, GHMA, and IHMA would be designated ROW avoidance (but not exclusion) areas to allow for management flexibility (**Tables 4-3** and **4-4**). In PHMA, the BLM and Forest Service would exclude development of larger transmission facilities (greater than 50 kilovolts); wind and solar developments; commercial geothermal development; nuclear, gas, and oil developments; airports; paved and gravel roads; and landfills. Communication sites would not be excluded. In IHMA and GHMA, the BLM and Forest Service would avoid siting these facilities or would collocate them when possible in order to minimize impacts (see **Table 4-35**).

Table 4-35
Alternative D: Percent of GRSG Habitat and Occupied Leks Affected by ROW Exclusion or Avoidance by Population Area

Population Area	Habitat Area			Occupied Leks		
	Exclusion	Avoid with Exclusions	Avoidance	Exclusion	Avoid with Exclusions	Avoidance
East-central Idaho	0.5%	4.4%	95.1%	0	0	2
Mountain Valleys	1.5%	65.5%	32.8%	1	127	9
Southwest Montana	16.4%	42.5%	39.1%	0	38	1
North Side Snake	6%	61.9%	31.1%	5	201	8
South Side Snake	2.4%	45.5%	51.4%	3	130	34
Southwest Idaho	20.6%	60.6%	18.1%	29	122	2
Sawtooth	0.2%	0%	99.8%	0	0	0
Bear Lake	1.2%	59.9%	38.9%	0	6	1
Weiser	58.6%	0%	41.4%	1	0	0

Source: BLM GIS 2015

Impacts from Geothermal Energy Development on Sub-populations
Under this alternative, 8.8 million acres of PHMA, IHMA, and GHMA would be closed to geothermal development. This alternative leaves the remaining GRSG management areas open or limited for geothermal development (**Table 4-36**Error! Reference source not found.**Error! Reference source not found.**).

Table 4-36
Alternative D: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Geothermal Energy by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	37.4%	4
Mountain Valleys	88.4%	156
Southwest Montana	77.7%	45
North Side Snake	68.1%	255
South Side Snake	31.9%	154
Southwest Idaho	81.5%	153
Sawtooth	76.5%	0
Bear Lake	47.4%	8
Weiser	40.7%	0

Source: BLM GIS 2015

Impacts from Travel Management
Alternative D would limit OHVs to existing roads, primitive roads and trails on all BLM-administered lands within field offices containing GRSG habitat unless specific open areas have been previously designated to support recreational activities. None of these open areas would overlap PHMA or IHMA areas. Acres where OHVs would be limited to roads, primitive roads, and trails in entire BLM field offices containing GRSG habitat are shown on **Table 4-37**.

Table 4-37
Alternative D: Percent of GRSG Habitat and Occupied Leks Affected by Travel Management Designations by Population Area

Population Area	Habitat Area			Occupied Leks		
	Open[1]	Limited	Closed	Open[1]	Limited	Closed
East-central Idaho	0%	91%	9%	0	2	0
Mountain Valleys	0%	98.8%	1.2%	0	136	1
Southwest Montana	0%	98.2%	1.8%	0	40	0
North Side Snake	0.1%	93.8%	6.2%	0	209	5
South Side Snake	0%	80.4%	19.6%	0	164	3
Southwest Idaho	0%	96.7%	3.3%	0	126	27
Sawtooth	0%	100%	0%	0	0	0
Bear Lake	0%	99.6%	0.4%	0	7	0
Weiser	0%	99.6%	0.4%	0	1	0

Source: BLM GIS 2015

Table 4-37
Alternative D: Percent of GRSG Habitat and Occupied Leks Affected by Travel Management Designations by Population Area

Population Area	Habitat Area			Occupied Leks		
	Open[1]	Limited	Closed	Open[1]	Limited	Closed

[1] Acres closed to OHV travel represent existing acres closed. No additional areas would be closed under any alternative.

This approach would reduce the likelihood of impacts from infrastructure within GRSG habitat (PHMA, IHMA, and GHMA) and would support comprehensive travel management planning for the entire field office subsequent to this planning effort. Impacts from areas limited to existing roads are as described in **Section 4.2.2**.

Impacts from Adaptive Management

Alternative D includes an adaptive management strategy that would apply the more restrictive measures of PHMA to the IHMA areas if hard adaptive triggers were tripped. In Alternative D, adaptive management is evaluated at the population area scale, so if a population area trips a hard trigger then the IHMA areas within that population area would then be managed as PHMA on BLM-administered and National Forest System lands, until the habitat or population recovers and the trigger no longer applies. While the management actions and allocations described for this alternative are anticipated to reduce impacts on GRSG, an adaptive management approach is included in the event that habitat or populations continue to decline to the point that hard habitat or population triggers are tripped. **Table 4-38** describes the extent of habitat and number of occupied leks on BLM-administered and National Forest System IHMA that would be affected and managed as PHMA, should a trigger be tripped in a particular population area.

Table 4-38
Alternative D: Percent of GRSG Habitat and Occupied Leks Affected by Adaptive Management Trigger in IHMA by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	5.8%	1
Mountain Valleys	76.6%	4
Southwest Montana	79.9%	0
North Side Snake	48.9%	6
South Side Snake	83.6%	28
Southwest Idaho	82.3%	1
Sawtooth	0%	0
Bear Lake	27.2%	0
Weiser	42.2%	0

Source: BLM GIS 2015

Impacts from Special Designations Management

Impacts from ACEC management under Alternative D are the same as those described for Alternative A (**Table 4-7**).

4.2.9 Alternative E

Under Alternative E, the BLM and Forest Service would manage to maintain, conserve, enhance, and restore sagebrush ecosystems. CHZ, IHZ, and GHZ would be designated in Idaho, with PHMA and GHMA in Montana and PHMA in Utah (**Table 4-15**). In CHZ and IHZ, the BLM and Forest Service would incorporate management flexibility to permit high value infrastructure with appropriate mitigation and best management practices tailored for the sub-region. Management and impacts are similar to Alternative D, though Alternative E would require less stringent use restrictions, as the disturbance cap would be applied to fluid mineral development only and would restrict development to 5 percent disturbance. Further, Alternative E would designate the least amount of CHZ compared to the other alternatives' management area designations.

Impacts from Vegetation and Soils Management

Alternative E categorizes management areas within Idaho into CHZ, IHZ, and GHZ. For lands within Utah, management areas are categorized as PHMA, and Montana management areas would be the same as Alternative A (see **Table 4-15**). CHZ would receive the highest degree of protection and management would focus on the maintenance and enhancement of habitats, populations, and connectivity. In important habitat these goals would coexist with high-value infrastructure projects.

Vegetation dynamics modeling shows the same trend under Alternative E compared with Alternative D; even though habitat condition trends appear to be slightly downward after 50 years, the model projections still show that habitat is meeting desired conditions.

Alternative E would maintain the policies described under Alternative A, along with additional provisions to protect CHZ, IHZ, and GHZ. These habitats would be managed to prevent invasion. Invasive plants threatening GRSG habitat would be eradicated or controlled in CHZ and IHZ. Invasive plants would be monitored for three years following a fire. The policies under Alternative E would reduce the impacts from invasive plants in these habitats to a limited degree compared with Alternative A, though current management already addresses this threat.

Under Alternative E, the BLM and Forest Service would prioritize the removal of conifers. This would be accomplished through methods appropriate for the terrain and most likely to facilitate GRSG population and habitat recovery in core and important habitat through methods determined appropriate for the terrain at the site-specific level. In addition, as described in **Section 4.2.6**, CHZ, IHZ, and GHZ would be managed to prevent invasion.

The policies under Alternative E would do more to reduce the impacts from conifer encroachment described under **Section 4.2.2** compared with Alternative A.

Table 4-39, Alternative E: Percent of GRSG Habitat Designations and Occupied Leks within each Conservation Area, describes the acres of CHZ, IHZ and GHZ and occupied leks within each conservation area.

Table 4-39
Alternative E: Percent of GRSG Habitat Designations and Occupied Leks within each Conservation Area

Population Area	Habitat Area			Occupied Leks		
	CHZ	IHZIHMA	GHZ	CHZ	IHZ	GHZ
Mountain Valleys	41%	32%	27%	64.5	31.8	3.6
Desert	41%	17%	43%	73.3	11.1	15.6
West Owyhee	60%	23%	17%	51.8	39.6	8.6
Southern	29%	33%	38%	82.4	16.9	0.7

Source: BLM GIS 2015

Impacts from Livestock Grazing Management

Management under Alternative E would add GRSG guidelines to grazing management plans in core and important habitats. Land health assessments would be prioritized in areas with declining GRSG populations, subject to existing legal requirements, and management changes would be tailored to specifically address GRSG habitat objectives. In core areas, grazing plans could be altered by enhancing grazing in areas with lower habitat value. Acreage closed to grazing is shown in **Table 4-5**. These efforts would reduce impacts from grazing on GRSG, relative to Alternative A.

Impacts from Fire and Fuels Management

Alternative E would focus resources to reduce wildfire in sagebrush areas. It would prioritize fire suppression in CHZ, IHZ, and GHZ and would maintain fuel breaks in core and important habitat. Fuels treatments would protect existing sagebrush ecosystems. Fire response times to CHZ and IHZ would be reduced to limit fire damage. Alternative E includes an adaptive management strategy based on population and habitat triggers for each conservation area. These policies may limit the prevalence of wildfire in sagebrush areas and would reduce damage to GRSG habitat; impacts are similar to those described for Alternative B.

Impacts from Wild Horse and Burro Management

Impacts would be the same as described for Alternative A.

Impacts from Leasable Minerals Management

Alternative E would designate CHZ and IHZ as open to oil and gas leasing subject to an NSO stipulation. In CHZ in Idaho, Alternative E would stipulate that the Idaho BLM State Director may waive the stipulation only in situations where the development will not accelerate and/or cause declines in GRSG populations within the relevant CA, based on the application of certain criteria. Development would be allowed in important habitat if it would not cause a decline in GRSG populations. The policy does not state how such an

assurance would be provided in advance of development. Impacts on GRSG from energy development would be reduced, relative to Alternative A.

Under Alternative E, 2.6 million acres would be closed to oil and gas leasing. Closure would increase protection on habitat associated with leks (**Table 4-40**, Alternative E: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Oil and Gas Leasing by Population Area).

Table 4-40
Alternative E: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Oil and Gas Leasing by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	31.9%	2
Mountain Valleys	93%	162
Southwest Montana	51.1%	42
North Side Snake	72%	244
South Side Snake	73.3%	148
Southwest Idaho	85.5%	152
Sawtooth	75.8%	0
Bear Lake	90.6%	6
Weiser	28.9%	0

Source: BLM GIS 2015

Under Alternative E, 2.1 million acres of GRSG habitat would be closed to nonenergy leasable mineral leasing. Closure would increase protection on habitat associated with leks (**Table 4-41**).

Table 4-41
Alternative E: Percent of GRSG Habitat and Occupied Leks Within Areas Closed to Nonenergy Leasable Mineral Leasing by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	21.2%	1
Mountain Valleys	26.5%	18
Southwest Montana	23.8%	1
North Side Snake	13.6%	12
South Side Snake	8.4%	7
Southwest Idaho	18.5%	29
Sawtooth	75.7%	0
Bear Lake	24.6%	2
Weiser	0.6%	0

Source: BLM GIS 2015

Impacts from Locatable Minerals Management

Impacts would be the same as described for Alternative A.

Impacts from Salable Minerals Management

Management under Alternative E would close areas to salable minerals removal. Closure would increase protection on habitat associated with leks (see **Table 4-42**).

Table 4-42
Alternative E: Percent of GRSG Habitat and Occupied Leks Affected by Closure to Salable Minerals by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	57.7%	5
Mountain Valleys	41.7%	164
Southwest Montana	33.9%	46
North Side Snake	2.3%	264
South Side Snake	18.7%	163
Southwest Idaho	11.5%	153
Sawtooth	0%	0
Bear Lake	56.4%	7
Weiser	0%	0

Source: BLM GIS 2015

Impacts from Land Uses and Realty Management (Wind Energy)

Under Alternative E, CHZ and IHZ would be identified as ROW avoidance areas (**Tables 4-3** and **4-4**). The BLM and Forest Service would collocate new ROWs or SUAs with existing infrastructure. They would aim to remove, bury, or modify existing power lines in these areas when possible. In important habitat areas, new infrastructure could be built if habitat protection criteria were met. In CHZ, no new infrastructure would be permitted, except in-place upgrades. (**Table 4-43**).

Table 4-43
Alternative E: Percent of GRSG Habitat and Occupied Leks Affected by ROW Exclusion or Avoidance by Population Area

Population Area	Habitat Area			Occupied Leks		
	Exclusion	Avoid with Exclusions	Avoidance	Exclusion	Avoid with Exclusions	Avoidance
East-central Idaho	0%	0%	10.5%	0	0	0
Mountain Valleys	1.5%	0%	84.5%	1	0	135
Southwest Montana	14.6%	0%	27.5%	0	0	1
North Side Snake	6%	0%	59.3%	5	0	185
South Side Snake	2.5%	0%	70.7%	3	0	152
Southwest Idaho	20.6%	0%	65.9%	29	0	123
Sawtooth	0.2%	0%	97.2%	0	0	0
Bear Lake	0.6%	0%	84%	0	0	6
Weiser	58.6%	0%	41.3%	1	0	0

Source: BLM GIS 2015

Impacts from Geothermal Energy

Under this alternative, over 2.6 million acres of CHZ, IHZ, and GHZ would be closed to geothermal development. This alternative leaves the remaining GRSG management areas open or with an NSO stipulation for geothermal development (**Table 4-44**).

Table 4-44
Alternative E: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Geothermal Energy by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	31.1%	2
Mountain Valleys	93.2%	162
Southwest Montana	51%	42
North Side Snake	72.2%	244
South Side Snake	73.5%	149
Southwest Idaho	85.5%	152
Sawtooth	75.8%	0
Bear Lake	88.1%	6
Weiser	28.7%	0

Source: BLM GIS 2015

Impacts from Travel Management

Alternative E would prioritize travel and transportation planning to minimize impacts on GRSG from road travel. It also would reduce the risk of wildfire from cross-country OHV travel because OHVs would be restricted to existing routes in CHZ and IHZ. Timing and seasonal restrictions would be applied to activities known to disturb nesting GRSG while travel management planning is underway. Impacts from roads and ROWs in CHZ and IHZ would be reduced, compared with Alternative A. Impacts from road construction and use in collocated areas and GHZ are similar to Alternative A. **Table 4-45** describes the percent of habitat and occupied leks affected by travel management decisions in this alternative.

Impacts from Adaptive Management

As described in Chapter 2, Alternative E includes an adaptive management strategy composed of soft and hard triggers that are based on population and habitat changes. Each trigger is determined by conservation area, so the strategy is more locally responsive than if triggers were determined on a sub-regional or statewide basis. When a conservation area meets a soft trigger there is no required adaptive response. When a hard trigger is met, the IHZ areas within that conservation area would be managed according to the CHZ regulations primarily impacting the ability to consider infrastructure projects until the habitat or population recovers and the trigger no longer applies. The Implementation Task Force would be engaged in situations where a soft trigger is met or when the cause of meeting the hard trigger is related to wildfire or invasive species or to analyze the secondary threats to determine the appropriate management response. The triggers are based on lek monitoring

Table 4-45
Alternative E: Percent of GRSG Habitat and Occupied Leks Affected by Travel Management Designations by Population Area

Population Area	Habitat Area			Occupied Leks		
	Open[1]	Limited	Closed	Open[1]	Limited	Closed
East-central Idaho	0.5%	87.4%	12.1%	0	2	0
Mountain Valleys	9.3%	89.6%	1.2%	2	134	1
Southwest Montana	0%	99%	1%	0	40	0
North Side Snake	48.4%	45.4%	6.2%	42	168	5
South Side Snake	0%	80.5%	19.5%	11	154	3
Southwest Idaho	11.2%	85.5%	3.3%	0	126	27
Sawtooth	0%	100%	0%	0	0	0
Bear Lake	0%	99.4%	0.6%	0	6	0
Weiser	71.3%	28.3%	0.4%	0	1	0

Source: BLM GIS 2015
[1]Acres closed to OHV travel represent existing acres closed. No additional areas would be closed under any alternative.

completed and compiled by IDFG on an annual basis and on habitat change. **Table 4-46** describes the percentage of habitat and percentage of occupied leks that would be affected should a trigger be met in a particular population area.

Table 4-46
Alternative E: Percent of GRSG Habitat and Occupied Leks Affected by Adaptive Management Trigger in IHZ by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	0%	0
Mountain Valleys	70.9%	38
Southwest Montana	0%	0
North Side Snake	43.6%	37
South Side Snake	82.5%	67
Southwest Idaho	81.2%	29
Sawtooth	0%	0
Bear Lake	29.8%	2
Weiser	0%	0

Source: BLM GIS 2015

Impacts from Special Designations Management

Impacts from ACEC management under Alternative E are the same as those described for Alternative A (**Table 4-7**).

4.2.10 Alternative F

Management under Alternative F would be largely similar to that described for Alternative B, though with more stringent guidance and restrictive management in sagebrush ecosystems. PHMA, GHMA and RHMA would be designated (**Table 4-15**). Impacts from implementing the maximum 3 percent disturbance cap are similar to those described for Alternative B; however, under Alternative F, all surface disturbances (including human disturbance and fire) would count toward this cap. This would further reduce the acreage of vegetation that would be removed or fragmented within all occupied habitat over the long term.

Impacts from Vegetation and Soils Management

Management under Alternative F generally would repeat management actions described under Alternative B with exceptions such as reduced treatment of invasive conifer.

Management under Alternative F would provide about the same level of protection as Alternative B or slightly less. Habitat trends for 10 and 50 years would improve compared with Alternative A and would be similar to Alternative B.

Alternative F would maintain the policies described under Alternative A, along with additional provisions to limit invasive weed spread. It would restrict activities that spread invasives and would ensure the health of vegetation and soil in GRSG habitat. Alternative F also includes post-fire treatment of invasives. Alternative F would prioritize restoration, including reducing invasive plants, as described under Alternative B. These policies would reduce impacts from invasive plants, compared to Alternative A, to a limited degree, though current management already addresses this threat.

Impacts from Livestock Grazing Management

Management under Alternative F would retain the same number of acres open and the same number of acres closed to livestock grazing as found under Alternative A and, therefore, would affect the same percentage of the sub-region's GRSG population. However, management under Alternative F would be more restrictive than Alternative A, with a 25 percent reduction of grazing in each population area and new water developments using spring or seep sources restricted within GRSG habitat. In addition, all prescriptions related to livestock management would apply to all GRSG habitats.

Alternative F includes a reduction in AUMs calculated by applying a 25 percent reduction to the three-year average of billed use. Management under Alternative F would also require that water developments be analyzed and modified or removed if they are found to be impacting a riparian area. Similar modification or removal standards would be applied to other existing range developments such as fences. No salt or other supplements would be allowed. Ensuring riparian areas are at PFC would be the same as for Alternative A. Compared with Alternative A, management under Alternative F would provide more indirect benefits to GRSG. This is because it would increase upland and riparian nesting and brood-rearing habitat amount and quality by reducing by 25 percent livestock grazing each year. Also, it would remove certain livestock-related structures such as fences.

Impacts from Fire and Fuels Management

Impacts would be similar to those under Alternative B, except that a 25 percent reduction in grazing may increase fuel loads in those areas where grazing no longer occurs. Although grazing can be an effective tool to reduce fuel loads, research indicates grazing alters fuel composition and reduces resistance to invasive annual grasses (see **Section 4.3**, Vegetation). Therefore, fine fuel loads and fire frequency in cheatgrass-infested GRSG habitat may not be affected by the absence of grazing.

Impacts from Wild Horse and Burro Management

Impacts would be the same as described for Alternative A.

Impacts from Leasable Minerals Management

Management under Alternative F would close PHMA and GHMA to fluid mineral leasing, including geothermal energy and nonenergy leasable mineral leasing. Quantitative impacts would be the same as for Alternative B.

Impacts from Locatable Minerals Management

Impacts from locatable minerals management would be the same as for Alternative B.

Impacts from Salable Minerals Management

Management under Alternative F would close areas to salable minerals removal. Closure would increase protection on habitat associated with leks (see **Table 4-47**).

Table 4-47
Alternative F: Percent of GRSG Habitat and Occupied Leks Affected by Closure to Salable Minerals by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	40	3
Mountain Valleys	93.1	159
Southwest Montana	80.8	47
North Side Snake	76.3	262
South Side Snake	79	157
Southwest Idaho	80.4	152
Sawtooth	75.8	0
Bear Lake	93.3	7
Weiser	35.4	0

Source: BLM GIS 2015

Impacts from Land Uses and Realty Management

Under Alternative F, most GHMA would be managed as avoidance areas for new ROWs and all PHMA habitats would be managed as ROW exclusion for new permits with exceptions for collocation of projects within existing footprints and valid, existing rights (**Table 4-48**). Under this alternative, 8.5 million acres would be managed as ROW exclusion. ROW exclusion would protect over eight times more acres of GRSG habitat than under

Alternative A. Management under Alternative F would also include actions to reclaim or modify existing ROWs that may impact GRSG directly (e.g., fences) or indirectly benefit their habitat (e.g., restoring a non-used road). Management under Alternative F would retain public ownership of PHMA where it benefitted overall GRSG habitat and propose PHMA for mineral withdrawal. Management under Alternative F would be expected to provide greater direct protections to GRSG than Alternative A due to the larger number of acres under Alternative F being in the ROW exclusion category. Indirect impacts on habitat would be expected to also be less than Alternative A.

Table 4-48
Alternative F: Percent of GRSG Habitat and Occupied Leks Affected by ROW Exclusion or Avoidance by Population Area

Population Area	Percent of Habitat Area			Number of Occupied Leks		
	Exclusion	Avoid with Exclusions	Avoidance	Exclusion	Avoid with Exclusions	Avoidance
East-central Idaho	15.4	0	84.6	1	0	1
Mountain Valleys	81.7	0	18.1	132	0	5
Southwest Montana	64.3	0	33.6	38	0	1
North Side Snake	69.3	0	21.3	212	0	2
South Side Snake	71.2	0	26.7	160	0	7
Southwest Idaho	79.4	0	14	152	0	1
Sawtooth	0.2	0	99.8	0	0	0
Bear Lake	89.5	0	10.5	6	0	0
Weiser	48.5	0	31.1	1	0	0

Source: BLM GIS 2015

Impacts from Renewable Energy Management

Impacts from Wind Energy Development
Impacts would be the same as described for Alternative B. Under Alternative F, wind energy projects would not be sited within occupied GRSG habitat or within five miles of an active lek. This would result in 8.6 million acres managed as ROW exclusion.

Impacts from Geothermal Energy Development
Impacts from geothermal energy management would be the same as those presented for Alternative B.

Impacts from Travel and Transportation Management

Impacts from travel and transportation management under Alternative F would be similar to those described for Alternative B. Acres and leks protected would be slightly different due to the management of RHMA under Alternative F (**Table 4-49**).

Table 4-49
Alternative F: Percent of GRSG Habitat and Occupied Leks Affected by Travel Management Designations by Population Area

Population Area	Percent of Habitat Area			Number of Occupied Leks		
	Open[1]	Limited	Closed	Open[1]	Limited	Closed
East-central Idaho	0	87.9	12.1	0	2	0
Mountain Valleys	0	98.8	1.2	0	136	1
Southwest Montana	0	99	1	0	40	0
North Side Snake	8.7	85.6	5.7	2	210	5
South Side Snake	0	81.4	18.6	0	165	3
Southwest Idaho	0.1	96.6	3.3	0	126	27
Sawtooth	0	100	0	0	0	0
Bear Lake	0	99.4	0.6	0	6	0
Weiser	12.3	87.4	0.3	0	1	0

Source: BLM GIS 2015
[1]Acres closed to OHV travel represent existing acres closed. No additional areas would be closed under any alternative.

Impacts from Special Designations Management
Under Alternative F, the BLM would designate one of two sub-alternatives: F1, which would designate all PPH as an ACEC, and F2, which would designate a subset of PPH as an ACEC (**Table 4-7**). Impacts from management of ACECs are as described under **Section 4.2.2** and impacts from Zoological Areas are expected to be similar.

4.2.11 Proposed Plan

Impacts from Lands and Realty Management
Under the Proposed Plan, PHMA and IHMA would be identified as ROW/SUA avoidance areas to allow for management flexibility (**Table 4-3**). However, PHMA would be exclusion areas specifically for wind and solar developments. In practice, new ROWs/SUAs in PHMA would not be allowed except in accordance with the Anthropogenic Disturbance Screening Criteria outlined in the Proposed Plan. In IHMA new ROWs/SUAs could be considered if in accordance with the IHMA Anthropogenic Disturbance Development Criteria. The BLM and Forest Service would collocate new ROWs or SUAs with existing infrastructure when possible. The Proposed Plan would apply at implementation a protective buffer from disturbance around leks in PHMA, IHMA and GHMA, depending on the type of disturbance and based on the latest science (USGS 2014a), to be applied at implementation. BLM and Forest Service retain management flexibility to route ROWs/SUAs to minimize overall impacts on GRSG habitat. Existing ROW/SUA corridors are preferred for collocation of new ROWs/SUAs, but could not be widened more than 50 percent greater than the original footprint. These measures would protect GRSG and their habitats from fragmentation, disturbance and predation, and other impacts, as described in **Section 4.2.2**, associated with ROW construction, operations and maintenance.

There is projected to be no impact from excluding solar energy development on National Forest System land in the planning area. This is because there is limited potential for solar energy development on these lands.

Under the Proposed Plan, land tenure adjustments would include retaining lands with GRSG habitat with exceptions for when there would be no impact or a net conservation gain for GRSG. Exchanges would be allowed if they were to increase the extent or provide for connectivity of habitat. Retention of areas with GRSG would reduce the likelihood of habitat conversion to agriculture, urbanization, or other uses that would remove sagebrush habitat and potentially impact sensitive plants. **Tables 4-50** and **4-51** show the percentage of GRSG habitat and occupied leks affected by major and minor ROW/SUA exclusion or avoidance by population area.

Table 4-50
Proposed Plan: Percent of GRSG Habitat and Occupied Leks Within ROW/SUA Exclusion or Avoidance Areas for Major ROWs/SUAs by Population Area

Population Area	Percent of Habitat Area		Number of Occupied Leks	
	Exclusion	Avoidance	Exclusion	Avoidance
East-central Idaho	0	52.8	0	1
Mountain Valleys	1	92.3	1	135
Southwest Montana	14.6	65.1	0	38
North Side Snake	6	64.7	5	202
South Side Snake	2.8	81.2	4	161
Southwest Idaho	20.4	68.7	29	124
Sawtooth	0.2	99.8	0	0
Bear Lake	0.5	96.8	0	7
Weiser	49.4	31.8	1	0

Source: BLM GIS 2015

Impacts from Habitat Restoration and Vegetation Management

Results from the VDDT are presented in **Table 4-52** below; this modeling is described further in **Appendix X**. Stand replacement wildfire, mosaic wildfire, overgrazing, insects and disease, and conifer encroachment were incorporated into the model to quantify changes in GRSG habitat. The modeling did not include changes in habitat conditions associated with climate change or with permitted activities, such as infrastructure development, travel management, and mineral development.

The model also estimated treatment acres required to meet target sagebrush habitat quality goals. Based on guidelines provided by the GRSG National Technical Team Report (NTT 2011), 70 percent of an area should be in 10 to 30 percent sagebrush canopy cover to meet GRSG sagebrush habitat objectives. The tables included as part of the vegetation impacts

for each alternative present the percentage of a given GRSG analysis area meeting GRSG sagebrush habitat objectives by alternative after 10 years and 50 years.

Table 4-51
Proposed Plan: Percent of GRSG Habitat and Occupied Leks Within ROW/SUA Exclusion or Avoidance Areas for Minor ROWs/SUAs by Population Area

Population Area	Percent of Habitat Area		Number of Occupied Leks	
	Exclusion	Avoidance	Exclusion	Avoidance
East-central Idaho	0	52.8	0	1
Mountain Valleys	1	92.3	1	135
Southwest Montana	14.6	65.1	0	38
North Side Snake	6	64.7	5	202
South Side Snake	2.8	81.2	4	161
Southwest Idaho	20.4	68.7	29	124
Sawtooth	0	99.8	0	0
Bear Lake	1	96.8	0	7
Weiser	49.4	31.8	1	0

Source: BLM GIS 2015

Table 4-52
Proposed Plan: Modeled Habitat Trends by Analysis Area

Analysis Area	No Action Modeled[1] Habitat Condition and Trend[2]			Proposed Plan Modeled[1] Habitat Condition and Trend[2]		
	Initial Condition	10 Year Condition	50 Year Condition	Initial Condition	10 Year Condition	50 Year Condition
9 (Bear Lake)	84%	77%	67%	84%	80%	73%
18 (East-Central Idaho)	98%	90%	79%	98%	90%	79%
23 (North Side Snake, Mountain Valleys)	85%	78%	73%	85%	79%	70%
25 (Weiser)	74%	77%	75%	74%	78%	77%
26 (Southwest Idaho	73%	70%	62%	73%	72%	70%
19 (Southwest Montana)	98%	90%	81%	98%	91%	81%

Source: Forest Service GIS 2015
[1]The outputs are not absolutes and are bound by the assumptions and limitations of the data.
[2]Habitat condition percentages are the amount of the analysis area that meets 10 to 30 percent sagebrush cover.

The acres of treatment proposed in each of the analysis areas are necessary to improve or maintain habitat conditions. The Proposed Plan provides treatment acres by decade sufficient to meet desired habitat conditions (70 percent of the analysis area meeting 10 to 30 percent sagebrush cover; NTT 2011). The trends reflect the combined treatment acres in both BLM and Forest Service Proposed Plans, compared to the treatment rates and types occurring under the No Action Alternative.

In the Alternative A model, results show a declining trend in 5 out of 6 of the analysis areas. Analysis areas 9 and 26 at 50 years would be below the desired conditions, meaning less suitable habitat would be available for GRSG than currently exist, which could result in GRSG population declines in those areas. For the other analysis areas (18, 23, 25, and 19), GRSG populations should remain stable, absent other factors that may not have been accounted for in the model.

In the Proposed Plan, results indicate all areas would meet or exceed desired conditions, based on the vegetation treatment objectives. For all areas GRSG populations should remain stable or would improve, absent other factors that may not have been accounted for in the model.

Conifer removal can provide immediate benefit to GRSG by restoring habitat quality, whereas other vegetation management projects aimed at restoring sagebrush may aid GRSG over the long term, but would not provide immediate habitat improvement. Under the Proposed Plan, the BLM and Forest Service would include treatment programs to reduce the likelihood of conifer encroachment and further improve GRSG abundance and distribution. A total of 107,000 acres of BLM-administered lands and 22,000 acres of National Forest System lands would be treated with mechanical means or prescribed fire to reduce conifer encroachment. Conifer removal would facilitate GRSG population and habitat recovery through methods determined appropriate for the terrain at the site-specific level. Thus, the vegetation management tools described in the Proposed Plan would help to reduce encroachment and improve GRSG habitat.

The policies under the Proposed Plan would also reduce the impacts from invasive plants in these habitats, compared with Alternative A. The Proposed Plan also includes GRSG seasonal habitat objectives (**Tables 2-3** and **2-6**). Monitoring and mitigation components of the Proposed Plan would help to ensure that these seasonal habitat objectives are met.

Impacts from Wildland Fire Management

The Proposed Plan would focus resources to reduce wildfire in sagebrush areas. It would maintain fuel breaks in PHMA and IHMA. Fire response times to PHMA and IHMA would be reduced to limit fire damage. The recommendations from the BLM Fire and Invasives Assessment Tool (FIAT; **Appendix D**) will direct field offices to prioritize landscapes for fire prevention and fuels management within GRSG habitat to minimize the risk of wildfire in PHMA and IHMA. Fuels management treatments and post-fire rehabilitation projects in PHMA would focus on maximizing benefits on GRSG habitats using the resistance and resilience concepts in Chambers et al. (2014), coupled with the FIAT assessments. These concepts would reduce impacts from invasive annual grasses and altered fire regimes on the

sagebrush ecosystem. They also would reduce the rate of conifer encroachment in order to reduce GRSG habitat fragmentation and maintain or reestablish habitat connectivity over the long-term and at a landscape scale. The use of prescribed fire in GRSG habitat would be avoided unless evaluation of site-specific conditions showed a net benefit to GRSG. All of these measures would reduce habitat loss for GRSG.

The Proposed Plan includes an adaptive management strategy based on population and habitat triggers for each conservation area. Adaptive management would expand more restrictive management based on specific and measurable triggers relating to habitat and population metrics, for example, grazing may be restricted in areas adjacent to burns in order to restore habitat capable of supporting GRSG. Enhanced monitoring would be conducted in restoration areas under the Proposed Plan. These policies are designed to limit the prevalence of wildfire in sagebrush areas and would reduce damage to GRSG habitat more than current management.

Impacts from Leasable Minerals Management

Under the Proposed Plan, in unleased areas of PHMA and IHMA, an NSO stipulation would be applied without waivers or modifications. In SFA, NSO stipulations would apply without waiver, exception, or modification. Outside SFA, exceptions to NSO would be considered under certain criteria. GHMA would be open to leasing with BMPs, RDF, and buffer zones (**Appendices B, C** and **DD**). Restrictive stipulations would increase protection of habitat associated with leks by avoiding surface disturbance during sensitive times and would reduce the impacts of mining on GRSG habitat, as described in **Section 4.1.2**. Mitigation requirements would be implemented to ensure a net conservation gain for GRSG. **Table 4-53** shows the percentage of GRSG habitat and occupied leks in areas closed or with NSO stipulations for oil and gas leasing by population area. **Table 4-54** shows the percentage of GRSG habitat and occupied leks in areas closed or with NSO stipulations for geothermal energy by population area.

Table 4-53
Proposed Plan: Percent of GRSG Habitat and Occupied Leks in Areas Closed or with NSO Stipulations for Oil and Gas Leasing by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	31.5	2
Mountain Valleys	94.7	162
Southwest Montana	80.8	47
North Side Snake	72.5	256
South Side Snake	83.6	160
Southwest Idaho	89.1	153
Sawtooth	75.8	0
Bear Lake	96.3	8
Weiser	23	0

Source: BLM GIS 2015

Table 4-54
Proposed Plan: Percent of GRSG Habitat and Occupied Leks Within Areas Closed or with NSO Stipulations for Geothermal Energy by Population Area

Population Area	Habitat Area	Occupied Leks
East-central Idaho	30.5	2
Mountain Valleys	94.6	162
Southwest Montana	80.8	46
North Side Snake	72.9	256
South Side Snake	83.7	161
Southwest Idaho	89.1	153
Sawtooth	75.8	0
Bear Lake	95.2	8
Weiser	22.9	0

Source: BLM GIS 2015

Under the Proposed Plan, PHMA would be closed to nonenergy leasable mineral leasing. IHMA and GHMA within KPLAs would be open to leasing, while IHMA outside KPLAs would be open subject to the anthropogenic disturbance development criteria and the disturbance cap as well as RDF, buffers, and seasonal timing restrictions (**Appendices B, C, and DD**). Restrictive stipulations would increase protection of habitat associated with leks by avoiding surface disturbance during sensitive times and would reduce the impacts of mining on GRSG habitat, as described in **Section 4.1.2**. Mitigation requirements would be implemented to ensure a net conservation gain for GRSG. **Table 4-55** shows the percentage of GRSG habitat and occupied leks in areas closed to nonenergy leasable mineral leasing by population area.

Table 4-55
Proposed Plan: Percent of GRSG Habitat and Occupied Leks in Areas Closed to Nonenergy Leasable Mineral Leasing by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	21.5%	1
Mountain Valleys	60.3%	105
Southwest Montana	70.4%	45
North Side Snake	43%	189
South Side Snake	39.9%	84
Southwest Idaho	68.3%	141
Sawtooth	75.7%	0
Bear Lake	67.4%	6
Weiser	0.6%	0

Source: BLM GIS 2015

Impacts from Nonenergy Leasable Minerals Management

Under the Proposed Plan, PHMA areas outside KPLAs would be closed to leasing, while IHMA would be open to leasing in accordance with the Anthropogenic Disturbance Development Criteria, as well as RDFs, BMPs, buffers (based on the USGS 2014 study, and seasonal timing restrictions (**Appendices B, C** and **DD**). In GHMA, lands will remain available for leasing subject to RDFs, BMPs, buffers, timing restrictions and stipulations. These provisions may have little impact on GRSG because phosphate resources are located primarily in southeastern Idaho in nonhabitat areas for GRSG. To the extent that phosphate resources are located in GRSG habitat, the provisions provided under the Proposed Plan would protect the habitat from impacts associated with mineral exploration.

Impacts from Locatable Minerals Management

Currently, BLM-administered and National Forest System lands within the sub-region are generally open to locatable mineral development. Mitigation of effects on GRSG and its habitat are identified through the NEPA process approving plans of operation. Goals and objectives for locatable minerals are to provide opportunities to develop the resource while preventing undue or unnecessary degradation of BLM-administered and National Forest System lands.

Under the Proposed Plan, all SFA would be recommended for withdrawal from locatable mineral entry. In addition, consistent with applicable law, the Proposed Plan would require operators to include mitigation measures required to prevent unnecessary or undue degradation as defined in 43 CFR 3809.415. RDFs for locatable minerals removal would be applied to PHMA, IHMA and GHMA consistent with applicable law. As no additional habitat would be withdrawn from mineral entry, there would continue to be effects on GRSG and their habitat. Use of RDFs to the extent consistent with applicable law and buffers (**Appendices B, C,** and **DD**) under the Proposed Plan might reduce these impacts, compared to Alternative A. **Table 4-56** shows the percentage of GRSG habitat and occupied leks affected by mineral withdrawal by population area.

Table 4-56
Proposed Plan: Percent of GRSG Habitat and Occupied Leks Within Existing and Proposed Locatable Mineral Withdrawals by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	6.1	1
Mountain Valleys	43.7	87
Southwest Montana	2.5	3
North Side Snake	47.2	191
South Side Snake	31.4	76
Southwest Idaho	58.7	120
Sawtooth	17.2	0
Bear Lake	8.9	2
Weiser	8.4	0

Source: BLM GIS 2015

Impacts from Salable Minerals Management

Under the Proposed Plan, PHMA would be closed to new development, while IHMA would be open subject to Anthropogenic Disturbance Development Criteria. Closure would increase protection on habitat associated with leks and GRSG habitat across the broader landscape (**Table 4-11**). In addition, buffer zones, RDFs and BMPs (**Appendices B, C,** and **DD**) associated with development in GRSG habitat would provide improved protection from disturbance associated with salable mineral development. **Table 4-57** shows the percentage of GRSG habitat and occupied leks affected by closure to salable minerals by population area.

Table 4-57
Proposed Plan: Percent of GRSG Habitat and Occupied Leks Affected by Closure to Salable Minerals by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	22.6	1
Mountain Valleys	61.5	127
Southwest Montana	68.9	45
North Side Snake	44.7	210
South Side Snake	39.8	84
Southwest Idaho	68.3	141
Sawtooth	12.7	0
Bear Lake	59.4	5
Weiser	0	0

Source: BLM GIS 2015

Impacts from Travel and Transportation Management

The Proposed Plan would prioritize travel planning to designate specific routes and roads within open and closed areas. In the meantime, it would limit OHV travel to existing roads and trails on all BLM-administered lands within field offices containing GRSG habitat, unless specific open areas have been previously designated to support recreational activities. Negative impacts would occur on a small scale in open areas. Timing and seasonal restrictions would be applied to activities known to disturb nesting GRSG while travel management planning is underway.

Under the Proposed Plan, impacts from roads and ROWs/SUAs in PHMA and IHMA would be reduced, compared with Alternative A. Impacts from road construction and use in collocated areas and GHMA are similar to Alternative A. **Table 4-58** shows the percentage of GRSG habitat and occupied leks affected by travel management designations by population area.

Table 4-58
Proposed Plan: Percent of GRSG Habitat and Occupied Leks in Each Travel Management Designation by Population Area

Population Area	Percent of Habitat Area			Number of Occupied Leks		
	Open[1]	Limited	Closed	Open[1]	Limited	Closed
East-central Idaho	0	84.9	15.1	0	2	0
Mountain Valleys	0.1	98.9	1	0	136	1
Southwest Montana	0	99	1	0	40	0
North Side Snake	0.1	94.2	5.8	0	212	5
South Side Snake	0	96.5	3.5	0	164	4
Southwest Idaho	0	81.2	18.8	0	126	27
Sawtooth	0	100	0	0	0	0
Bear Lake	0	99.5	0.5	0	7	0
Weiser	0	99.7	0.3	0	1	0

Source: BLM GIS 2015
[1]Acres closed to OHV travel represent existing acres closed. No additional areas would be closed under any alternative.

Impacts from Livestock Grazing Management

Under current management, 11,073,800 acres of identified GRSG habitat are open for livestock grazing (**Table 4-5**). Livestock grazing is managed through existing grazing plans, with methods and guidelines from the existing plans followed to maintain ecological conditions according to Standards for Rangeland Health, which include maintaining healthy, productive and diverse populations of native plants and animals. Direct impacts on GRSG have been reduced in some areas due to GRSG-specific management found in some conservation strategies or LUPs.

Range improvements are designed to meet both wildlife and range objectives, and include building, modifying or marking fences to permit passage of wildlife and reduce the chance of bird strikes. Modifications may involve moving troughs, adding or changing wildlife escape ramps, or ensuring water is available on the ground for a variety of different wildlife species. Although not directly created to protect GRSG, these approaches would protect and enhance GRSG habitat by diverting livestock from sensitive areas, thereby reducing the likelihood of surface disturbance in these areas.

Management under the Proposed Plan would add GRSG guidelines to grazing management plans in PHMA, IHMA, and GHMA. Land health assessments would be prioritized in SFA and PHMA, and management changes would be tailored to specifically address GRSG habitat objectives. When an allotment becomes vacant or grazing preference is relinquished in PHMA, IHMA, and GHMA, retirement of the allotment or grazing preference would be considered if it would maintain or enhance GRSG habitat. In addition, the NEPA analysis for renewals and modifications of livestock grazing permits that include lands in SFA and PHMA would include specific management thresholds based on GRSG habitat objectives.

Defined responses would allow the authorizing officer to adjust livestock grazing without conducting additional NEPA analyses. **Table 4-5** shows acres closed to grazing under the Proposed Plan, compared to current management. No additional acres would be closed under the Proposed Plan. Allotment retirement would remove any grazing effects on GRSG habitat in the retired allotment.

Structural range improvements not beneficial to GRSG would be limited in GRSG habitat to reduce the likelihood of additional disturbance. Similar efforts would apply to AML re-evaluations in HMA for wild horse populations. HMA would not be increased in PHMA or in IHMA without consideration of GRSG habitat objectives. Together, these efforts would reduce impacts on GRSG from grazing, such as loss of nesting cover, compared with Alternative A.

Impacts from Special Designations Management

Impacts would be the same as under Alternative A (current management); no additional special designations would be created under the Proposed Plan.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

While the management actions described for the Proposed Plan are anticipated to reduce impacts on GRSG, the adaptive management approach is included in the event that habitat or populations continue to decline to the point that triggers are met. In that event, more restrictive measures could be applied. The goal of adaptive management is to detect effects on GRSG and take action in an appropriate time frame to effectively offset impacts.

In Idaho, the Proposed Plan would incorporate an adaptive management strategy composed of soft and hard triggers that are based on population and habitat changes. BLM and Forest Service would utilize population information collected and maintained by the Idaho Department of Fish and Game to track and identify population changes to assess the population trigger in the adaptive management approach.

Triggers would be determined by Conservation Area, making the strategy more locally responsive than if triggers were determined on a sub-regional or statewide basis. When a soft trigger is met, the response would be additional evaluation. When a hard trigger is met, IHMA areas within that Conservation Area would be managed as PHMA, impacting the consideration of future projects until the habitat or population recovers and the trigger no longer applies. Hard triggers include a 20 percent decline of nesting and/or wintering habitat within PHMA or IHMA compared to an established baseline within a Conservation Area.

Appendix G provides more detail on the adaptive management approaches, triggers and responses. The use of adaptive management would benefit GRSG by limiting disturbance to habitat in PHMA and IHMA in Idaho. **Table 4-59** shows the percentage of GRSG habitat and occupied leks affected by adaptive management triggers by population area.

Table 4-59
Proposed Plan: Percent of GRSG Habitat and Occupied Leks Affected by Adaptive Management Trigger in IHMA by Population Area

Population Area	Percent of Habitat Area	Number of Occupied Leks
East-central Idaho	0	0
Mountain Valleys	73	35
Southwest Montana	0	0
North Side Snake	54.8	30
South Side Snake	80.9	92
Southwest Idaho	37.4	13
Sawtooth	0	0
Bear Lake	29	3
Weiser	0	0

Source: BLM GIS 2015

To limit overall anthropogenic disturbance to GRSG habitat, BLM and Forest Service would impose a cap to limit anthropogenic disturbance to 3 percent of habitat, as calculated within the BSU and project analysis area. This would reduce disturbance on both the local and landscape scales. The BSU is defined as the nesting and wintering habitat within PHMA and IHMA within a Conservation Area. The use of BSUs to calculate disturbance is more protective of GRSG because it assesses disturbance on a finer scale than would be possible using GRSG PACs.

The anthropogenic disturbance cap excludes habitat disturbance from wildfire because wildfire is already factored into the soft and hard habitat triggers. In Idaho, disturbance is measured by direct footprint or by ROW/SUA width, while in Montana disturbance is measured using the Disturbance Density Calculation Tool (**Appendix G**). The management area map and BSU baseline map would be reevaluated every five years. In PHMA, the Anthropogenic Disturbance Screening Criteria would apply stringent criteria to any proposed projects. These criteria would apply in addition to the Anthropogenic Disturbance Development Criteria that apply in IHMA. No disturbance cap would apply in GHMA or GRSG brood-rearing habitat and migration corridors. BSUs include only nesting and wintering habitat.

The impact of the disturbance cap would differ by Conservation Area. In some areas, projected disturbance would not approach the cap, and would avoid impacts on GRSG habitat using buffers (**Appendix DD**), collocation of disturbance, other management under the Proposed Plan. The implementation of the anthropogenic disturbance cap represents a safeguard to maintain GRSG populations and habitat within BSUs. The mitigation requirements under the Proposed Plan would further reduce harm to GRSG from development. Adhering to GRSG habitat objectives (**Tables 2-3** and **2-6**) in mitigation and monitoring would ensure that restoration efforts improve nesting and wintering habitat for GRSG.

Coordination among agencies under the Proposed Plan will allow for effective, integrated management of GRSG to achieve desired habitat and population conditions and to maximize available funding. Coordination will occur among federal agencies, between federal agencies and the States of Idaho and Montana, and between agencies and tribes, private landowners and communities to develop consistent approaches for monitoring and facilitate effective GRSG conservation.

4.3 Vegetation

4.3.1 Methods and Assumptions

Indicators

Indicators of impacts on vegetation are as follows:

Upland, Riparian and Wetland Vegetation

- Acres and condition of vegetation communities
- Extent of sagebrush fragmentation

Noxious Weeds and Invasive Species

- Increase, decrease, or no change in the likelihood for noxious weed or invasive species introduction or spread
- Increase, decrease, or no change in the estimated acres of conifer encroachment

Assumptions

The analysis includes the following assumptions:

- All plant communities would be managed to achieve a mix of species composition, cover, and age classes across the landscape, except in site-specific situations where nonnative plantings are used for livestock grazing to provide rest or deferment to native vegetation.
- The degree of impact attributed to any one disturbance or series of disturbances would be influenced by several factors—location in the watershed; the type, time, and degree of disturbance; existing vegetation; precipitation; and mitigating actions applied to the disturbance.
- Noxious and invasive weeds would continue to be introduced and spread as a result of recreation, wildfire, wildlife and livestock grazing and movements, surface-disturbing activities, and ongoing vehicle traffic in and out of the planning area.
- Activities that would disturb soils could cause wind and water erosion, topsoil loss, and soil compaction, which could affect the ability of vegetation to regenerate. Resulting impacts could include lowered plant vigor and growth rate, altered or disrupted pollination, and increased susceptibility to disease. Impacts

may vary depending on the sensitivity of certain species, functional group, and vegetation community.

- Ecological health and ecosystem functioning depend on vegetative cover, species diversity, nutrient cycling and availability, water infiltration and availability, and percent cover of weeds.
- Climate fluctuation would continue to influence the health and productivity of plant communities annually.

Short-term effects would occur over two years or less, and long-term effects would occur over longer than two years.

4.3.2 Nature and Type of Effects

GRSG rely on sagebrush ecosystems for all aspects of their life cycle. Typically, a range of sagebrush community composition in the landscape, including variations in subspecies composition, co-dominant vegetation, shrub cover, herbaceous cover, and stand age, are needed to meet seasonal and interseasonal requirements for food, cover, nesting, and wintering habitats. The landscape required for GRSG may be up to 40 square miles; thus, conserving and managing GRSG is as much about the ecology, management, and conservation of large, intact sagebrush ecosystems as it is about the dynamics and behaviors of the populations themselves (Manier et al. 2013, p. 7).

Historically, sagebrush-dominated vegetation was one of the most widespread habitats in the country, but its expanse has been fragmented, lost, or altered by invasive plants and human disturbance (NTT 2011, p.4). Protecting GRSG habitat would involve restricting and limiting activities that contribute to the spread of invasive species, fire, and other surface disturbance. It also would involve managing vegetation to promote healthy sagebrush and maintaining understory vegetation to support GRSG.

Vegetation Management and Habitat Protection

In addition to landscapes with large, intact patches of sagebrush, GRSG require high-quality habitat conditions. These conditions are a diversity of herbaceous species, vegetative and reproductive health of native grasses, and an abundance of sagebrush. These requirements make management for high condition in seasonally important habitats essential (Manier et al. 2013, pp. 181-182). Management plans that protect intact sagebrush and restore impacted areas strategically to enhance existing habitats (for example, connectivity of intact sagebrush) have the best chance of increasing the amount and quality of sagebrush cover (Manier et al. 2013, p.183). This is because of the limited distribution of suitable sagebrush habitats and the cost of habitat restoration. Sagebrush-promoting vegetation treatments will enhance native vegetation and overall ecosystem productivity, while reducing the distribution of invasive species and some woody species.

Invasive plants can alter plant community structure and composition, productivity, nutrient cycling, and hydrology. They could competitively exclude native plant populations. In particular, invasive plants can reduce and eliminate vegetation that GRSG use for food and

cover, resulting in habitat loss and, when infestations occur on large scales, may result in fragmentation. They also could increase the risk of wildfire caused by the spread of invasive plants such as cheatgrass (*Bromus tectorum*), which has increased the frequency and intensity of fires (Balch et al. 2012). An assortment of nonnative annuals and perennials and native conifers are invading sagebrush ecosystems.

Expansion of conifer woodlands, especially juniper (*Juniperus* spp.) present a threat to GRSG because they do not provide suitable habitat; mature trees can displace shrubs, grasses, and forbs through direct competition for resources. Juniper expansion is also associated with increased bare ground and increased potential for erosion. Mature trees may offer perch and nest sites for raptors; thus, woodland expansion may also represent expansion of predation threat, similar to perches on power lines and other structures (Manier et al. 2013, pp. 152-154).

To reduce juniper expansion, current vegetation treatments and active vegetation management typically focus on manipulating vegetation composition or structure. These techniques are used to improve fuels management, fire suppression, and habitat management by removing invasive plants or using surface soil stabilization to increase productivity. Conifer removal is more likely to succeed if perennial grasses and forbs are a component of the pretreatment understory (Miller et al. 2007, p. 32). Locally and regionally, the distribution of these treatments can affect the distribution of GRSG and sagebrush habitats (Manier et al. 2013, pp. 179-185). Vegetation treatments would have short-term effects on vegetation from vegetation removal and disturbance, but they would result in long-term improvements in habitat condition by reducing invasive species and fragmentation and increasing diversity and productivity.

Managing vegetation to protect GRSG would alter vegetation communities by promoting diversity, healthy reproductive native grasses, and sagebrush productivity and vigor. Treatments designed to prevent encroachment of nonnative species or conifers would alter the condition of native vegetation communities. They would do this by changing the species richness, composition, and frequency of species in plant communities. Habitat connectivity for GRSG could also be increased through vegetation manipulation designed to restore vegetation, particularly sagebrush overstory cover.

Vegetation manipulation in the riparian zone, such as weed treatments and native plantings, would improve the condition of the riparian vegetation community. It also would improve or maintain plant vigor and hydrologic function.

Protection of sagebrush habitat through restrictions on uses, such as closure to mineral development or OHV use or exclusion of ROWs, would support GRSG. Such use restrictions would reduce damage to native vegetation communities and individual native plant species. Likewise, use restrictions would minimize habitat fragmentation and would be more likely to retain contiguous sagebrush habitat, naturally developed sagebrush growth form, existing age class distribution, and sagebrush recruitment within these areas. Use restrictions could also minimize the spread of invasive species by limiting human activities that disturb soil or introduce seeds. Specific impacts from restricting certain uses, such as

minerals, lands and realty, and grazing, are described in more detail under their respective headers below.

Wildland Fire

Wildfires likely played an important role historically in creating a mosaic of areas dominated by herbaceous species (recently disturbed) and mature sagebrush (less-frequently disturbed). Nevertheless, current and past land use patterns have restricted the system's ability to support natural wildfire regimes. Slow rates of regrowth and recovery of vegetation, particularly sagebrush, after wildfire, as well as high rates of human disturbance, and conversion to invasive annual grasses, are largely responsible for the accumulating displacement and degradation of the sagebrush ecosystem (Manier et al. 2013, pp. 133-144).

Fire can be particularly damaging to sagebrush ecosystems. Big sagebrush does not resprout after a fire but is replenished by wind-dispersed seed from adjacent unburned stands or seeds in the soil. Depending on the species and the size of a burn, sagebrush can reestablish itself within five years of a burn, but a return to a full pre-burn community cover can take 15 to 30 years or longer (Manier et al. 2013, pp. 133-134). ES&R (for BLM-administered lands) and BAER (for National Forest System lands) would reduce the potential effects of invasive species by providing the best opportunities for vegetation to reestablish following wildland fires and compete with the natural strengths invasive species have compared to native species. Re-seeding with native plants and long-term monitoring to ensure the production of GRSG cover and forage plants assists with vegetation recovery (NTT 2011, pp. 25-26).

Fire suppression may be used to maintain habitat for GRSG (NTT 2011, pp. 25-26). When management reduces wildland fire frequency the indirect impact is that vegetation ages across the landscape, and early successional vegetation communities are diminished. Fire suppression may preserve the condition of some vegetation communities, as well as habitat connectivity. This is particularly important in areas where fire frequency has increased as a result of invasive annual grass invasion and where landscapes are highly fragmented. Fire suppression can also lead to increased fuel loads, which can lead to more severe or larger fires in the long term. Fire also increases opportunities for invasive species, such as cheatgrass, to expand (Brooks et al. 2004); fire suppression can indirectly limit this expansion.

Controlled burning may be prescribed to treat fuel buildup, remove invasive annuals, and can assist in the recovery of sagebrush habitat in some vegetation types, such as in juniper woodlands and conifer-encroached mountain sagebrush communities (NTT 2011, pp. 25-26; Manier et al. 2013, p. 71). Prescribed fire may be an important management option in these areas, increasing spatial heterogeneity and reducing tree cover and fuel continuity (Manier et al. 2013, p. 71).

Lands and Realty

Permitted activities, such as construction of utility ROWs or SUAs, involve vegetation removal. This reduces the condition of native vegetation communities and individual native plant species, alters age class distribution, increases fragmentation, and encourages the spread of invasive species. Construction could compact soils, which would inhibit natural

revegetation by hindering root growth in areas without reclamation. It also would reduce plant vigor, making plants more susceptible to disease, drought, and insect attack. In most cases soils in reclaimed areas would be ripped and seeded during interim or final reclamation (NTT 2011, pp. 12-13).

Different types of ROWs or SUAs would impact vegetation in different ways. Aboveground linear and underground ROWs or SUAs, such as transmission lines or pipelines, would temporarily remove vegetation during construction, but areas would be reclaimed or restored after construction. Vegetation would be permanently removed for construction of surface linear ROWs or SUAs, such as roads. Furthermore, since aboveground and surface linear ROWs or SUAs may extend for many miles, vegetation communities could be fragmented and encourage the spread of invasive species. Aboveground ROWs or SUAs and wind energy projects would remove vegetation during the life of the project, often lasting several decades, but areas would be restored after the ROW or SUA is decommissioned.

ROW or SUA exclusion areas would prohibit all development of ROWs or SUAs. Prohibiting ROWs or SUAs in exclusion areas would directly protect vegetation from disturbance and removal. In ROW or SUA avoidance areas, the BLM and Forest Service would consider on a case-by-case basis whether a ROW or SUA should be allowed. This flexibility may be advantageous where federal and private landownership areas are mixed and exclusion areas may result in more widespread development on private lands.

Acquisitions, disposals, or land exchanges to reduce the fragmentation of GRSG habitat could improve the BLM and Forest Service's ability to implement management to increase vegetation diversity, ecological health, and land health standards. In addition, retention of federal lands would prevent sagebrush removal associated with land conversion to agricultural or urban uses.

Mineral Resources

While not a large threat in the Idaho and Southwestern Montana Sub-region, mineral development requires construction of roads, well pads, wells and other infrastructure which result in the removal of vegetation (Manier et al. 2013, pp. 90-104). Surface disturbance associated with mineral development often removes vegetation, reduces the condition of native vegetation communities, increases fragmentation, and encourages the spread of invasive species, particularly if pre-disturbance vegetation is composed of deep-rooted perennial bunchgrasses and/or biological soil crusts (NTT 2011, pp. 19-20; Reisner et al. 2013, p. 1047; Deines et al. 2007, p. 31). Vegetation is typically removed for a period during the course of mining. When mining is completed, the areas are reclaimed using seed mixes chosen by the BLM or Forest Service. The remaining vegetation could have reduced vigor or productivity due to mechanical damage, soil compaction, and dust. Impacts would not occur in areas closed to mineral leasing or development.

Recreation

Recreation in GRSG habitat can be benign, but casual use at excessive levels may degrade sagebrush vegetation from such activities as camping, hiking, bird watching, bicycling, OHV riding, hunting, and rock climbing site access. Potential impacts from casual recreation

include trampling, soil compaction, erosion, invasive plant spread, and fugitive dust generation (Knick et al. 2011). Recreation can also increase the potential for wildfire caused by invasive plant spread or human error (Knick et al. 2011). Most impacts occur in easily accessible areas and in areas open to cross-country travel, particularly OHV use. Restrictions on recreation in GRSG habitat would limit damage to the vegetation communities that comprise this habitat by directly reducing vegetation disturbance from trampling, OHVs, dust, and spread of invasive species. Such restrictions could involve seasonal area closures or limitations on the number of users or types of uses permitted, particularly OHV use (NTT 2011, p. 12).

There would likely be negligible impacts on vegetation from management associated with recreation under all alternatives.

Travel and Transportation

Road and trail construction divides and fragments vegetation and causes erosion and nutrient leaching. The use of roads creates soil compaction and allows the spread of human disturbance, including wildfire and invasive plant species (USFWS 2010a, pp. 19-21; Manier et al. 2013, pp. 71-90). Invasive species can outcompete sagebrush and other vegetation essential for GRSG survival. Invasives also increase wildfire frequency, further contributing to loss of habitat (Balch et al. 2012).

The more areas that are seasonally or permanently closed to OHV use, the fewer impacts on vegetation from surface disturbance. In areas open to OHV use, vehicle and human trampling of vegetation, soil compaction, and spread of dust and weeds would be expected. Impacts would be reduced, but not eliminated, in areas limited to existing routes.

Livestock Grazing

Livestock grazing is the most widespread land use across the sagebrush landscape (Connelly et al. 2004, pp. 7-29). Livestock grazing can affect soils, vegetation health, species composition, and water and nutrient availability by consuming vegetation, redistributing nutrients and seeds, trampling soils and vegetation, and disrupting microbial systems (Connelly et al. 2004 Ch. 7; NTT 2011, p. 14).

Livestock grazing has been described as a diffuse form of disturbance that exerts repeated pressure over many years on a system; unlike point sources of disturbance (e.g., fires). Thus, effects of grazing are not likely to be detected as disruptions but as differences in the processes and functioning of the sagebrush, riparian, and wetland systems.

Grazing effects are not distributed evenly because historic practices, management plans and agreements, and animal behavior all lead to differential use of the range (Manier et al. 2013, pp. 157-168). Livestock often use riparian and wetland areas for water and shade, which could reduce riparian community condition and hydrologic function.

Water developments, roads, and structural range improvements associated with livestock grazing would remove vegetation over the long term and could introduce weeds to rangelands. Livestock would congregate around water developments, compacting soil and

trampling nearby vegetation, and making reestablishment of native vegetation difficult in the surrounding area. However, water developments would divert livestock use away from riparian and wetland areas and thus reduce such impacts in these areas.

At unsustainable levels, grazing can lead to loss of vegetation cover, reduced water infiltration rates and nutrient recycling, decreased plant litter and water quality, and increased bare ground and soil erosion (Manier et al. 2013, pp. 157-159). Depending on the level of utilization and time frame, livestock grazing can reduce resistance to invasive annual grasses by decreasing bunchgrass abundance, shifting bunchgrass composition, and reducing biological soil crusts (Reisner et al. 2013, p. 1044). Land health evaluations are used to assess rangeland condition and help to identify where changing grazing management would be beneficial. Grazing may also affect the extent and behavior of fires in sagebrush-dominated ecosystems, both on annual and decadal scales. Over annual time frames, grazing can reduce the amount of herbaceous fine fuels, including cheatgrass, forbs, and small twigs of woody plants. Grazing can reduce fire spread and intensity by removing understory vegetation, reducing the amount of fuel, and accelerating the decay of litter through trampling. Over decadal time frames, livestock grazing can change the relative proportions of shrubs, perennial grasses, and annual grasses, altering the fuel composition (Strand et al. 2014, p. 50).

Management of grazing systems that aim to protect sagebrush and riparian ecosystems would enhance vegetation by allowing more plant growth, increase plant vigor, reduce trampling and introduction of exotic and undesirable species. Conversely, livestock grazing concentrated in certain areas would increase surface-disturbing impacts in those areas.

The Forest Service will incorporate grazing guidelines (**Table 2-6**) into term grazing permits that will likely improve vegetation structures in GRSG seasonal habitat on grazing allotments.

Special Designations

Special designations (e.g., ACECs, Wilderness, and WSAs) and other conservation measures may be established to protect vegetation in GRSG habitat as a relevant or important value. While existing ACECs, Wilderness, WSAs and other special designations do not have GRSG habitat as a relevant or important value, some incidental protection may be conferred to vegetation in existing ACECs by restricting resource uses intended to protect other values.

4.3.3 Impacts on Vegetation Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative.

Under all alternatives, the Integrated Vegetation Management Handbook policies would be followed and would provide guidance on which treatments and chemicals can be used. Applying these policies would improve vegetation management in sagebrush habitat, thereby likely improving vegetation conditions in these areas.

In general, impacts from recreation are similar among all alternatives, as dispersed casual recreation would continue throughout the planning area.

There would be no impacts common to all alternatives from lands and realty management, habitat restoration and vegetation management, wildland fire management, mineral resource management, livestock grazing management, or ACEC management.

4.3.4 Alternative A

While GRSG may be protected under existing provisions of some LUPs, in general, Alternative A relies on management guidance that does not reflect the most up-to-date science regarding GRSG. Some of the older land use plans lack a landscape-level approach to land planning.

There is no consistently applied vegetation management across all land use plans, though Idaho and Montana Standards for Rangeland Health incorporate objectives for maintaining, improving, or restoring vegetation communities, particularly sagebrush and riparian and wetland habitats. As a result, there is general direction to preserve and improve vegetation communities; however, discrete human disturbances, such as road construction and mineral and ROW development, would continue. This could result in a number of impacts on vegetation, as described under **Section 4.3.2**.

Impacts from Lands and Realty Management

Under Alternative A, lands and realty management would continue, with some areas identified as ROW avoidance and ROW exclusion (**Table 4-60** and **Table 4-61**). Impacts on areas chosen for ROWs are similar to those described under **Section 4.3.2** and would include loss and degradation of upland vegetation communities, and the potential for increased spread of noxious weeds.

Impacts from Habitat Restoration and Vegetation Management

Under Alternative A, the BLM and Forest Service would continue to incorporate habitat restoration and vegetation objectives in management actions as described in the existing LUPs. This may improve vegetation conditions and increase the amount of native vegetation in areas, depending on the application of existing LUPs across the sub-region. In particular, the BLM and Forest Service would manage for the benefit of vegetation that provides wildlife forage, forbs, and sagebrush. Native species would be used when possible, but not required, allowing for some introduced species in areas where they are necessary for site stabilization. This approach would provide for habitat restoration, reduce noxious weeds, and improve the condition of vegetation communities to the extent possible under existing resource allocations.

Impacts from Wildland Fire Management

Under Alternative A, projects would be designed to minimize the size of wildfires and to prevent the further loss of sagebrush. In addition, prescribed burning may be used in support of resource management objectives, such as restoring grassland or shrubland, reducing conifer encroachment, or increasing age-class variety. As a result, vegetation condition and desired species composition would be improved in certain areas. Further, chemical weed treatments applied following prescribed burns would limit the expansion of weeds or invasive species in the burned area and would facilitate revegetation of native species. Impacts from fire on vegetation, described under **Section 4.3.2**, would continue under Alternative A.

Table 4-60
Acres of Sagebrush Vegetation within ROW Avoidance Areas in the Idaho and Southwest Montana Sub-Region

Vegetation Type	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ[1]	IHZ	CHZ[1]	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Low Sagebrush	**72,300**	**52,000**	**0**	**0**	**52,000**	**47,900**	**621,000**	**13,100**	**238,600**	**420,900**	**52,000**	**0**	**0**	**10,900**	**184,300**	**489,600**
BLM	64,300	45,400	0	0	45,400	44,100	609,300	8,820	232,200	412,600	45,400	0	0	7,210	179,600	479,700
Forest Service	8,020	6,600	0	0	6,600	3,700	11,700	4,290	6,350	8,310	6,630	0	0	3,660	4,670	9,880
Mixed Sagebrush	**487,400**	**546,300**	**0**	**0**	**546,300**	**324,000**	**1,931,700**	**183,700**	**743,300**	**1,115,600**	**546,300**	**0**	**0**	**113,200**	**747,200**	**1,450,200**
BLM	210,400	282,600	0	0	282,600	174,600	1,662,700	28,400	607,400	867,500	282,600	0	0	11,200	620,800	1,181,000
Forest Service	277,000	263,800	0	0	263,800	149,400	269,000	155,300	135,900	248,000	263,800	0	0	102,100	126,300	269,200
Tall Sagebrush	**605,700**	**633,200**	**0**	**0**	**633,200**	**402,200**	**2,304,500**	**215,800**	**874,000**	**1,644,100**	**633,200**	**0**	**0**	**201,200**	**839,400**	**1,794,700**
BLM	327,000	500,300	0	0	500,300	367,700	2,151,600	93,100	784,000	1,559,400	500,300	0	0	73,200	736,700	1,711,200
Forest Service	278,700	133,000	0	0	133,000	34,500	152,900	122,700	89,900	84,700	133,000	0	0	128,000	102,700	83,500
Total	**1,165,300**	**1,231,600**	**0**	**0**	**1,231,600**	**774,100**	**4,857,100**	**412,600**	**1,855,800**	**3,180,500**	**1,231,600**	**0**	**0**	**325,300**	**1,770,800**	**3,734,500**
BLM	601,600	828,200	0	0	828,300	586,500	4,423,500	130,300	1,623,600	2,839,500	828,200	0	0	91,500	1,537,200	3,371,900
Forest Service	563,700	403,400	0	0	403,400	187,700	433,600	282,300	232,200	341,000	403,400	0	0	233,700	233,700	362,600

Source: BLM GIS 2015
[1]Acres in PHMA in Utah and Montana are included with CHZ acres for Idaho. Acres in GHMA in Montana are included in GHZ for Idaho.

Table 4-61
Acres of Sagebrush Vegetation within ROW Exclusion Areas in the Idaho and Southwest Montana Sub-Region

Vegetation Type	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Low Sagebrush	**72,300**	**9,320**	**763,300**	**824,700**	**9,320**	**15,800**	**78,700**	**25,900**	**23,300**	**54,600**	**9,320**	**763,300**	**0**	**25,000**	**3,320**	**75,200**
BLM	64,300	9,260	747,800	802,500	9,260	15,800	78,700	25,800	23,300	54,600	9,260	747,800	0	25,000	3,300	75,200
Forest Service	8,020	60	15,500	22,200	60	20	40	60	30	30	60	15,500	0	50	30	30
Mixed Sagebrush	**487,400**	**39,000**	**2,310,400**	**2,895,800**	**39,000**	**710**	**54,000**	**39,600**	**16,300**	**37,600**	**39,000**	**2,310,400**	**0**	**32,200**	**17,900**	**37,000**
BLM	210,400	900	1,856,300	2,139,800	890	490	18,500	1,350	15,800	2,730	900	1,856,300	0	1,040	17,200	290
Forest Service	277,000	38,100	454,100	756,000	38,100	210	35,500	38,300	530	34,900	38,100	454,100	0	31,100	720	36,700
Tall Sagebrush	**605,700**	**93,000**	**3,107,400**	**3,833,600**	**93,000**	**98,600**	**302,100**	**104,100**	**112,700**	**277,000**	**93,000**	**3,107,400**	**0**	**97,300**	**89,100**	**302,800**
BLM	327,000	93,000	2,920,000	3,513,200	93,000	98,600	302,100	104,100	112,700	277,000	93,000	2,920,000	0	97,300	89,100	302,800
Forest Service	278,700	0	187,400	320,400	0	0	0	0	0	0	0	187,400	0	0	0	0
Total	**1,165,300**	**141,300**	**6,181,100**	**7,554,100**	**141,300**	**115,100**	**434,900**	**169,600**	**152,300**	**369,200**	**141,300**	**6,181,100**	**0**	**154,500**	**110,300**	**415,000**
BLM	601,600	103,100	5,524,100	6,455,500	103,100	114,800	399,300	131,200	151,800	334,200	103,100	5,524,100	0	123,300	109,500	378,200
Forest Service	563,700	38,200	657,100	1,098,600	38,200	230	35,600	38,300	550	34,900	38,200	657,100	0	31,200	750	36,700

Source: BLM GIS 2015

Impacts from Nonenergy Leasable Minerals Management

Acres of sagebrush closed to nonenergy leasable mineral leasing in the Idaho and southwest Montana sub-region are shown in **Table 4-62**. Impacts from nonenergy leasable development on vegetation, including loss and degradation of upland vegetation and increased potential for invasive plant spread, as described under **Section 4.3.2**, would continue to occur in areas open to leasing and development.

Impacts from Locatable Minerals Management

Impacts from locatable mineral development on vegetation, as described under **Section 4.3.2**, would continue to occur in areas open to development.

Impacts from Salable Minerals Management

Acres of sagebrush closed to salable mineral material disposal in the Idaho and southwest Montana sub-region are shown in **Table 4-63**. Acres are not available for National Forest System lands. Impacts from salable mineral development on vegetation, as described under **Section 4.3.2**, would continue to occur in areas open to development.

Impacts from Fluid Minerals Management

Acres of sagebrush vegetation closed to fluid mineral materials disposal in the Idaho and southwestern Montana sub-region are shown in **Table 4-64** Seasonal timing restrictions and lek buffers may be applied in certain areas, as described in the existing LUPs, to reduce impacts from mineral leasing or development, but these stipulations would not be applied consistently across the planning area. Impacts from fluid mineral development on vegetation, as described under **Section 4.3.2**, may occur in areas open to leasing and development.

Impacts from Travel and Transportation Management

Impacts from OHV use would continue under Alternative A in areas that would be open to cross-country use and would be reduced in areas limited to existing roads (**Table 4-65**). Route and trail modifications would be considered on a case-by-case basis. Impacts on vegetation from travel would continue, including damage to upland vegetation, fragmentation, and potential for spread of invasive plants, as described under **Section 4.3.2**.

Impacts from Livestock Grazing Management

Livestock grazing would continue to occur under Alternative A, with no change in acres open or closed to grazing (**Table 4-66**). Rangelands would continue to be managed to conform to the Idaho Standards for Rangeland Health or similar guidelines; thus, vegetation communities would continue to be maintained and improved to some extent across the planning area. Changes and adjustments would be considered on a case-by-case basis and would incorporate grazing standards and guides to evaluate the ability to meet desired conditions. Under current LUPs, riparian and wetland areas would be managed to maintain or attain PFC or forest plan standards and guidelines, and rangelands would be managed to attain Rangeland Health Standards. These standards would benefit vegetation condition and limit fragmentation.

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Table 4-62
Acres of Sagebrush Vegetation Closed to Nonenergy Leasable Mineral Leasing in the Idaho and Southwest Montana Sub-Region[1]

Vegetation Type	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Low Sagebrush	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed Sagebrush	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tall Sagebrush	**0**	**0**	**40**	**160**	**130**	**20**	**20**	**0**	**0**	**0**	**0**	**40**	**0**	**0**	**0**	**0**
BLM	0	0	40	160	**130**	**20**	**20**	0	0	0	0	40	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**40**	**160**	**130**	**20**	**20**	**0**	**0**	**0**	**0**	**40**	**0**	**0**	**0**	**0**
BLM	0	0	40	160	**130**	**20**	**20**	0	0	0	0	40	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: BLM GIS 2015
[1] For unleased known phosphate lease areas that are closed to leasing

Table 4-63
Acres of Sagebrush Vegetation Closed to Mineral Materials Disposal in the Idaho and Southwestern Montana Sub-region[1]

Vegetation Type	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Low Sagebrush	**103,000**	**8,040**	**765,500**	**826,400**	**10,100**	**6,030**	**303,900**	**8,370**	**24,900**	**69,700**	**8,040**	**765,500**	**0**	**4,130**	**7,310**	**565,800**
BLM	88,400	3,410	749,900	804,400	5,500	3,340	295,300	3,370	21,100	63,900	3,410	749,900	0	1,990	4,650	555,900
Forest Service	14,600	4,640	15,500	212,000	4,650	2,690	8,610	5,000	3,820	5,740	4,640	15,500	0	2,150	2,660	9,910
Mixed Sagebrush	**608,600**	**208,800**	**2,304,400**	**2,892,000**	**219,600**	**112,300**	**713,300**	**230,100**	**104,200**	**273,500**	**208,800**	**2,304,400**	**0**	**82,800**	**121,800**	**1,485,800**
BLM	88,400	7,040	1,849,400	2,137,500	17,400	9,170	490,700	5,890	21,500	61,000	7,040	1,849,400	0	2,110	29,900	1,180,100
Forest Service	520,200	201,800	455,000	754,500	202,200	103,100	222,600	224,200	82,700	212,500	201,800	455,000	0	80,700	91,900	305,700
Tall Sagebrush	**444,200**	**128,900**	**3,081,200**	**3,803,700**	**160,000**	**95,100**	**1,264,400**	**100,100**	**66,900**	**277,200**	**128,900**	**3,081,200**	**0**	**84,600**	**53,900**	**2,094,100**
BLM	353,700	65,800	2,914,600	3,512,900	92,700	84,500	1,201,700	33,700	43,800	276,300	65,800	2,914,600	0	23,200	28,200	2,010,700
Forest Service	90,500	63,000	166,600	290,800	67,300	10,600	62,7800	66,400	23,200	940	63,000	166,600	0	61,500	25,700	83,400
Total	**1,155,800**	**345,700**	**6,151,100**	**7,522,000**	**389,800**	**213,400**	**2,281,600**	**338,600**	**196,000**	**620,400**	**345,700**	**6,151,100**	**0**	**171,600**	**183,100**	**4,145,700**
BLM	530,500	76,300	5,513,900	6,454,800	115,600	97,000	1,987,600	43,000	86,400	401,200	76,300	5,513,900	0	27,300	62,800	3,746,700
Forest Service	625,300	269,400	637,100	1,067,300	274,100	116,400	294,000	295,600	109,700	219,200	269,400	637,100	0	144,300	120,300	399,000

Source: BLM GIS 2015
[1]Data not available for the Forest Service. Acres in the table represent BLM-administered lands only

Table 4-64
Acres of Sagebrush Vegetation Closed to Fluid Mineral Leasing in the Idaho and Southwestern Montana Sub-region

Vegetation Type	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F		Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	IHMA	PHMA
Low Sagebrush	**103,700**	**8,440**	**765,500**	**826,400**	**8,440**	**50,000**	**597,600**	**8,590**	**27,900**	**67,200**	**8,440**	**765,500**	**4,000**	**3,820**	**80,800**
BLM	87,500	3,600	749,900	804,400	3,600	46,500	587,100	3,380	24,100	60,000	3,600	749,900	1,860	3,660	78,000
Forest Service	16,200	4,840	15,500	22,000	4,840	3,450	10,500	5,220	3,800	7,230	4,840	15,500	2,150	160	2,790
Mixed Sagebrush	**787,900**	**261,600**	**2,304,500**	**2,892,100**	**261,600**	**294,000**	**1,798,400**	**284,900**	**108,800**	**393,400**	**261,600**	**2,304,500**	**104,800**	**45,500**	**193,200**
BLM	203,900	30,900	1,849,500	2,137,500	30,900	144,000	1,502,000	29,700	8,520	165,700	30,900	1,849,500	13,800	23,700	140,900
Forest Service	584,000	230,700	455,100	754,600	230,700	150,000	296,400	255,200	100,300	227,700	230,700	455,100	91,000	21,800	52,300
Tall Sagebrush	**778,900**	**148,500**	**3,081,100**	**3,803,600**	**154,400**	**187,600**	**1,829,800**	**187,700**	**164,100**	**427,000**	**148,500**	**3,081,100**	**142,300**	**70,900**	**383,700**
BLM	692,400	90,800	2,914,600	3,512,900	90,800	175,300	1,807,800	126,300	140,000	426,100	90,800	2,914,600	85,000	70,800	383,700
Forest Service	86,500	57,700	166,500	290,700	63,500	12,200	22,100	61,500	24,100	940	57,700	166,500	57,400	0	0
Total	**1,670,500**	**418,500**	**6,151,100**	**7,522,000**	**424,300**	**531,500**	**4,225,800**	**481,200**	**300,800**	**887,600**	**418,500**	**6,151,100**	**251,100**	**120,200**	**657,700**
BLM	983,700	125,300	5,513,900	6,454,800	125,300	365,900	3,896,800	159,300	172,600	651,800	125,300	5,513,900	100,600	98,200	602,600
Forest Service	686,800	293,200	637,100	1,067,300	299,100	165,700	329,000	321,900	128,200	235,800	293,200	637,100	150,500	22,000	55,100

Source: BLM GIS 2015

Table 4-65
Acres of Sagebrush Vegetation Limited to Existing Roads in the Idaho and Southwest Montana Sub-Region

Vegetation Type	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Low Sagebrush	**494,100**	**46,900**	**689,600**	**747,600**	**57,900**	**63,100**	**626,600**	**52,200**	**162,500**	**423,100**	**57,900**	**689,600**	**0**	**64,200**	**186,100**	**491,400**
BLM	471,900	40,200	674,100	725,300	51,200	59,300	614,800	44,700	156,100	414,800	51,200	674,100	0	60,500	181,400	481,400
Forest Service	22,200	6,680	15,500	22,200	6,680	3,760	11,800	7,500	6,380	8,340	6,680	15,500	0	3,710	4,700	9,910
Mixed Sagebrush	**2,460,500**	**559,200**	**2,312,600**	**2,896,600**	**584,000**	**326,500**	**1,986,200**	**584,700**	**638,600**	**1,514,400**	**584,000**	**2,312,600**	**0**	**408,200**	**759,400**	**1,489,100**
BLM	1,703,200	257,300	1,857,300	2,139,400	282,100	175,600	1,681,700	249,600	500,900	1,231,000	282,100	1,857,300	**0**	275,000	631,100	1,183,200
Forest Service	757,300	301,900	455,400	757,300	301,900	150,900	304,500	335,100	137,700	283,400	301,900	455,400	0	133,200	128,400	305,900
Tall Sagebrush	**2,146,700**	**413,500**	**2,759,000**	**3,440,100**	**681,100**	**482,900**	**2,276,100**	**494,000**	**550,600**	**1,590,500**	**681,100**	**2,759,000**	**20**	**691,000**	**897,200**	**1,744,100**
BLM	1,826,500	280,600	2,571,800	3,119,900	548,100	448,500	2,123,200	348,300	460,800	1,505,800	548,100	2,571,800	20	563,000	794,700	1,660,600
Forest Service	320,200	132,900	187,200	320,200	132,900	34,400	152,900	145,700	89,800	84,700	132,900	187,200	0	128,000	102,500	83,500
Total	**5,101,300**	**1,019,600**	**5,761,300**	**7,084,300**	**1,323,000**	**872,400**	**4,888,900**	**1,130,900**	**1,351,600**	**3,528,000**	**1,323,000**	**5,761,300**	**20**	**1,163,400**	**1,842,700**	**3,724,600**
BLM	4,001,600	578,100	5,103,100	5,984,600	881,500	683,500	4,419,700	642,500	1,117,800	3,151,600	881,500	5,103,100	20	898,500	1,607,100	3,325,300
Forest Service	1,099,700	441,500	658,100	1,099,700	441,500	189,000	469,200	488,300	233,800	376,400	441,500	658,100	0	264,900	235,600	399,300

Source: BLM GIS 2015

Table 4-66
Acres of Sagebrush Vegetation Closed to Livestock Grazing in the Idaho and Southwestern Montana Sub-region

Vegetation Type	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Low Sagebrush	**22,500**	**810**	**21,700**	**829,100**	**810**	**120**	**21,600**	**870**	**1,070**	**20,600**	**810**	**21,700**	**0**	**330**	**2,430**	**19,500**
BLM	22,200	650	21,500	806,800	650	70	21,500	780	990	20,400	650	21,500	0	310	2,300	19,400
Forest Service	330	170	160	22,200	170	40	129	90	80	160	170	160	0	20	130	140
Mixed Sagebrush	**53,900**	**25,300**	**28,600**	**2,919,500**	**25,300**	**1,330**	**27,300**	**24,400**	**13,700**	**15,700**	**25,300**	**28,600**	**0**	**13,900**	**17,800**	**12,100**
BLM	17,100	540	16,500	2,162,200	540	220	16,300	80	9,580	7,410	540	16,500	0	160	12,000	4,420
Forest Service	36,800	24,700	12,000	757,300	24,700	1,110	10,900	24,300	4,120	8,320	24,700	12,000	0	13,700	5,780	7,700
Tall Sagebrush	**118,400**	**19,000**	**99,400**	**3,865,500**	**19,000**	**1,160**	**98,200**	**9,210**	**2,010**	**107,200**	**19,000**	**99,400**	**0**	**3,170**	**2,200**	**112,600**
BLM	114,700	17,000	97,700	3,545,100	17,000	680	97,000	7,020	530	107,200	17,000	97,700	0	1,230	500	112,600
Forest Service	3,670	1,980	1,690	320,400	1,980	480	1,220	2,200	1,470	0	1,980	1,690	0	1,940	1,700	0
Total	**194,700**	**45,100**	**149,600**	**7,614,100**	**45,100**	**2,610**	**147,000**	**34,400**	**16,800**	**143,500**	**45,100**	**149,600**	**0**	**17,400**	**22,400**	**144,300**
BLM	154,000	18,200	135,700	6,514,200	18,200	970	134,800	7,900	11,100	135,000	18,200	135,700	0	1,700	14,800	136,400
Forest Service	40,800	26,900	13,900	1,099,900	26,900	1,630	12,300	26,600	5,670	8,480	26,900	13,900	0	15,700	7,610	7,840

Source: BLM GIS 2015

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Impacts from Special Designations Management

Under Alternative A, the BLM would continue to manage 59 ACECs within the sub-region (**Table 4-67**, Acres of Sagebrush Vegetation within BLM ACECs and Forest Service Zoological Areas in the Idaho and Southwestern Montana Sub-region1). The Forest Service would not manage any Zoological Areas under Alternative A. Existing ACECs likely protect vegetation through use restrictions; these impacts are analyzed under each existing RMP within the planning area. As a result, there would be no additional effects from ACEC or Zoological Area management on vegetation under this alternative.

4.3.5 Alternative B

Under Alternative B, the BLM and Forest Service would manage lands to conserve, enhance, and restore sagebrush ecosystems. Direct protection of sagebrush habitat to support GRSG would limit or modify uses in this habitat type, improving the acreage and condition of desired vegetation communities. Restrictions on resource uses such as ROW and mineral development would reduce damage to native vegetation communities and individual native plant species in areas that are important for regional vegetation diversity and quality. Likewise, use restrictions would minimize loss of connectivity and would be more likely to retain existing age class distribution within these areas. Use restrictions could also minimize the spread of invasive species by limiting human activities that disturb soil or introduce seeds.

PHMA and GHMA would be designated. Acres of each vegetation community within GRSG management areas are presented in **Table 4-68** through **Table 74** and are split out by GRSG analysis area. These tables demonstrate the differences in the size of GRSG management areas by alternative and the relative differences in the acreage of each vegetation community within these areas. The BLM and Forest Service would apply a maximum 3 percent disturbance cap to human activities in PHMA. The 3 percent disturbance cap was recommended in the NTT report and is designed to minimize impacts on GRSG habitat by limiting disturbances in sensitive habitat areas. The agencies would implement numerous conservation measures, as described under the resource headings below, to reduce impacts from human activities in PHMA. Restricting surface-disturbing activities would reduce the likelihood for vegetation removal, degradation, or fragmentation and would maintain the acreage and condition of sagebrush vegetation.

Impacts from Lands and Realty Management

Identifying GHMA as ROW avoidance and PHMA as ROW exclusion areas would reduce impacts on vegetation, as described under **Section 4.3.2**. In addition, the BLM and Forest Service would restore ROWs that are no longer in use. This would increase the extent and connectivity of sagebrush habitats and reduce the spread of weeds to these areas over the long term. Lands would be retained in federal ownership, with limited exceptions, which would reduce fragmentation, as described under **Section 4.3.2**.

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Table 4-67
Acres of Sagebrush Vegetation within BLM ACECs and Forest Service Zoological Areas in the Idaho and Southwestern Montana Sub-region[1]

	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F1[1]		Alternative F2[1]		Proposed Plan		
		GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	PHMA	GHMA	IHMA	PHMA
Low Sagebrush	**36,300**	**1,500**	**34,800**	**415,200**	**1,470**	**760**	**34,100**	**770**	**1,270**	**34,200**	**2,550**	**767,200**	**2,550**	**197,000**	**1,010**	**4,220**	**30,900**
BLM	36,300	1,500	34,800	415,100	1,470	760	34,100	770	1,270	34,200	2,550	751,700	2,550	192,600	1,010	4,220	30,900
Forest Service	0	0	0	180	0	0	0	0	0	0	0	15,500	0	4,400	0	0	0
Mixed Sagebrush	**92,700**	**10,300**	**82,300**	**345,200**	**10,300**	**7,500**	**74,800**	**5,640**	**27,500**	**59,500**	**12,700**	**2,326,400**	**12,700**	**262,800**	**13,500**	**33,100**	**40,100**
BLM	92,700	10,300	82,300	310,600	10,300	7,500	74,800	5,640	27,500	59,500	12,700	1,871,100	12,700	229,000	13,500	33,100	40,100
Forest Service	0	0	0	34,600	0	0	0	0	0	0	0	455,400	0	33,800	0	0	0
Tall Sagebrush	**196,500**	**47,900**	**148,600**	**1,507,200**	**47,900**	**11,300**	**137,300**	**18,100**	**20,300**	**158,000**	**56,100**	**3,126,300**	**56,100**	**1,114,400**	**13,500**	**18,600**	**161,200**
BLM	196,500	47,900	148,600	1,506,700	47,900	11,300	137,300	18,100	20,300	158,000	56,100	2,938,900	56,100	1,019,700	13,500	18,600	161,200
Forest Service	0	0	0	510	0	0	0	0	0	0	0	187,400	0	94,700	0	0	0
Total	**325,430**	**59,700**	**265,700**	**2,267,600**	**59,700**	**19,600**	**246,200**	**24,500**	**49,100**	**251,800**	**71,300**	**6,220,000**	**71,300**	**1,574,300**	**28,000**	**55,900**	**232,200**
BLM	325,430	59,700	265,700	2,232,400	59,700	19,600	246,200	24,500	49,100	251,800	71,300	5,561,700	71,300	1,441,300	28,000	55,900	232,200
Forest Service	0	0	0	35,200	0	0	0	0	0	0	0	658,300	0	132,900	0	0	0

Source: BLM GIS 2015
[1]There are no acres of ACECs or Zoological Areas in RHMA under Alternatives F1 and F2.

Table 4-68
Acres of Annual Grassland within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ[1]	IHZ	CHZ[1]	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**80**	**30**	**110**	**80**	**30**	**0**	**110**	**0**	**0**	**80**	**30**	**0**	**110**	**0**	**0**
BLM	80	30	110	80	30	0	110	0	0	80	30	0	110	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mountain Valleys	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Southwest Montana	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Side Snake	**7,150**	**6,860**	**14,000**	**7,150**	**1,150**	**5,710**	**8,560**	**2,960**	**4,200**	**7,150**	**6,860**	**20,200**	**13,400**	**8,750**	**8,930**
BLM	7,070	6,860	13,900	7,070	1,150	5,710	8,480	2,960	4,200	7,070	6,860	20,200	13,300	8,750	8,930
Forest Service	80	0	80	80	0	0	80	0	0	80	0	0	80	0	0
South Side Snake	**4,830**	**24,600**	**29,400**	**4,830**	**15,700**	**8,920**	**6,850**	**15,200**	**11,900**	**4,830**	**24,600**	**32,200**	**18,200**	**36,700**	**10,900**
BLM	4,720	24,300	29,000	4,720	15,600	8,700	6,640	14,900	11,900	4,720	24,300	32,200	18,200	36,300	10,900
Forest Service	110	310	420	110	100	220	210	210	0	110	310	0	0	420	0
Southwest Idaho	**6,540**	**19,200**	**25,700**	**6,540**	**3,070**	**16,150**	**7,410**	**12,900**	**7,250**	**6,540**	**19,200**	**1,850**	**2,040**	**15,200**	**9,960**
BLM	6,540	19,200	25,700	6,540	3,070	16,150	7,410	12,900	7,250	6,540	19,200	1,850	2,040	15,200	9,960
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weiser	**2,720**	**1,050**	**3,770**	**2,720**	**110**	**940**	**3,770**	**0**	**0**	**2,720**	**1,050**	**3,250**	**5,240**	**0**	**0**
BLM	2,720	1,050	3,770	2,720	110	940	3,770	0	0	2,720	1,050	3,250	5,240	0	0

Table 4-68
Acres of Annual Grassland within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ[1]	IHZ	CHZ[1]	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sawtooth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**21,300**	**51,700**	**73,000**	**21,300**	**20,000**	**31,700**	**26,700**	**31,000**	**23,300**	**21,300**	**51,700**	**57,500**	**39,000**	**60,700**	**29,700**
BLM	21,100	51,400	72,500	21,100	19,900	31,500	26,400	30,800	23,300	21,100	51,400	57,500	38,900	60,300	29,700
Forest Service	190	310	500	190	100	220	290	210	0	190	310	0	80	420	0

Source: BLM GIS 2015
[1]Acres in PHMA in Utah and Montana are included with CHZ acres for Idaho. Acres in GHMA in Montana are included in GHZ for Idaho.

Table 4-69
Acres of Conifer Encroachment within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]		Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	IHMA	PHMA
East-Central Idaho	**270**	**10**	**280**	**270**	**0**	**0**	**280**	**0**	**0**	**270**	**10**	**280**	**0**	**0**
BLM	170	10	180	170	0	0	180	0	0	170	10	180	0	0
Forest Service	100	0	100	100	0	0	100	0	0	100	0	100	0	0
Mountain Valleys	**2,380**	**3,390**	**5,770**	**2,3780**	**630**	**2,760**	**1,900**	**1,780**	**2,050**	**2,380**	**3,390**	**300**	**1,780**	**1,710**
BLM	840	2,380	3,220	840	220	2,170	490	1,180	1,530	840	2,380	220	1,490	1,160
Forest Service	1,540	1,010	2,550	1,540	410	600	1,410	600	510	1,540	1,010	80	290	540
Southwest Montana	**890**	**440**	**1,330**	**890**	**0**	**440**	**890**	**0**	**430**	**890**	**440**	**890**	**0**	**440**
BLM	370	230	600	370	0	230	370	0	230	370	230	370	0	230
Forest Service	520	200	720	520	0	200	520	0	200	520	200	520	0	200
North Side Snake	**1,260**	**2,120**	**3,380**	**1,260**	**340**	**1,780**	**1,280**	**1,290**	**800**	**1,260**	**2,120**	**1,230**	**1,110**	**1,010**
BLM	510	1,870	2,370	510	180	1,690	540	1,030	800	510	1,870	480	870	1,010
Forest Service	750	260	1,010	750	160	100	740	260	0	750	260	750	240	0
South Side Snake	**28,100**	**105,400**	**133,500**	**28,100**	**22,500**	**82,900**	**41,400**	**85,400**	**6,710**	**28,100**	**105,400**	**23,000**	**101,900**	**8,340**
BLM	16,200	65,700	81,900	16,200	21,100	44,600	35,900	45,300	630	16,200	65,700	18,200	61,100	2,260
Forest Service	11,900	39,700	51,600	11,900	1,400	38,300	5,500	40,100	6,070	11,900	39,700	4,770	40,800	6,080
Southwest Idaho	**99,100**	**108,400**	**207,400**	**99,100**	**5,850**	**102,500**	**88,600**	**68,500**	**50,400**	**99,100**	**108,400**	**57,100**	**69,100**	**81,200**
BLM	99,100	108,400	207,400	99,100	5,850	102,500	88,600	68,500	50,400	99,100	108,400	57,100	69,100	81,200
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**0**	**10**	**10**	**0**	**0**	**10**	**0**	**10**	**0**	**0**	**10**	**0**	**10**	**0**
BLM	0	10	10	0	0	10	0	10	0	0	10	0	10	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weiser	**740**	**110**	**850**	**740**	**110**	**0**	**850**	**0**	**0**	**740**	**110**	**840**	**0**	**0**
BLM	740	110	850	740	110	0	850	0	0	740	110	840	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sawtooth	**320**	**0**	**320**	**320**	**0**	**0**	**320**	**0**	**0**	**320**	**0**	**320**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	320	0	320	320	0	0	320	0	0	320	0	320	0	0

Table 4-69
Acres of Conifer Encroachment within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]		Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	IHMA	PHMA
Total	**133,000**	**219,900**	**352,800**	**133,000**	**29,400**	**190,400**	**135,500**	**157,000**	**60,300**	**133,000**	**219,900**	**84,000**	**173,900**	**92,700**
BLM	117,800	178,700	296,500	117,800	27,400	151,200	126,900	116,000	53,600	117,800	178,700	77,500	132,600	85,900
Forest Service	15,100	41,200	56,300	15,100	1,980	39,200	8,600	40,900	6,790	15,100	41,200	6,520	41,300	6,830

Source: BLM GIS 2015
[1]There are no acres of conifer encroachment in RHMA under Alternative F.

Table 4-70
Acres of Crested Wheatgrass within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]		Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	IHMA	PHMA
East-Central Idaho	**190**	**10**	**200**	**190**	**0**	**0**	**200**	**0**	**0**	**190**	**10**	**130**	**0**	**0**
BLM	30	10	40	30	0	0	40	0	0	30	10	30	0	0
Forest Service	160	0	160	160	0	0	160	0	0	160	0	100	0	0
Mountain Valleys	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Southwest Montana	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Side Snake	**42,800**	**36,900**	**79,700**	**42,800**	**9,310**	**27,600**	**69,200**	**1,330**	**9,210**	**42,800**	**36,900**	**43,700**	**21,900**	**8,490**
BLM	40,800	36,900	77,600	40,800	9,240	27,600	67,150	1,250	9,210	40,800	36,900	41,700	21,900	8,490
Forest Service	2,000	90	2,090	2,000	70	10	2,010	80	0	2,000	90	2,010	80	0
South Side Snake	**16,000**	**27,900**	**43,800**	**16,000**	**18,900**	**9,010**	**18,400**	**22,100**	**3,330**	**16,000**	**27,900**	**9,080**	**23,300**	**2,620**
BLM	15,500	25,400	40,900	15,500	17,600	7,810	16,800	20,800	3,310	15,500	25,400	9,050	20,500	2,600
Forest Service	410	2,500	2,910	410	1,300	1,200	1,610	1,280	20	410	2,500	30	2,870	20
Southwest Idaho	**2,540**	**950**	**3,490**	**2,540**	**80**	**870**	**2,340**	**580**	**570**	**2,540**	**950**	**1,710**	**190**	**1,450**
BLM	2,540	950	3,490	2,540	80	870	2,340	580	570	2,540	950	1,710	190	1,450
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weiser	**4,480**	**2,020**	**6,500**	**4,480**	**1,790**	**230**	**6,500**	**0**	**0**	**4,480**	**2,020**	**6,500**	**0**	**0**
BLM	4,480	2,020	6,500	4,480	1,790	230	6,500	0	0	4,480	2,020	6,500	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sawtooth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**65,900**	**67,800**	**133,700**	**65,900**	**30,000**	**37,700**	**96,600**	**24,000**	**13,100**	**65,900**	**67,800**	**61,100**	**45,500**	**12,600**

Table 4-70
Acres of Crested Wheatgrass within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]		Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	IHMA	PHMA
BLM	63,300	65,200	128,500	63,300	28,700	36,500	92,800	22,600	13,100	63,300	65,200	58,900	42,500	12,500
Forest Service	2,580	2,590	5,160	2,580	1,370	1,220	3,780	1,370	20	2,580	2,590	2,150	2,940	20

Source: BLM GIS 2015
[1] There are no acres of crested wheatgrass in RHMA under Alternative F.

Table 4-71
Acres of Low Sagebrush within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]		Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	IHMA	PHMA
East-Central Idaho	**30**	**10**	**40**	**30**	**0**	**0**	**40**	**0**	**0**	**30**	**10**	**40**	**0**	**0**
BLM	30	10	40	30	0	0	40	0	0	30	10	40	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mountain Valleys	**7,910**	**280,200**	**288,100**	**7,910**	**30,400**	**249,800**	**9,780**	**103,900**	**174,400**	**7,910**	**280,200**	**4,760**	**106,100**	**171,200**
BLM	4,730	266,700	271,400	4,730	27,100	239,600	6,050	99,100	166,300	4,730	266,700	4,670	103,200	161,500
Forest Service	3,180	13,500	16,700	3,180	3,340	10,200	3,730	4,810	8,150	3,180	13,500	90	2,940	9,760
Southwest Montana	**1,730**	**4,230**	**5,970**	**1,730**	**0**	**4,230**	**1,730**	**0**	**4,230**	**1,730**	**4,230**	**1,730**	**0**	**4,230**
BLM	1,570	4,130	5,710	1,570	0	4,130	1,570	0	4,130	1,570	4,130	1,570	0	4,130
Forest Service	160	100	260	160	0	100	160	0	100	160	100	160	0	100
North Side Snake	**3,760**	**66,000**	**69,700**	**3,760**	**2,570**	**63,400**	**4,510**	**14,800**	**50,400**	**3,760**	**66,000**	**3,700**	**6,670**	**69,700**
BLM	740	65,700	66,400	740	2,370	63,300	1,480	14,600	50,400	740	65,700	680	6,410	59,400
Forest Service	3,020	270	3,290	3,020	200	70	3,030	260	0	3,020	270	3,020	260	0
South Side Snake	**1,920**	**45,100**	**47,000**	**1,920**	**6,050**	**39,100**	**9,690**	**4,550**	**32,800**	**1,920**	**45,100**	**4,610**	**8,600**	**33,300**
BLM	1,590	43,400	45,000	1,590	5,830	37,600	9,100	3,240	32,700	1,590	43,400	4,180	7,100	33,300
Forest Service	330	1,660	1,990	330	220	1,440	590	1,310	90	330	1,660	440	1,500	50
Southwest Idaho	**33,600**	**354,200**	**387,900**	**33,600**	**10,850**	**343,400**	**28,200**	**140,200**	**219,400**	**33,600**	**354,200**	**20,900**	**67,500**	**299,300**
BLM	33,600	354,200	387,900	33,600	10,850	343,400	28,200	140,200	219,400	33,600	354,200	20,900	67,500	299,300
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weiser	**12,900**	**17,500**	**30,300**	**12,900**	**13,700**	**3,720**	**30,300**	**0**	**0**	**12,900**	**17,500**	**30,300**	**0**	**0**
BLM	12,900	17,500	30,300	12,900	13,700	3,720	30,300	0	0	12,900	17,500	30,300	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sawtooth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-71
Acres of Low Sagebrush within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]		Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	GHMA	IHMA	PHMA
Total	**61,900**	**767,200**	**829,100**	**61,900**	**63,700**	**703,500**	**84,300**	**263,600**	**481,200**	**61,900**	**767,200**	**66,100**	**188,800**	**567,500**
BLM	55,200	751,700	806,800	55,200	59,900	691,800	76,800	257,200	472,800	55,200	751,700	62,400	184,100	557,600
Forest Service	6,690	15,500	22,200	6,690	3,760	11,800	7,500	6,380	8,340	6,690	15,500	3,710	4,700	9,910

Source: BLM GIS 2015
[1]There are no acres of low sagebrush in RHMA.

Table 4-72
Acres of Mixed Sagebrush within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mountain Valleys	**319,400**	**1,795,900**	**2,115,300**	**319,400**	**325,700**	**1,470,100**	**354,400**	**748,500**	**1,011,000**	**319,400**	**1,795,900**	**0**	**140,500**	**753,400**	**988,900**
BLM	131,200	1,430,800	1,562,000	131,200	175,200	1,255,600	133,200	611,800	816,400	131,200	1,430,800	0	120,600	625,800	770,800
Forest Service	188,300	365,100	553,300	188,300	150,500	214,600	221,200	136,700	194,600	188,300	365,100	0	19,900	127,600	218,100
Southwest Montana	**254,800**	**489,300**	**744,100**	**254,800**	**100**	**489,300**	**254,900**	**0**	**488,900**	**254,800**	**489,300**	**0**	**254,800**	**0**	**489,300**
BLM	156,000	400,200	556,200	156,000	50	400,200	156,000	0	400,100	156,000	400,200	0	156,000	0	400,200
Forest Service	98,800	89,100	187,900	98,800	50	89,100	98,900	0	88,800	98,800	89,100	0	98,800	0	89,100
North Side Snake	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Side Snake	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Southwest Idaho	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**4,420**	**41,200**	**45,700**	**4,420**	**870**	**40,400**	**6,670**	**14,900**	**24,100**	**4,420**	**41,200**	**0**	**970**	**15,600**	**28,100**
BLM	4,060	40,000	44,100	4,060	560	39,500	6,130	13,900	24,100	4,060	40,000	0	970	14,800	28,100
Forest Service	360	1,200	1,570	360	310	890	550	1,020	0	360	1,200	0	0	750	0
Weiser	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-72
Acres of Mixed Sagebrush within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F[1]			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sawtooth	**14,500**	**0**	**14,500**	**14,500**	**0**	**0**	**14,500**	**0**	**0**	**14,500**	**0**	**0**	**14,500**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	14,500	0	14,500	14,500	0	0	14,500	0	0	14,500	0	0	14,500	0	0
Total	**593,100**	**2,326,400**	**2,919,500**	**593,100**	**326,700**	**1,999,700**	**630,500**	**763,400**	**1,523,900**	**593,100**	**2,326,400**	**0**	**410,700**	**769,000**	**1,506,400**
BLM	291,200	1,871,100	2,162,200	291,200	175,800	1,695,200	295,300	625,700	1,240,600	291,200	1,871,100	0	277,500	640,600	1,199,100
Forest Service	301,900	455,400	757,300	301,900	150,900	304,500	335,100	137,700	283,400	301,900	455,400	0	133,200	128,400	307,300

Source: BLM GIS 2015
[1]There are no acres of mixed sagebrush in RHMA.

Table 4-73
Acres of Tall Sagebrush within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**28,200**	**8,660**	**36,900**	**28,200**	**5,310**	**3,350**	**36,900**	**0**	**0**	**28,200**	**8,660**	**0**	**31,300**	**0**	**0**
BLM	13,500	8,660	22,200	13,500	5,310	3,350	22,200	0	0	13,500	8,660	0	21,600	0	0
Forest Service	14,700	0	14,700	14,700	0	0	14,700	0	0	14,700	0	0	9,730	0	0
Mountain Valleys	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Southwest Montana	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Side Snake	**267,800**	**1,135,500**	**1,403,200**	**267,800**	**145,600**	**989,900**	**378,900**	**416,000**	**608,300**	**267,800**	**1,135,500**	**0**	**254,300**	**312,400**	**733,100**
BLM	212,300	1,114,100	1,326,400	212,300	133,000	981,200	322,700	395,400	608,300	212,300	1,114,100	0	254,300	312,400	733,100
Forest Service	55,500	21,400	76,900	55,500	12,600	8,740	56,300	20,600	0	55,500	21,400	0	56,600	19,200	0
South Side Snake	**226,700**	**795,000**	**1,021,600**	**226,700**	**275,400**	**519,600**	**298,500**	**358,500**	**364,600**	**226,700**	**795,000**	**20**	**196,000**	**443,800**	**326,500**
BLM	163,900	628,900	792,800	163,900	253,500	375,400	223,700	289,100	279,900	163,900	628,900	20	134,400	360,300	243,000
Forest Service	62,800	166,100	228,800	62,800	21,900	144,100	74,800	69,300	84,700	62,800	166,100	0	61,700	83,500	83,500
Southwest Idaho	**159,900**	**1,146,500**	**1,306,400**	**159,900**	**46,100**	**1,100,400**	**128,100**	**215,500**	**962,800**	**159,900**	**1,146,500**	**0**	**70,600**	**155,700**	**1,054,100**
BLM	159,900	1,146,500	1,306,400	159,900	46,100	1,100,400	128,100	215,500	962,800	159,900	1,146,500	0	70,600	155,700	1,054,100
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weiser	**56,600**	**40,700**	**97,400**	**56,600**	**29,800**	**11,000**	**97,400**	**0**	**0**	**56,600**	**40,700**	**0**	**97,300**	**0**	**0**
BLM	56,600	40,700	97,400	56,600	29,800	11,000	97,400	0	0	56,600	40,700	0	97,300	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-73
Acres of Tall Sagebrush within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Sawtooth	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**739,100**	**3,126,400**	**3,865,500**	**739,100**	**502,200**	**2,624,200**	**939,800**	**990,000**	**1,935,800**	**739,100**	**3,126,400**	**20**	**706,200**	**931,000**	**2,113,600**
BLM	606,200	2,939,000	3,545,100	606,200	467,700	2,471,300	794,100	900,000	1,851,100	606,200	2,939,000	20	578,200	828,300	2,030,100
Forest Service	133,000	187,400	320,400	133,000	34,500	152,900	145,700	89,900	84,700	133,000	187,400	0	128,000	102,700	83,500

Source: BLM GIS 2015

Table 4-74
Acres of Perennial Grassland within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
East-Central Idaho	**490**	**10**	**500**	**490**	**10**	**0**	**500**	**0**	**0**	**490**	**10**	**0**	**450**	**0**	**0**
BLM	430	10	450	430	10	0	450	0	0	430	10	0	440	0	0
Forest Service	50	0	50	50	0	0	50	0	0	50		0	0	0	0
Mountain Valleys	**2,390**	**29,600**	**32,000**	**2,390**	**1,010**	**28,600**	**3,260**	**9,130**	**19,600**	**2,390**	**29,600**	**0**	**1,260**	**8,800**	**20,300**
BLM	1,390	27,300	28,700	1,390	620	26,600	2,260	7,110	19,300	1,390	27,300	0	1,200	7,180	20,000
Forest Service	1,000	2,350	3,350	1,000	390	1,960	1,010	2,010	320	1,000	2,350	0	60	1,620	300
Southwest Montana	**3,470**	**590**	**4,060**	**3,470**	**0**	**590**	**3,470**	**0**	**590**	**3,470**	**590**	**0**	**3,470**	**0**	**590**
BLM	1,750	530	2,280	1,750	0	530	1,750	0	530	1,750	530	0	1,750	0	530
Forest Service	1,720	60	1,780	1,720	0	60	1,720	0	60	1,720	60	0	1,720	0	60
North Side Snake	**158,900**	**346,000**	**504,900**	**158,900**	**58,200**	**287,700**	**376,800**	**22,900**	**105,100**	**158,900**	**346,000**	**0**	**171,500**	**197,400**	**110,300**
BLM	156,900	344,100	500,900	156,900	56,800	287,200	374,800	21,000	105,100	156,900	344,100	0	169,500	195,500	110,300
Forest Service	1,980	1,930	3,910	1,980	1,400	530	2,020	1,890	0	1,980	1,930	0	1,990	1,920	0
South Side Snake	**191,400**	**418,000**	**609,300**	**191,400**	**162,200**	**255,800**	**218,400**	**165,400**	**225,500**	**191,400**	**418,000**	**10**	**91,500**	**194,500**	**189,700**
BLM	178,700	400,200	578,900	178,700	157,600	242,600	200,500	154,000	224,300	178,700	400,200	10	76,900	179,900	188,500
Forest Service	12,700	17,800	30,500	12,700	4,570	13,200	17,900	11,300	1,230	12,700	17,800	0	14,600	14,600	1,230
Southwest Idaho	**53,100**	**78,900**	**132,100**	**53,100**	**5,160**	**73,800**	**52,500**	**37,000**	**42,500**	**53,100**	**78,900**	**0**	**11,400**	**48,300**	**59,100**
BLM	53,100	78,900	132,100	53,100	5,160	73,800	52,500	37,000	42,500	53,100	78,900	0	11,400	48,300	59,100
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear Lake	**0**	**520**	**520**	**0**	**0**	**520**	**10**	**20**	**500**	**0**	**520**	**0**	**0**	**20**	**500**
BLM	0	520	520	0	0	520	10	20	500	0	520	0	0	20	500
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weiser	**28,300**	**4,460**	**32,800**	**28,300**	**2,780**	**1,670**	**32,800**	**0**	**0**	**28,300**	**4,460**	**0**	**32,700**	**0**	**0**
BLM	28,300	4,460	32,800	28,300	2,780	1,670	32,800	0	0	28,300	4,460	0	32,700	0	0
Forest Service	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-74
Acres of Perennial Grassland within GRSG Analysis Areas in the Idaho and Southwestern Montana Sub-region

Analysis Area	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan		
	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	GHZ	IHZ	CHZ	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA
Sawtooth	**20**	**0**	**20**	**20**	**0**	**0**	**20**	**0**	**0**	**20**	**0**	**0**	**20**	**0**	**0**
BLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forest Service	20	0	20	20	0	0	20	0	0	20	0	0	20	0	0
Total	**438,000**	**878,100**	**1,316,100**	**438,000**	**229,400**	**648,700**	**687,800**	**234,500**	**393,900**	**438,000**	**878,100**	**10**	**312,400**	**454,000**	**380,500**
BLM	420,600	855,900	1,277,000	420,600	223,000	632,900	665,100	219,200	392,300	420,600	855,900	10	294,000	435,900	379,000
Forest Service	17,400	22,100	39,600	17,400	6,360	15,800	22,700	15,200	1,610	17,400	22,100	0	18,400	18,100	1,590

Source: BLM GIS 2015

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Impacts from Habitat Restoration and Vegetation Management

Under Alternative B, habitat restoration and vegetation management actions would improve GRSG habitat. It would do this by restricting activities that degrade sagebrush communities, while promoting and prioritizing those activities that improve sagebrush communities and prioritizing restoration to benefit GRSG habitat. The BLM and Forest Service would require the use of native seeds as a component and would design post-restoration management to ensure the long-term persistence of restoration. In addition, the BLM and Forest Service would consider climate change when determining species for restoration. Together, these management actions would alter vegetative communities by increasing sagebrush height, herbaceous cover, and vegetation productivity.

Treatments designed to prevent encroachment of trees and nonnative species would alter the condition of native vegetation communities by changing the density, composition, and frequency of species within plant communities. Habitat connectivity for GRSG could be increased over the planning time frame through vegetation manipulation designed to restore vegetation, particularly sagebrush overstory cover.

Vegetation manipulations in riparian areas, such as weed treatments, native plantings, and erosion control in the channel, would improve the acreage and condition of the riparian vegetation community, individual riparian species, and hydrologic functionality. The result of this would be to attain PFC or forest plan standards and guidelines.

Impacts from Wildland Fire Management

Fuels treatments under Alternative B would be designed to protect sagebrush ecosystems by maintaining sagebrush cover, applying seasonal restrictions and protections for winter range, and requiring use of native seeds as a component of restoration. Post-fuels treatments, ESR, and BAER management would be designed to ensure long-term persistence of seeded areas and native plant restoration areas. While the risk of wildfire in sagebrush areas would continue, these management actions would help to restore sagebrush vegetation and prevent degradation or destruction of sagebrush from wildfire. Furthermore, emphasizing the use of native seeds and noninvasive species would reduce the likelihood for weed invasion in burned or treated areas.

The BLM and Forest Service would also prioritize suppression in PHMA, which would retain the existing conditions and trends of vegetation in these areas. Impacts from fuels treatments, ESR/BAER, and suppression are similar to those described under **Section 4.3.2**.

Impacts from Nonenergy Leasable Minerals Management

Under Alternative B, PHMA would be closed to future nonenergy leasable mineral leasing (**Table 4-62**) and RDFs would be required on existing leases. This would prevent removal, fragmentation, and other impacts on vegetation associated with nonenergy leasable mineral development in unleased areas and would reduce impacts in leased areas.

Impacts from Locatable Minerals Management

In addition to withdrawing acres from locatable mineral entry, the BLM and Forest Service would apply mitigation measures required to prevent unnecessary or undue degradation as

defined in 43 CFR 3809.415. The BLM and Forest Service make applicable RDFs (see **Appendix B**) required design features on 3809 plans and Plans of Operation in PHMA consistent with applicable law. These actions would reduce the likelihood that vegetation would be removed, degraded, or fragmented in these areas and would reduce the likelihood that weeds could be introduced or spread as a result of locatable mineral development.

Impacts from Salable Minerals Management

In addition to closing PHMA to mineral material sales, the BLM and Forest Service would restore salable mineral pits no longer in use. Over the long term, closures would protect existing vegetation from removal, degradation, fragmentation, and nonnative invasive species introduction or spread. Restoration would increase the extent of vegetation and depending on the location could remove nonnative invasive species and reduce fragmentation.

Impacts from Fluid Minerals Management

In addition to acres closed to fluid mineral leasing (**Table 4-64**), the BLM and Forest Service would require numerous conservation measures in PHMA. Impacts are similar to those described for Locatable Minerals Management, above. Over the long term, closures and NSO stipulations would protect vegetation from removal, degradation, fragmentation, and nonnative invasive species introduction or spread in unleased areas. Conservation measures would help to reduce such impacts in leased areas. Restoration would improve the condition and increase the extent of vegetation and depending on the location could remove nonnative invasive species and reduce fragmentation. Geophysical exploration could disturb vegetation or spread weeds, but it would be unlikely to remove substantial amounts of vegetation.

Impacts from Travel and Transportation Management

Under Alternative B, OHV travel would be limited to existing roads, primitive roads, and trails within PHMA (**Table 4-65**). Management actions would also reduce new route construction and restore roads, primitive roads, and trails not designated under future travel management plans. These actions would reduce the likelihood of impacts caused by roads, as described under **Section 4.3.2**, and would increase the acreage and connectivity of sagebrush vegetation.

Impacts from Livestock Grazing Management

Under Alternative B, the BLM and Forest Service would not change permitted AUMs compared to Alternative A (**Table 4-66**). However, the BLM and Forest Service would implement a number of management actions in PHMA, including prioritizing land health assessments or similar grazing evaluations in GRSG habitat, to incorporate GRSG habitat objectives and management considerations into livestock grazing management and to improve the condition of vegetation in GRSG habitat areas. These actions include completing land health assessments or similar grazing evaluations, taking into consideration grazing methods and systems to reduce impacts on GRSG habitat, improving management of riparian areas and wet meadows, and evaluating existing introduced perennial grass seedings, water developments, and structural range improvements. Such measures would help to improve vegetation condition of rangeland and riparian and wetland areas. They also could reduce the likelihood of nonnative invasive species introduction or spread. Together,

these efforts would improve consistency of management across the sub-region and would reduce impacts from grazing on vegetation, described in **Section 4.3.2.**

Impacts from Special Designations Management
Impacts from ACEC management under Alternative B are the same as those described for Alternative A (**Table 4-61**).

4.3.6 Alternative C

Under Alternative C, the BLM and Forest Service would manage lands to conserve, enhance, and restore sagebrush ecosystems. Management actions would be applied to all occupied GRSG habitats (**Table 4-15**). Management would focus on removing livestock grazing from occupied habitats, with most other management similar that to Alternative A. A 3 percent disturbance cap would be the same as under Alternative B but would be applied to all occupied habitat.

Impacts from Lands and Realty Management
Lands and realty management under Alternative C would be similar to that described for Alternative B, but ROW exclusion areas would be designated in all occupied habitats and ACECs (**Table 4-61**). In addition, all occupied habitat, ACECs, and restoration areas would be retained in federal ownership. These actions would protect vegetation from removal, degradation, and fragmentation in protected areas. Impacts from ROW exclusion areas and retention of federal lands would be as described under **Section 4.3.2**.

Impacts from Habitat Restoration and Vegetation Management
Management under Alternative C would be similar to that described under Alternative A, though with an increased focus on restoration. Impacts are similar to those described for Alternative A, though impacts may be reduced in areas where vegetation is restored to the reference state of the appropriate ecological site description.

Impacts from Wildland Fire Management
Impacts from wildland fire management under Alternative C are similar to those described for Alternative A.

Impacts from Nonenergy Leasable Minerals Management
Impacts from nonenergy leasable minerals management under Alternative C are the same as those described under Alternative B, but would include more acres in PHMA (**Table 4-62**). These management changes would prevent impacts on vegetation associated with nonenergy leasable mineral development in unleased areas, described in **Section 4.3.2,** and reduce impacts in leased areas.

Impacts from Locatable Minerals Management
Impacts from locatable minerals management under Alternative C are the same as those described under Alternative A.

Impacts from Salable Minerals Management

Impacts from salable minerals management under Alternative C are the same as those described under Alternative A (**Table 4-63**).

Impacts from Fluid Minerals Management

Impacts from fluid minerals management under Alternative C are similar to those described for Alternative B, although all occupied habitat would be closed to leasing (**Table 4-64**).

Impacts from Travel and Transportation Management

Impacts from travel and transportation management under Alternative C are the same as those described under Alternative A (**Table 4-65**).

Impacts from Livestock Grazing Management

Under Alternative C, livestock grazing would be removed from all occupied GRSG habitats (**Table 4-66**). The effects of livestock exclusion would depend on climate, soils, fire history, and disturbance and grazing history (Strand and Launchbaugh 2013, p. 10). While studies have examined the effects of reducing or changing livestock grazing, limited literature is available on the effects of completely removing livestock grazing. Grazing is associated with direct and indirect impacts on vegetation, as described under **Section 4.3.2**. Grazing may reduce resistance to invasion from cheatgrass (Reisner et al. 2013, p. 9), reduce water infiltration, increase soil compaction and erosion, and decrease water quality (Braun 1998 and Dobkin et al. 1998 in USFWS 2010, p. 13939).

Ceasing grazing could relieve these impacts and allow for recovery of native understory perennials and an increase in sagebrush and herbaceous vegetation cover (Strand and Launchbaugh 2013, pp. 6-7). This recovery would enhance habitat components important to nest success, including cover and forage by increasing the insect population. Other research suggests that understory herbaceous productivity may not increase in depleted sagebrush ranges when grazing is removed (Beck and Mitchell 2000, p. 995). Furthermore, in some areas, passive restoration may not be sufficient to improve GRSG habitat and active restoration may be necessary (Davies et al. 2011).

Riparian and wetland areas that have been altered by grazing-associated water developments would be restored, potentially increasing the acreage and improving the condition of these vegetation communities. However, impacts from wildlife use and from wild horses, where present, on riparian and wetland areas would continue.

In the short term, this alternative would result in more residual herbaceous biomass, which may result in some smaller fires under less severe conditions. It may also result in more crown die-out of bunchgrasses that burn hotter due to retained crown fuel. Evidence suggests that the potential role of grazing on fire behavior is limited under extreme burning conditions, such as low fuel moisture and relative humidity, high temperature, and wind speed (Strand and Launchbaugh 2013, p. 16). Ultimately, the effect of removing grazing on fire spread, severity, and intensity would depend on weather, fuel characteristics, landscape features, and other factors.

Impacts from Special Designations Management
Under Alternative C, the BLM would designate 39 new ACECs (**Table 4-**Table 4-**67**). Impacts from management of ACECs are as described under **Section 4.3.2**.

4.3.7 Alternative D

Under Alternative D, the BLM and Forest Service would manage lands to conserve, enhance, and restore sagebrush ecosystems. Management and impacts would be similar to Alternative B, though Alternative D would incorporate more flexibility and adaptive management applied to resource uses to account for sub-regional conditions. PHMA, IHMA, and GHMA would be designated (**Table 4-15**). The BLM and Forest Service would require a no net unmitigated loss of PHMA and IHMA and would implement numerous conservation measures to reduce impacts from human activities in PHMA. This would reduce the likelihood for vegetation removal, degradation, or fragmentation.

However, by including a rule set to release areas from PHMA, IHMA, GHMA protection, some vegetation communities that do not provide habitat for GRSG could receive less protection under this alternative and could be subject to removal, damage, or reduced condition caused by human disturbances. At the implementation level, impacts would be analyzed on a site-specific basis.

Impacts from Lands and Realty Management
Under Alternative D, PHMA would be ROW avoidance, with exclusions for wind and solar development. A number of uses would not be allowed, such as large transmission facilities, fluid mineral development, and paved and graded gravel roads. IHMA and GHMA would be designated as ROW avoidance areas for all infrastructure (**Table 4-60**). Impacts from designating ROW exclusion and avoidance areas are as described under **Section 4.3.2**; impacts from land tenure decisions are similar to those described for Alternative B.

Impacts from Habitat Restoration and Vegetation Management
Management under Alternative D would be similar to that described for Alternative B, though with additional measures to prioritize vegetation rehabilitation. They would incorporate design features that would improve the success of rehabilitation projects and strategically plan for wildfire suppression. Together, these management actions would improve the likelihood for sagebrush rehabilitation and prevention of catastrophic wildfires that would destroy sagebrush vegetation over the long term.

Impacts from Wildland Fire Management
Wildfire management under Alternative D would be similar to that described for Alternative B, with additional management flexibility to respond to sub-regional conditions and management, and guidance incorporated to tailor management to specific vegetation communities. The BLM and Forest Service would prioritize wildfire suppression planning and would consider targeted grazing to reduce fine fuels throughout the decision area. Together, these actions would improve wildfire management, given the limited resources available, and would target those areas that need most protection. As a result, the likelihood for wildfire would be reduced and subsequent impacts on vegetation from wildfire described under **Section 4.3.2** would also be reduced.

Impacts from Nonenergy Leasable Minerals Management

Under Alternative D, PHMA and IHMA would be closed to nonenergy leasable mineral leasing with exceptions for modifications (**Table 4-62**). GHMA are available for leasing subject to applicable timing restrictions and lease stipulations. RDFs and restoration would be required on existing leases in all GRSG habitat. This would reduce impacts on vegetation associated with nonenergy leasable mineral development in unleased and leased areas, as described under **Section 4.3.2**.

Impacts from Locatable Minerals Management

Acres open to locatable mineral development under Alternative D would be the same as those described for Alternative A. However, no net unmitigated loss of habitat would be allowed under this alternative. This measure, along with RDFs consistent with applicable law (see **Appendix B**) and mitigation measures applied to the extent possible (see impacts analysis for Alternative B), would reduce impacts on vegetation and would restore habitat, thereby reducing the impacts described under Alternative A.

Impacts from Salable Minerals Management

Under Alternative D, no new authorizations would be approved within 1.86 miles (3 km) of an occupied lek. RDFs and timing limitations would be applied to newly authorized disposals within GRSG habitat, and reclamation bonding would be required (**Table 4-63Error! Reference source not found.**). Impacts on vegetation, such as those described under **Section 4.3.2**, could occur from authorizations outside of the 1.86-mile (3 km) buffer from leks, although RDFs would reduce impacts.

Impacts from Fluid Minerals Management

Under Alternative D, low or no potential areas in PHMA and IHMA would be closed to fluid mineral leasing (**Table 4-64Error! Reference source not found.**). Areas of moderate and high potential would be open to leasing, subject to CSU, timing limitations, and an NSO stipulation within 0.6 miles (1 km) of an occupied lek. Geophysical exploration would be allowed, subject to timing limitations. Impacts on vegetation, such as those described under **Section 4.3.2**, could occur from development on leases outside of the 0.6-mile (1 km) buffer from leks, although RDFs would reduce impacts.

Impacts from Travel and Transportation Management

Impacts from travel and transportation management under Alternative D are similar to those described under Alternative B, though with increased flexibility to provide for high quality and sustainable travel routes and administrative access (**Table 4-65**). As such, there may be increased impacts on the acreage of vegetation in areas where new routes are created. Impacts in these areas are as described under **Section 4.3.2**.

Impacts from Livestock Grazing Management

Under Alternative D, the BLM and Forest Service would maintain the same number of acres open to grazing as under Alternative A (**Table 4-66**). Impacts from livestock grazing management under Alternative D are similar to those described for Alternative B. However, under Alternative D, PHMA would receive the highest priority, subject to legal requirements, for completion of land health assessments. Also, the BLM and Forest Service

would restrict authorizations of new water developments and would evaluate introduced perennial grass seedings. The BLM and Forest Service would incorporate measures to reduce impacts from trailing and would consider using grazing to achieve fuels management objectives throughout the decision area. Together these measures would reduce the impacts from grazing described under **Section 4.3.2**.

Impacts from Special Designations Management

Impacts from ACEC management under Alternative D are the same as those described for Alternative A (**Table 4-67**).

4.3.8 Alternative E

Under Alternative E, the BLM and Forest Service would manage to maintain, conserve, enhance, and restore sagebrush ecosystems. CHZ, IHZ, and GHZ would be designated (**Table 4-15**). In CHZ and IHZ, the BLM and Forest Service would incorporate management flexibility to permit high value infrastructure with appropriate mitigation and best management practices tailored for the sub-region. Management and impacts are similar to Alternative D, though Alternative E would require less stringent use restrictions and would designate the least amount of CHZ, compared to the other alternatives' management area designations.

Impacts from Lands and Realty Management

Under Alternative E, CHZ and IHZ would be designated as ROW avoidance areas, although the BLM and Forest Service would allow for more exceptions for development in IHZ (**Table 4-60**). This could increase the likelihood for impacts on vegetation, such as disturbance, removal, or fragmentation. Impacts from designation of ROW avoidance areas are as described under **Section 4.3.2**. Alternative E does not provide guidance for land tenure decisions in GRSG habitat, so there would be no associated effects on vegetation.

Impacts from Habitat Restoration and Vegetation Management

Development of a restoration strategy for vegetation management at the implementation stage would help focus priorities on the areas and communities identified as most pertinent to restoring sagebrush and GRSG habitat. Native vegetation would be used for restoration to the extent practicable. These measures would increase the acreage and extent of sagebrush vegetation over the long term. Invasive species would be controlled for three years after wildfire treatments, which would reduce the likelihood of invasive weeds to be introduced or spread into recently burned areas.

Impacts from Wildland Fire Management

Alternative E provides guidance to reduce wildfire response time, create fuel breaks, and improve the wildfire suppression baseline. The goal is to maintain habitat to support 73 to 95 percent of breeding male GRSG by implementing fire breaks, re-seeding burned areas, establishing Rangeland Fire Protection Associations within CHZ and IHZ, and offsetting habitat losses to wildfire, according to the Governor's Office of Species Conservation letter dated July 1, 2013 (Governor's Office of Species Conservation 2013). Completion of a response time analysis would help focus suppression resources and activities to help reduce the size and extent of wildfires in CHZ. Targeted grazing would be allowed in IHZ. These

actions would improve the likelihood for fire suppression and would reduce the likelihood for fire, thereby protecting existing vegetation. However, this alternative does not provide much guidance regarding other fuel treatments and ESR, which could limit the success of fire suppression and regrowth of desired vegetation after a fire.

Impacts from Nonenergy Leasable Minerals Management

Alternative E does not provide guidance on nonenergy leasable minerals management, and as such, impacts on vegetation are expected to be similar to those described for Alternative A (**Table 4-62**).

Impacts from Locatable Minerals Management

Alternative E does not provide guidance on locatable minerals management, and as such, impacts on vegetation are expected to be similar to those described for Alternative A.

Impacts from Salable Minerals Management

Alternative E does not provide guidance on salable minerals management, and as such, impacts on vegetation are expected to be similar to those described for Alternative A (**Table 4-63**).

Impacts from Fluid Minerals Management

Under Alternative E, the BLM and Forest Service would apply an NSO stipulation on leases in CHZ, which would reduce the likelihood of surface-disturbing activities and vegetation removal in these areas. No additional areas would be closed to leasing (**Table 4-64**), but a five percent disturbance cap would apply to fluid mineral impacts only. Fluid mineral leasing would be authorized in IHZ under certain conditions, and vegetation could be disturbed, removed, or fragmented in the areas where development would occur.

Impacts from Travel and Transportation Management

Under Alternative E, the completion of travel management planning would be prioritized and would seek to minimize disturbance to GRSG and their habitat. Before completion of travel planning, OHVs would be restricted to existing routes and new roads would be discouraged or re-routed where possible (State of Idaho 2012). No immediate road closures would occur (**Table 4-65**).

Impacts from Livestock Grazing Management

Impacts from livestock grazing management under Alternative E are similar to those described for Alternative D, though with an increased emphasis on flexibility to respond to sub-regional conditions and adaptive management in grazing management (**Table 4-66**). These measures could further reduce impacts on vegetation, depending on where and how they were applied.

Impacts from Special Designations Management

Impacts from ACEC management under Alternative E are the same as those described for Alternative A (**Table 4-67**).

4.3.9 Alternative F

Management under Alternative F would be largely similar to that described for Alternative B, though with more stringent guidance and restrictive management in sagebrush ecosystems. PHMA, GHMA and RHMA would be designated (**Table 4-15**). Unique to Alternative F, an area would be considered successfully restored only if GRSG used the area.

Impacts from implementing the maximum 3 percent disturbance cap are similar to those described for Alternative B; however, under Alternative F, all surface disturbances (including human disturbance and fire) would count toward this cap. This would further reduce the acreage of vegetation that would be removed or fragmented within all occupied habitat over the long term.

Impacts from Lands and Realty Management

Impacts from designation of ROW exclusion areas are similar to those described under Alternative B (**Table 4-61**). Impacts from land tenure decisions are similar to those described under Alternative B, though Alternative F would not allow for exceptions to disposal criteria. This would reduce management flexibility and could have implications for vegetation connectivity.

Impacts from Habitat Restoration and Vegetation Management

Impacts from habitat restoration and vegetation management under Alternative F are similar to those described for Alternative B.

Impacts from Wildland Fire Management

Impacts from wildland fire management under Alternative F are similar to those described for Alternative B. Alternative F would require exclusions of grazing post-fire. This would reduce grazing pressure on and trampling of ESR seedings, thus improving the likelihood of native vegetation restoration post-fire.

Impacts from Nonenergy Leasable Minerals Management

Impacts from nonenergy leasable minerals management under Alternative F are the same as those described for Alternative B (**Table 4-62**).

Impacts from Locatable Minerals Management

Impacts from locatable minerals management under Alternative F are the same as those described for Alternative B.

Impacts from Salable Minerals Management

Impacts from salable minerals management under Alternative F are the same as those described for Alternative B (**Table 4-63Error! Reference source not found.**).

Impacts from Fluid Minerals Management

Impacts from fluid minerals management under Alternative F are the same as those described for Alternative B (**Table 4-64**).

Impacts from Travel and Transportation Management

Impacts from travel and transportation management under Alternative F are similar to those described for Alternative B, though there would be fewer impacts on vegetation under Alternative F (**Table 4-65**), because no new road construction would be allowed within 4 miles (6.4 km) of leks in PHMA, and mitigation of impacts from route construction would be required.

Impacts from Livestock Grazing Management

Impacts from livestock grazing management under Alternative F are similar to those described for Alternative B, though Alternative F would require a 25 percent reduction in AUMs and would incorporate more stringent guidance and restrictive measures. This reduction could further reduce impacts on vegetation by reducing grazing pressure across the decision area. The total acreage open to grazing would be the same as for Alternative B (**Table 4-**Table 4-**66**).

Impacts from Special Designations Management

Under Alternative F, the BLM would designate one of two sub-alternatives: F1, which would designate all PPH as an ACEC, and F2, which would designate a subset of PPH as an ACEC (**Table 4-**Table 4-**67**). Impacts from management of ACECs are as described under **Section 4.3.2** and impacts from Zoological Areas are expected to be similar.

4.3.10 Proposed Plan

Under the Proposed Plan, the BLM and Forest Service would manage lands to conserve, enhance and restore GRSG habitat and the sagebrush ecosystem that GRSG populations depend on. Direct protection of sagebrush habitat to support GRSG would limit or modify uses in this habitat type, improving the acreage and condition of desired vegetation communities. Restrictions on resource uses such as ROW and mineral development would reduce damage to native vegetation communities and individual native plant species in areas that are important for regional vegetation diversity and quality. Likewise, use restrictions would minimize fragmentation and would be more likely to retain existing age class distribution within these areas. Use restrictions could also minimize the spread of invasive species by limiting human activities that disturb soil or introduce seeds.

Management and impacts would be similar to Alternatives D and E, though the Proposed Plan would incorporate robust strategies and approaches to GRSG management, including wildfire management, adaptive management, mitigation, and monitoring (**Appendices D**, **G**, **J**, and **E**). PHMA, IHMA, and GHMA would be designated, and 3.8 million acres of SFA would be managed. Acres of each vegetation community within GRSG habitat management areas are presented in **Tables 4-68** through **4-74**. Limiting anthropogenic disturbances to 3 percent at both the BSU and project levels would reduce the likelihood for vegetation removal, degradation, or fragmentation and would maintain the acreage and condition of sagebrush vegetation on both the local and landscape scales. Human disturbances in PHMA and IHMA would be mitigated to a net conservation gain standard, thereby preserving the potential for these areas to provide GRSG habitat. In addition, the BLM and Forest Service would implement numerous conservation measures such as BMPs, RDFs, and buffers

(**Appendix B** and **DD**) to reduce impacts from human activities in PHMA and IHMA. This would reduce the likelihood for vegetation removal, degradation, or fragmentation and reduce the likelihood for weed introduction or spread.

Impacts from Lands and Realty Management

Under the Proposed Plan, PHMA would be designated as ROW exclusion areas and IHMA would be ROW avoidance areas for solar, wind, nuclear, and hydropower energy development as well as commercial service airports and landfills. ROW avoidance areas would also be designated for major and minor ROWs in PHMA and IHMA. GHMA in Montana would have similar protections. Such restrictions would have impacts on vegetation, as described under **Section 4.3.2** (**Tables 4-60 and 4-61**). Additional requirements would further reduce the likelihood for impacts on vegetation by requiring additional conditions to be met and reducing overall disturbance. These requirements would meet the Anthropogenic Disturbance Screening Criteria (for PHMA in Idaho), Anthropogenic Disturbance Development Criteria (for PHMA and IHMA in Idaho), the project/action screen and mitigation process in Montana, mitigation requirements, and application of the disturbance cap, RDFs, BMPs, and buffers.

Retention and acquisition of GRSG habitat would reduce fragmentation of vegetation communities, as described under **Section 4.3.2**.

Impacts from Habitat Restoration and Vegetation Management

Under the Proposed Plan, habitat restoration and vegetation management actions would aim to achieve certain vegetation objectives to improve GRSG habitat. It would do this by restricting activities that could degrade sagebrush communities, such as prescribed fire, while promoting and prioritizing those activities that improve sagebrush communities and prioritizing restoration and rehabilitation to benefit GRSG habitat. The BLM and Forest Service would require the use of native seeds as a component of most restoration activities and would design post-restoration management to ensure the long-term persistence of restoration. Together, these management actions would alter vegetative communities by increasing herbaceous cover and vegetation productivity. Strategically planning for wildfire suppression would prevent catastrophic wildfires that would destroy sagebrush vegetation over the long term.

Over 10 years, the condition of native vegetation communities would be altered by mechanical treatments on 77,000 acres, prescribed fire on 30,000 acres, and grass restoration on 620,000 acres designed to prevent and reduce encroachment of conifers and nonnative species. This would come about by changing the density, composition, and frequency of species within plant communities. Habitat connectivity for GRSG could be increased over the planning time frame through vegetation manipulation designed to restore vegetation, particularly sagebrush overstory cover.

Impacts from Wildland Fire Management

A comprehensive strategy for wildland fire management would be implemented under the Proposed Plan, including the FIAT (**Appendix D**). The assessment would identify PHMA areas and management strategies to reduce the threats to GRSG from invasive annual

grasses, wildfires, and conifer expansion. It would incorporate recent scientific research on resistance and resilience of Great Basin ecosystems as well as interdisciplinary team knowledge. Potential management strategies include proactive measures, such as fuels management and habitat restoration and recovery, and reactive measures, such as fire operations and post-fire rehabilitation. Together, these actions would improve wildland fire management, given the limited resources available, and would target those areas that need most protection. As a result, the likelihood for wildfire would be reduced and subsequent impacts on vegetation from wildfire, particularly vegetation that meets GRSG habitat requirements, described under **Section 4.3.2** would also be reduced. Further, providing adequate rest from livestock grazing would improve the likelihood that ESR seedings would stabilize the site, compete effectively against invasive annuals, and successfully establish native vegetation over the long term.

Impacts from Nonenergy Leasable Minerals Management

Acres of sagebrush closed to nonenergy leasable mineral leasing under the Proposed Plan are shown in **Table 4-62**. Application of the disturbance cap, mitigation requirements, and closures in PHMA and restrictions in IHMA and GHMA outside of KPLAs would prevent or reduce the removal, fragmentation, and other impacts as described in **Section 4.3.2** on vegetation associated with nonenergy leasable mineral development. Impacts, including loss and degradation of upland vegetation and an increased potential for invasive plant spread, as described under **Section 4.3.2**, would continue to occur in areas open to nonenergy leasable mineral leasing and development.

Impacts from Locatable Minerals Management

Under the Proposed Plan, SFA would be recommended for withdrawal from the General Mining Act of 1872; if withdrawn, this action would result in the protection of vegetation in these areas from removal and disturbance caused by operations authorized by the mining law. In addition, RDFs would be applied consistent with applicable law, as well as conditions of approval and mitigation measures to the extent possible (see impact analysis for Alternative B). This would reduce impacts on vegetation and would restore habitat, thereby reducing the impacts described under Alternative A.

Impacts from Salable Minerals Management

Acres of sagebrush closed to salable mineral development under the Proposed Plan are shown in **Table 4-63**. Prohibitions on new salable mineral development in PHMA would prevent new impacts on vegetation in these areas. Requirements to meet the anthropogenic disturbance criteria in IHMA, adhere to the disturbance cap, and implement mitigation, RDFs, BMPs, and buffers in IHMA and GHMA would reduce vegetation removal, fragmentation, and other impacts associated with salable mineral development, as described in **Section 4.3.2**. Restoration would increase the extent of vegetation and depending on the location could remove nonnative invasive species and reduce fragmentation.

Impacts from Fluid Minerals Management

Acres of sagebrush closed to fluid mineral leasing under the Proposed Plan are shown in **Table 4-64**. Protections for vegetation would be greatest in SFA, which would be subject to an NSO stipulation without waivers, exceptions, or modifications. Vegetation would also be

highly protected in PHMA and IHMA, which would be subject to an NSO stipulation with one exception. As a result, the primary mechanisms to prevent or reduce the removal, fragmentation, and other impacts on vegetation from fluid mineral development in unleased areas would be as follows: the NSO stipulation, human disturbance criteria, mitigation requirement, disturbance cap, RDFs, BMPs, and buffers. Impacts, including loss and degradation of upland vegetation and an increased potential for invasive plant spread, as described under **Section 4.3.2**, would continue to occur in areas open to fluid mineral leasing and development.

Impacts from Travel and Transportation Management

Under the Proposed Plan, OHV travel would be limited to existing roads, primitive roads, and trails within Idaho BLM field offices (**Table 4-65**). Management actions would also close areas adversely affected by off-highway vehicles and Travel Management Plans would be developed. These actions would reduce the likelihood of impacts caused by roads, as described under **Section 4.3.2**, and would increase the acreage and connectivity of sagebrush vegetation.

Impacts from Livestock Grazing Management

Under the Proposed Plan, the BLM and Forest Service would maintain the same number of acres open to grazing as under Alternative A (**Table 4-66**). However, the BLM and Forest Service would implement a number of management actions to meet vegetation objectives in SFA and PHMA, as follows: prioritizing the review and processing of grazing permits/leases in SFA, particularly in areas not meeting land health standards that also contain riparian areas, including wet meadows. Further, the BLM would prioritize land health assessments in GRSG habitat, incorporate GRSG habitat objectives and management considerations into livestock grazing management, improve the condition of vegetation in GRSG habitat areas, and incorporate grazing into adaptive management considerations.

Such measures would help to improve vegetation condition of rangeland and riparian and wetland areas. They also could reduce the likelihood of nonnative invasive species introduction or spread through improved grazing management and changes resulting from land health assessments. Together, these efforts would improve consistency of management across the sub-region and would reduce impacts from grazing on vegetation, described in **Section 4.3.2.**

The Forest Service would incorporate grazing guidelines (**Table 2-6**) into term grazing permits, which would likely improve vegetation structures in GRSG seasonal habitat on grazing allotments.

Impacts from Special Designations Management

Under the Proposed Plan, the BLM would continue to manage 59 ACECs within the sub-region (**Table 4-67**). The Forest Service would not manage any Zoological Areas under the Proposed Plan. Existing ACECs likely protect vegetation through use restrictions; these impacts are analyzed under each existing RMP within the planning area. As a result, there would be no additional effects from ACEC or Zoological Area management on vegetation under this alternative.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

Implementing a human disturbance cap at both the BSU and project levels would limit vegetation removal in GRSG habitat at the site and landscape scales. The BLM and Forest Service would also require no net loss of Key habitat. This would help to maintain the extent and condition of sagebrush habitat throughout the sub-region, but could displace development into other vegetation types, causing increased impacts on these communities. Collocation requirements in the Anthropogenic Disturbance Exception and Development Criteria would limit fragmentation and may also limit weed spread since development would occur in previously disturbed areas.

4.4 Wild Horse and Burro Management

4.4.1 Methods and Assumptions

Indicators

Indicators of impacts on wild horses are as follows:

- Changes in permitted AMLs
- Changes in AUMs
- Prohibitions or limitations on the construction or maintenance of range improvements
- Modifications to or removal of structural range improvements

Assumptions

The analysis includes the following assumptions:

- Horses and burros depend on the herbaceous component of a shrub/grass plant community. Declines in grasses and forbs are adverse and increases are beneficial. Vegetation treatments, such as prescribed burns or weed control, can enhance the plant community composition and forage availability.
- Water is the primary resource of wild horse distribution and can improve wild horse distribution.
- Fences and other disturbances can restrict wild horse movement and access. Fences are sometimes necessary to restrict horse distribution to areas inside HMAs or to protect sensitive resources within HMAs.
- No forage is allocated to wild horses found on lands outside of HMAs. The BLM has the responsibility to remove wild horses found outside of HMAs.
- The scheduling for wild horse gathers to remove excess animals is influenced by a national priority process. Factors affecting gather priorities are determinations of excess horses and overpopulations, wild horse and range condition, annual appropriations, litigation and court orders, emergency situations, such as disease,

weather, and fire, availability of contractors, the market for adoption, and long-term holding availability for unadoptable excess horses.

- Wild horse distribution is influenced by season, climatic conditions, water and forage availability, and population size.
- There are no HMAs in the southwest Montana portion of the sub-region; therefore, impacts described apply to Idaho only.
- There are no wild burros in Idaho or southwest Montana, so impacts apply only to wild horses.

4.4.2 Nature and Type of Effects

All HMAs are managed for AML. Initially, AML is established in RMPs at the outset of planning and is adjusted based on monitoring data by revising HMA plans and subsequent land use plan amendment. Priorities for gathering excess wild horses to maintain AML are based on population inventories, resource monitoring objectives, gather schedules, and budgets. Gathers are also conducted in emergency situations when the health of the population is at risk due to lack of forage or water and, in some situations, wildland fire.

Development such as mineral extraction, recreation, and construction in ROWs may impact wild horse populations in the following ways:

- Reduce forage availability
- Disturb wild horses
- Prohibit the ability of wild horses to move freely across HMAs
- Limit ability to perform management activities (for example, energy development infrastructure may impact the ability to conduct helicopter gathers)

Implementing management to protect GRSG generally involves reducing or otherwise restricting land uses and activities. Limiting these activities to protect GRSG would also protect forage for wild horses and would limit human and surface disturbance.

Conversely, there could be impacts on wild horses and the ability to support AMLs when management options for HMAs are restricted. Impacts from range improvement restrictions vary, based on the type of range improvement affected. Restrictions on fences would improve wild horse habitat by allowing free range, while limiting projects that could enhance forage, and water availability could limit future options to manage for current AML.

Implementing management for the following resources would have negligible or no impact on wild horse management and are therefore not discussed in detail: air quality, visual resources, cultural resources, wilderness characteristics, socioeconomics, special designation management, and tribal interests.

4.4.3 Impacts Common to All Alternatives

Under all alternatives except Alternative F, management actions for wild horses would not result in direct changes to HMA status, to AMLs in designated HMAs, or to acreage designated as HMAs. Impacts under all alternatives, with the exception of Alternative F, would be limited to any future changes that may result in AML or acreage adjustment, as well as reconsideration of HMA status that is based on achieving GRSG habitat objectives for improving habitat conditions.

Under all alternatives, management actions would not result in direct acreage designated as HMAs. Approximately 269,700 acres of HMAs would fall within GRSG habitat, although the acres within a specific GRSG management area designation (such as a PHMA) with associated management varies by alternative.

The Forest Service does not manage any wild horses or burros within the planning area, so no impacts would occur on National Forest System lands.

Impacts from Energy and Mineral Development

Impacts from Nonenergy Leasable Minerals Management
There are expected to be minimal impacts from nonenergy leasable minerals on wild horses across all alternatives due to a lack of leases in GRSG habitat.

Impacts from Coal Management
No economically viable coal resources are found in Idaho. Under the Dillon RMP, a plan amendment would be required to lease coal. As a result, coal development in the project area and related impacts on wild horses are likely to be limited under all alternatives.

Impacts from Recreation and Visitor Services Management

Under all alternatives, OHVs would be limited to existing roads and trails, thereby limiting the impacts on wild horses from dispersed travel. Site-specific travel management planning could, when completed, reduce the potential for conflicts between wild horses and travel management.

4.4.4 Alternative A

No PHMA or GHMA would be designated for GRSG under this alternative. Wild horse management would be determined by management in current RMPs in the planning area.

Impacts from Vegetation Management

Under Alternative A, restoration would continue in the planning area, with long-term benefits to forage for horses. Vegetation could be managed to improve forage, and impacts on WHB from vegetation management would likely be minimal. Management actions for invasive species would continue under the direction of current management plans, with the focus on areas not meeting land health standards or desired conditions.

Impacts from Wild Horse and Burro Management

Under Alternative A, all HMAs are managed for AML and for healthy populations to achieve a thriving natural ecological balance with respect to wildlife, livestock use, and other multiple uses. All adjustments to HMAs, HMA plans, and priorities of gathers would continue to be based on monitoring data. As a result, impacts on wild horses under Alternative A would depend on the site-specific conditions as reported in monitoring data.

While most HMAs in the sub-region contain GRSG habitat within a sagebrush vegetation community, prioritizing wild horse gathers to maintain AML is not based on GRSG habitat needs. Nevertheless, this is implicit in the congressional directive to maintain a thriving natural ecological balance.

Impacts from Wildland Fire Management

Under Alternative A, mechanical treatments, prescribed fires, and other treatments would be used to prevent conifer encroachment and remove undesirable annual grass and weed species. These actions could improve forage for wild horses in the long term. Although most of the LUPs do not provide specific direction for fire suppression in GRSG habitat, protection of GRSG habitat during suppression has taken center stage in planning and operational discussions due to large fire in PPH and PGH in 2007 and 2012. Therefore, the risk of forage loss in these areas may be lower than in non-GRSG habitats.

Impacts from Livestock Grazing/Range Management

Under Alternative A, grazing permits, including grazing systems, permitted AUMs, and allotment boundaries, would be modified as necessary to conform to Standards and Guidelines for Livestock Grazing Management. Range improvements, including fences, vegetation treatments, and water developments, would be allowed in the decision area when needed to support grazing or to improve livestock distribution.

Levels of conflict with wild horses would vary throughout the planning area based on individual RMP management and levels of grazing. Water developments for livestock would likely be maintained and may provide a source of water for horses.

Impacts from Recreation Management

Under this alternative, there would be no new restrictions to SRPs in the decision area; therefore, horses could be disturbed by recreation in the planning area. Some limited potential for disturbance from general recreation is possible, as described under nature and type of impacts, above.

Impacts from Travel Management

Under Alternative A, as under all alternatives, OHV travel would be limited to designated routes, and site-specific travel management planning on BLM-administered lands would be developed, limiting disturbance to horses.

Impacts from Lands and Realty Management

Under Alternative A, the impacts on wild horse management continue to be the same as those identified in the individual RMP documents. Under Alternative A, there would be

approximately 1 million acres of ROW exclusion and 1.9 million acres of avoidance areas in the decision area; no new ROW exclusion or avoidance areas would be created. Wild horses could be disturbed from development of ROWs. For these reasons, this alternative would have the highest potential for impacts from lands and realty on WHB management; however, access to HMAs for gathers would be the least restricted.

Impacts from Mineral Materials (Salables) Management

In general, Alternative A is the least restrictive on energy and mineral development of all alternatives. As a result, the indirect impacts of development on wild horses, including spread of noxious weeds and disturbance of horses, are the greatest under this alternative.

4.4.5 Alternative B

Impacts from Vegetation Management

Under Alternative B, restoration projects in PH would be designed to benefit GRSG and based on the likelihood of success, with reestablishment of sagebrush cover as the highest priority. Projects to remove nonnative species and improve habitat would likely improve forage conditions and water quality for wild horses in the long term. However, should management require increased fences to protect vegetation for GRSG, this could limit wild horse movement and access to riparian areas and reduce water availability. This could result in potential need for reduction of wild horse numbers within an HMA in order to meet vegetation objectives for GRSG.

Impacts from Wild Horse and Burro Management

Under Alternative B, management actions would require examination of herd management plans, AML levels, and range improvements or other NEPA and management activities for wild horses in light of GRSG habitat objectives and potential impacts on GRSG habitat, particularly in PHMA. This could potentially result in changes to wild horse management and AMLs should objectives for GRSG habitat not align with management objectives for wild horse management. In many cases, however, management actions to improve GRSG habitat would also improve wild horse rangeland conditions (for example, conifer removal and noxious weed control would improve forage conditions for wild horses).

If water developments required modification to meet GRSG objectives or new developments were not permitted, water availability could be reduced. This could result in the potential need to reduce wild horse numbers or develop alternative water sources within the HMA, particularly during periods of drought.

Impacts from Wildland Fire Management

Fuels projects and fire suppression to protect sagebrush ecosystems and associated PHMA would benefit wild horses where HMAs overlap this habitat. This would be due to a reduction in the likelihood of high intensity wildfire. However, temporary or long-term management changes to wild horses, such as reduction in AML, or fencing blocking access to forage may be necessary to achieve and maintain the desired project objectives post-fire.

Impacts from Livestock Grazing/Range Management
Management to conserve, enhance, or restore GRSG habitat that benefit livestock forage would generally also benefit wild horses within GRSG in the long term. Modifying or eliminating livestock watering sites could reduce water availability for wild horses. This could result in the need to reduce wild horse numbers or develop alternative water sources within specific HMAs, especially during periods of drought.

Impacts from Recreation and Visitor Services Management
In PHMA, OHV travel would be limited to existing roads and trails on BLM-administered and National Forest System lands. Travel plans (to be completed) would analyze PHMA for the need for road closures, and limitations would be implemented during development of new roads. Some reduction in routes , and limitations on new routes would occur compared to Alternative A in PHMA. This could impact the ability to conduct gathers of wild horses for population control. These limits also could increase the time and costs of gathers if they are not covered by administrative exceptions. However, limits to travel would also decrease any disturbance of horses from OHV use.

Under Alternative B, limits on SRPs in PHMA would reduce any conflicts between recreation and wild horse management.

Impacts from Lands and Realty Management
Under Alternative B, no new ROW authorizations would be permitted in PHMA unless the development would occur within the existing developed footprint This action would likely reduce devolvement in HMAs overlapping PHMA as compared to Alternative A, indirectly reducing related disturbance to wild horses.

Impacts from Energy and Mineral Management
Under Alternative B, additional restrictions would be put on mineral development, as compared to Alternative A. Lands in PHMA would be recommended for withdrawal from mineral entry for locatable minerals, closed to mineral materials removal, and closed to new leasing for fluid minerals and nonnenergy leasable minerals. For currently leased parcels, NSO stipulations would be applied in PHMA and around leks. As a result, disturbance of wild horses from mineral development would be minimized in PHMA.

4.4.6 Alternative C

Impacts from Vegetation Management
Habitat restoration actions and related impacts in PHMA would be similar to that described in Alternative B. In addition, restoration proposed under Alternative C includes removing water developments. This could reduce available water in HMAs and result in the need to reduce wild horse AML within an HMA in occupied habitat in order to meet vegetation objectives for GRSG.

Impacts from Wild Horse and Burro Management
Impacts are as discussed under Alternative A.

Impacts from Wildland Fire Management
Impacts are similar to those discussed under Alternative B.

Impacts from Livestock Grazing/Range Management
Elimination of livestock grazing in occupied habitat would provide additional forage for wild horses where HMAs overlap these habitats. This would occur by reducing competition for forage in these areas.

Elimination of livestock watering sites or failure to maintain water developments could reduce water availability. As a result, developments would be limited, and ability to manage for AML could be impacted for HMAs in occupied habitat, particularly in drought conditions.

Impacts from Recreation and Visitor Services Management
Impacts from recreation management are similar to those discussed under Alternative A. Travel management impacts would be as discussed under Alternatives B.

Impacts from Lands and Realty Management
Under Alternative C, new ROWs for corridors would be sited in nonhabitat and bundled with existing corridors to the maximum extent possible. As a result, disturbance from development and related impacts on wild horse management would be reduced compared to Alternative A.

Impacts from Energy and Mineral Management
Impacts from mineral materials would be similar to those described under Alternative B for existing fluid mineral leases and locatable, salable, and nonenergy leasable minerals. No new fluid-mineral leases would be issued in PHMA. As a result, the chance of disturbance of wild horses from development of these resources would be reduced as compared to Alternative A.

4.4.7 Alternative D

Impacts from Vegetation Management
Under Alternative D, vegetation rehabilitation would emphasize projects to achieve the greatest improvement in GRSG abundance and distribution. This includes sites with greater likelihood of success. Reconnecting and expanding native plant communities would be an objective across all GRSG habitat types; restoring seasonal habitats would be emphasized in both PHMA and IHMA. As discussed in Alternative B, these management actions could improve wild horse forage in the long term. For example, measures to replace annual grasses with perennial grasses would also reduce inter-annual variability in forage quantity.

Impacts would likely occur if wild horses are found to be factors in GRSG habitat not achieving or moving toward achieving objectives, in which case the adjustment of wild horse populations would be considered and could result in the reduction of AMLs in some HMAs in the long term. Post-restoration management requirements could impact horse movement

if fences were installed. In addition, should access to water sources be restricted, ability to manage for AML could be affected.

Impacts from Wild Horse and Burro Management

Under Alternative D, as in Alternative B, HMPAs would be amended to incorporate GRSG habitat objectives; therefore changes may be required to AMLs or wild horse management in the long term in PHMA, IHMA and GHMA should these objectives not be met by current AMLs or management.

In addition, under Alternative D, no HMA expansion would be permitted in PHMA. Under IHMA habitat expansion may be permitted if impacts on GRSG as well as alternative areas of expansion are examined first. These actions would limit the ability to sustainably manage for increasing population of horses and potentially necessitate additional gathers to reduce herd sizes, at increased cost for management of the program.

Impacts from Wildland Fire Management

Under Alternative D, post-fire and restoration management would be undertaken to ensure long-term persistence of seeded or pre-burn native plants. It may also require short- or long-term change to wild horse management. Fencing to exclude livestock from post-burn areas could impact the ability of horses to roam freely. If exclusion reduces horses' ability to access water sources, ability to manage for AML could be affected. The degree of impacts would be determined by the location, size, and intensity of fires in GRSG habitat but would be increased over those in Alternative B. because all GRSG habitat types would be included.

Impacts from Livestock Grazing/Range Management

Grazing management actions and impacts on wild horses would be similar to those described in Alternative B. Under Alternative D, however, allotments containing PHMA would be prioritized for permit renewal, followed by IHMA and finally GHMA; impacts on wild horses would occur in HMAs overlapping these habitat areas in this sequence.

Water developments under Alternative D would be limited as compared to Alternative A, as only projects that would maintain, benefit or have neutral effect on PHMA would be allowed and modification or removal of existing developments may be required. As described for Alternative B, this could result in impacts on the ability to manage for AML, particularly under drought conditions.

Impacts from Recreation Management and Visitor Services

Under Alternative D, OHV travel would be limited to designated roads, primitive roads, and trails, at a minimum. However, any play area designated for OHV use would remain open, with the potential to disturb or disrupt wild horse movement in these areas. Seasonal restrictions for authorized activities could impact the ability of to access herds for gathers.

Impacts from Lands and Realty Management

Under Alternative D, new ROW and land use authorizations would be avoided whenever possible, with a goal of no net loss of GRSG habitat. ROW avoidance areas in PHMA, IHMA, and GHMA, as well as the exclusion of larger facilities in PHMA, would somewhat

limit the indirect impacts of development on wild horses in the avoidance and exclusion areas. Impacts would still occur in nonhabitat HMAs.

Similarly, management actions prohibiting solar and wind development in PHMA and imposing restrictions on development in IHMA and avoidance areas in GHMA would limit any impacts of disturbance from development of these resources. However, this may shift impacts on nonhabitat HMAs.

Impacts from Mineral Materials (Salables) Management

Under Alternative D, some degree of mineral development would be allowed, with measures to avoid or mitigate impacts on GRSG. Specifically, new fluid minerals and undeveloped nonenergy mineral leases would be allowed in all GRSG habitat types, with BMPs applied. Similarly, mineral materials would be allowed to be leased in all habitat types, with stipulations. As a result of the flexibility in management for PHMA, unlike that in Alternative B, there is some potential for mineral development in PHMA and related impacts on disturbance of wild horses; however, the impacts would likely be minimal and lower than those under Alternative A. Within IHMA and GHMA, the degree of disturbance from or conflicts with wild horses from energy and mineral development would also be lower than that under Alternative A.

4.4.8 Alternative E

Impacts from Vegetation Management

Impacts from habitat restoration are as described under Alternative A. Similarly, management actions of invasive species would likely be similar to Alternative A, with a focus on actions in CHZ and IHZ. Short-term impacts on wild horses would be minimal, with a chance for long-term improvement of forage.

Impacts from Wild Horse and Burro Management

Under Alternative E, management actions for wild horses and related impacts would be as discussed under Alternative A.

Impacts from Wildland Fire Management

Under Alternative E, management actions for wildfire include an emphasis on fire suppression and reduction in fire risk in CHZ, IHZ, and GHZ. As a result, the risk of ignition and spread of fire in occupied GRSG habitat would be reduced, thereby reducing the impacts of fire on HMAs in GRSG habitat. The risk of fire spread in HMAs in other habitat could increase, should limited resources be allocated for GRSG habitat.

Impacts from Livestock Grazing/Range Management

Under Alternative E, management actions for livestock grazing would be based on GRSG population trends and focused on CHZ and IHZ. Adjustments would be applied at a site-specific level and specifically tailored to achieve objectives. As a result, changes to management and associated impacts would be limited. Impacts on wild horse management would therefore be most likely to occur in CHZ and IHZ but would be limited in nature.

Avoiding construction of new fences within 1.2 miles (2 km) of leks could reduce barriers to wild horse movement as compared to Alternative A. Considering GRSG habitat needs and risks when designing and locating new water developments may limit water developments which could result in a need to reduce AMLs in HMAs where alterative water sources are not available, especially in drought situations.

Impacts from Recreation Management and Visitor Services

Impacts would be similar to those described under Alternative B. Seasonal and site-specific limits on OHV travel in GRSG habitat could impact management options for gathers; however, administrative access allowances may limit impacts. These restrictions also could limit disturbances on wild horses from other recreational users.

Impacts from Lands and Realty Management

Under Alternative E, ROW avoidance areas in CHZ and IHZ, as well as the exclusion of new infrastructure in CHZ, would somewhat limit the indirect impacts of development and associated disturbance on wild horses.

Impacts from Energy and Minerals Mineral Management

Impacts from mineral and energy development are generally the same as those described under Alternative A. Fluid mineral development would have some additional restrictions applied to limit disturbance; therefore, the likelihood of development and associated disturbance would be reduced in areas with potential for these resources.

4.4.9 Alternative F

Impacts from Vegetation Management

Management actions under this alternative are similar to those described under Alternative B. For invasive species management, activities that spread invasives would be restricted. As described under the range management section, restrictions on water developments may apply, with potential impacts on wild horses. However, there is the potential that less water would be necessary under Alternative F, due to the reduction in AMLs in the planning area.

Impacts from Wild Horse and Burro Management

Under Alternative F, AMLs would be directly reduced by 25 percent for all HMAs within PHMA and GHMA. This would reduce the established AMLs for all HMAs that are entirely or partially in mapped, occupied GRSG habitat. As a result of AML reduction under Alternative F, costs of wild horse management would increase, due to a need for additional horse gathers for removal or population growth suppression treatments. Location specific population reductions and impacts on particular HMAs would be determined at implementation and likely related to land health and current population size.

Other management actions for wild horses and related impacts are similar in nature to those described under Alternative B.

Impacts from Wildland Fire Management

Impacts from Wildland Fire Management are similar to those described under Alternative B and all action alternatives; actions to suppress and control the spread of wildfire under Alternative F could decrease the risk of disturbance from wildfire for HMAs in GRSG habitat. HMAs outside of GRSG habitat would be at a lower priority level for fire suppression efforts, and may have higher risk of loss of forage from fire.

Closures in place for livestock grazing post-fire until woody and herbaceous cover achieve GRSG habitat objectives could result in long-term (10 to 50 years or longer) exclusion from burned sites and barrier to movement for wild horses, as it would generally take more than a decade to reestablish adequate Wyoming sage cover in low precipitation areas. The level of impacts would depend on locations, size, and intensity of wildfire in GRSG habitat in relation to location of HMAs.

Impacts from Livestock Grazing/Range Management

Under Alternative F, 25 percent of the area in PHMA/GHMA open to livestock grazing would be rested each year and utilization would be limited to 25 percent of current levels; therefore AUMs for livestock would correspondingly be reduced. As described in Alternative C, a reduction in areas available for livestock grazing could result in additional forage available for wild horses. In addition, a prohibition on new water developments and requirements to make modifications, including potential dismantling of developments would be in place. As a result, there would likely be impacts on the availability of water sources for wild horses. This could result in impacts on the ability to manage for AML, particularly for those HMAs with no alternate water source. Alternative F also calls for avoiding all new structural range developments in occupied GRSG habitat, unless independent peer-reviewed studies show that the range improvement structure benefits GRSG. In practice, this would result in few range developments being approved. The lack of new fences would benefit wild horses by reducing barriers to movement across the range.

Impacts from Recreation and Visitor Services Management

Impacts are similar to those described under Alternative B.

Impacts from Energy and Minerals Management

Under Alternative F, no new mining claims would be allowed, and salable minerals sales would be prohibited in PHMA. Therefore, there would be limited potential from development-related disturbance of these resources on wild horses. Impacts from leased fluid minerals are the same as those described under Alternative A. New leasing in PHMA and GHMA would be limited, so there is some limited opportunity for disturbance from development of these resources.

4.4.10 Proposed Plan

Impacts from Lands and Realty Management

Under the Proposed Plan, restrictions on disturbance would be prioritized based on GRSG habitat. The greatest restrictions on ROW development would occur in the HMAs in SFA,

followed by PHMA and IHMA. While these restrictions would provide for the greatest protection of wild horse forage and water sources and would limit disturbance in SFA, it would still allow development in areas outside of occupied GRSG habitat.

Under the Proposed Plan, PHMA and IHMA would be managed as ROW avoidance areas, but would be subject to RDFs, BMPs buffers, and a seasonal timing limitation, resulting in limited new development in GRSG habitat. As a result, disturbance of wild horses and forage from development activities, as discussed under *Nature and Type of Effects*, would be limited in GRSG habitat.

Implementing the GRSG mitigation strategy and monitoring framework under the Proposed Plan would ensure that this increased level of protection of forage and water resources and reduction of wild horse harassment would be maintained for HMAs within GRSG habitat.

Impacts from Habitat Restoration and Vegetation Management

Under the Proposed Plan, vegetation rehabilitation would emphasize projects in areas with potential to improve GRSG habitat. Conifer removal and noxious weed control, as identified in **Tables 2-5** and **2-7,** or the prioritization for treatment and restoration projects, as identified in the Wildfire, Invasive Annual Grasses and Conifer Expansion Assessment approach, would improve forage conditions for wild horse in the long term. In the short term, prescribed burns or other treatments may temporarily reduce available forage or disturb horses, but due to the restrictions on these activities, impacts are likely to be limited.

Implementing the GRSG mitigation strategy and monitoring framework responses under the Proposed Plan would ensure that this increased level of protection of forage and water resources and reduction of wild horse harassment would be maintained.

Management changes in restoration or rehabilitation area could be required to maintain or improve GRSG habitat. This could result in potential need for reduction of wild horse numbers within an HMA in order to meet vegetation objectives for GRSG.

Impacts from Wildland Fire Management

Fuels projects and fire suppression to protect sagebrush ecosystems and associated GRSG habitat would benefit wild horses where HMAs overlap this habitat due to a reduction in the likelihood of high intensity wildfire.

Under the Proposed Plan, management actions for wildfire include an emphasis on fire suppression and reduction in fire risk in PHMA and IHMA with potential for reduction in fire risk and related disturbance of wild horses and forage in these areas. Wildland fire, invasive annual grasses, and conifer expansion assessments would identify priority areas and treatment opportunities for fuels management, fire management, and restoration. The assessments would further define areas for fire management activities. These actions may result in site-specific temporary exclusions of wild horses or reduced forage; however, they would help to reduce the likelihood of catastrophic wildfire and subsequent disturbance of wild horses and reduction of forage in the long term.

Should HMAs contain high fire risk areas that are outside of the identified priority treatment areas, then these non-priority areas could be at an increased risk for wildfire, as treatment and suppression activities would be focused elsewhere. Impacts on forage or herd dispersal could occur in these areas if fires occur. Temporary or long-term management changes to wild horse management, such as emergency gathers, reduction in AML, or fencing blocking access to forage or water, may be necessary to achieve and maintain the desired GRSG objectives post-fire. The degree of impacts would be determined by the location, size, and intensity of fires in GRSG habitat. Fencing to exclude livestock from post-burn areas could impact the ability of horses to roam freely. If exclusion reduces horses' ability to access water sources, the ability to manage for AML could be affected, and animals may be removed from the range temporarily if adequate forage and alternate water sources could not be supplied.

Impacts from Energy and Minerals Development

Under the Proposed Plan energy and mineral development would have additional restrictions applied to limit disturbance on GRSG habitat as compared to Alternative A. Restrictions on development would be prioritized with the greatest restrictions in SFA, followed by PHMA, IHMA, and GHMA. As a result, the likelihood of development and associated disturbance of wild horses would be reduced in areas with potential for these resources (with the most reduction in SFA followed by PHMA, IHMA, and GHMA), as compared to Alternative A. Due to the limited conflicts between wild horse management and energy development under existing conditions, impacts would be negligible.

Impacts from Travel and Transportation Management

Under the Proposed Plan, OHV travel would be limited to existing roads, primitive roads, and trails in PHMA and IHMA, unless already designated as limited or closed. As a result, disturbance of wild horses and their forage and water sources from OHVs would be reduced, as compared to Alternative A. Under the Proposed Plan, temporary closures would also be permitted as necessary for resource protection, which would further reduce disturbance to wild horses and forage.

Specific implementation-level criteria to protect GRSG would also be applied, further limiting the location of new roads and volume of traffic on new and existing roads. Site-specific travel management planning could, when completed, reduce the potential for conflicts between wild horses and recreation.

Impacts from Livestock Grazing Management

Management to conserve, enhance, or restore GRSG habitat that benefits livestock forage would generally also benefit wild horses within GRSG habitat in the long term.

Livestock grazing permits and leases would be processed and land health would be assessed in allotments most in need of habitat improvement. Allotments in GRSG habitat would be emphasized, with SFA prioritized over PHMA and then IHMA. As a result, range conditions for both livestock and wild horses overlapping these allotments should be improved concurrent with this priority order.

Modifying or eliminating livestock watering sites could reduce water availability for wild horses. This could result in the need to reduce wild horse numbers or develop alternative water sources within specific HMAs, especially during periods of drought.

Impacts from Wild Horse and Burro Management

Under the Proposed Alternative, HMAPs would be amended to incorporate GRSG habitat objectives; therefore changes may be required to AMLs or wild horse management in the long term in SFA, PHMA and IHMA should these objectives not be met by current AMLs or management. The level of such changes or the specific HMA(s) in which changes may occur would be determined at implementation and would be influenced by site specific habitat conditions and land health.

Acres of SFA, PHMA, IHMA and GHMA in each HMA are displayed in **Table 4-75**, Proposed Plan GRSG Management Areas by HMA, below.

Table 4-75
Proposed Plan GRSG Management Areas by HMA

HMA	Associated Conservation Area	SFA (Acres)	PHMA (Acres)	IHMA (Acres)	GHMA (Acres)
Black Mountain	West Owyhee	0	0	46,300	0
Challis	Mountain Valleys	109,400	104,800	51,400	250
Fourmile	Mountain Valleys	0	0	0	16,000
Hardtrigger	West Owyhee	0	0	60,200	0
Sands Basin	West Owyhee	0	0	9,500	0
Saylor Creek	West Owyhee	0	0	0	0

Source: BLM GIS 2015

Prioritization of gathers in HMAs would directly and indirectly impact wild horses. SFA would take priority for gathers, followed by PHMA and IHMA. Challis is the only HMA that falls within an SFA and would have the highest standing priority for gathers each year to maintain animals within the established AML. This focused management strategy would ensure that AML is maintained, along with the necessary forage for the horses in this HMA; however, it may increase the number of gathers needed and other intensive management to maintain AML, thereby potentially increasing the disturbance to the populations and possibly disrupting herd dynamics. This prioritized management strategy could also reduce the ability to gather animals from lower prioritized HMAs and puts HMAs that fall within the lowest priority at risk for overpopulation; however, under this LUPA, provisions would allow for exceptions as needed for herd health-limiting impacts.

Authorizing new or modifying existing livestock watering sites that benefit or conserve PHMA, IHMA, and GHMA in conservation areas would provide alternate sources of water for wild horses. Eliminating fencing or existing water sources that may be impacting PHMA and IHMA could reduce or eliminate water availability. This could change horse distribution and potential need for reducing wild horse numbers in an HMA. In addition, without adequate water sources, wild horses would stray outside HMAs in search of water, increasing

the cost of gathers for removing nuisance animals outside HMAs or that occupy private land.

Finally, the BLM would continue to coordinate with professionals from other federal and state agencies and university researchers to use and evaluate new management tools (e.g. population growth suppression, inventory techniques, and telemetry) for implementing the wild horse and burro program. This would be to ensure practical and efficient management of wild horses in AML, while protecting GRSG habitat.

Impacts from Human Disturbance Management, Adaptive Management, and Coordination

Placing a 3 percent cap on human disturbance at the BSU and project levels would generally reduce development in GRSG habitat and disturbance of wild horses. Human disturbances in PHMA and IHMA would additionally be mitigated to ensure a net conservation gain to GRSG habitat, which indirectly protects wild horse forage.

In a conservation area, if adaptive management soft triggers were met and wild horses were found to be factors in GRSG habitat not achieving or moving toward achieving objectives, the adjustment of wild horse populations would be considered. This could reduce AMLs in some HMAs in the long term.

Increased coordination between entities would directly impact the conservation of GRSG habitat, which would indirectly conserve forage for wild horses. The entities involved would be the BLM and Forest Service and adjacent landowners, federal and state agencies, local governments, tribes, communities, other agencies, Resource Advisory Councils, public land permit holders, and nongovernmental organizations.

4.5 Wildland Fire Management

4.5.1 Methods and Assumptions

Indicators

Indicators of impacts on wildland fire management are as follows:

- Alteration of vegetation cover that is likely to result in a substantial shift in fire regime condition class (FRCC) across the planning area
- A substantial change in the likelihood or severity of wildfire, based on the level of restrictions on uses that may introduce sources of ignition
- Management actions that substantially inhibit a response to wildfire or appropriate treatments to prevent wildfire

Assumptions

The analysis includes the following assumptions:

- The spread of invasive annuals (e.g., cheatgrass) has lengthened the fire season in many parts of the planning area. These species often cure sooner than native perennial species and are more prone to ignition. Therefore, actions that reduce the spread or footprint of invasive annuals or restore perennial vegetation communities would reduce the frequency and intensity of wildfires, while reducing wildfire management costs.
- Fuels treatments using chemical methods to control invasive annuals are likely to be the most effective in reducing fine fuels and fire intensity and severity.
- Fire is an important functional natural disturbance in many of the ecological systems found in the planning area.
- In many cases, a direct relationship exists between fuel loading and potential fire intensity and severity.

4.5.2 Nature and Type of Effects

Impacts on wildfire management result from changes in fire frequency and intensity and the ability to employ fire-suppression methods, both of which would affect management of fire and related costs within the planning area. As discussed in **Section 3.7**, most of the lands in the decision area have moderate to high levels of departure from historic conditions and related fire risk. Actions that change condition class from highly altered ecosystems to one closer to historical conditions could reduce the risk of key ecosystem loss, as well as decrease fire risk and management costs in the long term.

Many different resource uses may introduce additional ignition sources into the planning area. This increases the probability of wildfire occurrence and the need for fire suppression. Fire intensity can be affected by activities that decrease fuel loading, such as vegetation treatments and timber product harvesting, and activities that alter the composition and structure of vegetation communities. High-intensity fires generally result in a greater loss of vegetation cover, changes to soil chemistry, damage to root structures, and a greater ability for nonnative species to become established (Verma and Jayakumar 2012).

Transportation and travel management can impact fire frequency by changing the level of risk of human-caused ignitions. The risk of ignition is increased where travel is less restrictive, particularly where motorized vehicles travel cross-country. All forms of travel encourage the spread of invasive weeds, particularly cheatgrass, which can shift fire regimes and increase fire behavior potential. Conversely, if management were to restrict access, wildfire risk may decrease. In addition, transportation management may impact fire suppression; when routes are closed and rehabilitated, they become unavailable for response to wildfires, limiting access opportunities.

Similarly, the level and type of recreation permitted can impact fire risk. Increased recreation may increase the probability of unintentional fires from human-caused ignitions and the need for fire suppression. Recreation management may reduce this risk by providing targeted activities and outcomes.

Surface disturbance caused by development would generally contribute to the modification of the composition and structure of vegetation communities (including increases in noxious weed proliferation) around developed areas. This would then be more likely to fuel high-intensity fires, which could increase program costs because of the increased potential for fire.

Lands and realty actions may indirectly result in development and associated fire risk. For example, issuing ROWs can result in indirect impacts by increasing the risk of human-caused ignition should transmission lines, renewable energy projects, or other development be constructed.

Likewise, the development of energy and minerals may increase the risk of wildfires by introducing new ignition sources (Shlisky et al. 2007). Associated facilities, infrastructure, and transmission lines can increase fire and fuels program costs, while decreasing fire management flexibility to respond to sub-regional conditions with regard to suppression options. Energy development also poses hazards to firefighters, including unknown toxins, facility protection, evacuation of industry personnel, and dangerous overhead power lines. Fire programs could incur additional costs to train firefighting personnel for emergency situations associated with energy development.

Additional limitations on mineral development would have an indirect effect of decreased fire. This would be due to less development, fewer vehicles, and less construction equipment, all of which would decrease the chance of human ignition. Development of federal minerals underlying nonfederal lands may impact fire management on BLM-administered and National Forest System lands. This is particularly the case when ownership is in a patchwork pattern, as fires ignited on nonfederal lands may quickly spread onto and impact BLM-administered and National Forest System lands.

Invasive species establishment or increase may follow construction and could impact fire management actions through increased risk of fire and need for fire management. If treatments in annual infested areas use an approved herbicide, those treatments would generally experience greater levels of success.

Prioritizing fuels treatments in areas dominated by invasive species would reduce the frequency and intensity of wildfire. The spread of invasive species, which cure earlier in the spring or summer, has lengthened the fire season in many parts of the planning area. If these areas revert to a perennial-dominated community, the fire season would generally be shortened by two to four months, depending on moisture, weather, and other factors.

Biological treatments can impact the ability to manage fire as a natural process through changes in fine fuels availability (e.g., grasses). For example, livestock grazing temporarily reduces fuel loads, so retiring allotments may increase fuels in specific sites. Conversely, increasing AUMs could reduce fuel loads. However, grazing could spread invasive species. Mowing or herbicide applications may be better suited for long-term fuels management goals.

Vegetation and weed treatments that decrease standing vegetation could decrease the intensity of wildfires and allow fires to be more easily controlled. For example, reducing the incursion of nonnative annual grasses (primarily cheatgrass) and the proliferation of other noxious and invasive weeds would promote healthy plant communities and an associated lower risk of high-intensity wildfire (USGS 2006). Used appropriately, prescribed fire would be compatible with noxious weed control. However, the presence of noxious weeds and the potential of weeds to spread after a prescribed fire would need to be monitored on a site-specific basis; herbicide applications may be warranted to assist in successful treatments. Conversely, management actions that retain shrub and cover may increase fuel loading and the likelihood and intensity of wildfire.

Management actions that are intended to improve, create, or reestablish healthy ecological conditions in various vegetation types benefit the fire and fuels program in the long term. They do this by promoting the most efficient use of fire and fuels management program resources. Conversely, prioritizing fire suppression can limit management options and increase costs for fire management programs.

Special designations, such as ACECs and sensitive resource management, can restrict fuels treatments on a site-specific basis. For example, in areas where preservation of particular species or habitats is emphasized, management options and fuels treatments may be limited. Conversely, restricting resource uses, such as travel and mineral extraction, in special designation areas could reduce fire risk in these locations.

Implementing management for the following resources would have negligible or no impact on wildfire management; therefore, they are not discussed in detail: air quality, soil resources, water resources, cultural resources, paleontological resources, visual resources, wilderness characteristics, cave and karst resources, forestry, socioeconomics, and environmental justice.

4.5.3 Impacts on Wildland Fire Management Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative.

Impacts on wildland fire management common to all alternatives include changes in fire frequency and intensity, and the ability to use fire suppression methods, all of which would affect management of fire within the planning area. Many different resource uses may introduce additional ignition sources into the planning area, which increases the probability of wildfire occurrence and the need for fire suppression.

Fire intensity can be affected by activities that decrease fuel loading, such as vegetation treatments and timber product harvesting, and activities that alter the composition and structure of vegetation communities. High-intensity fires generally result in a greater loss of vegetation cover, changes to soil chemistry, damage to root structures, and a greater ability for nonnative species to become established. Resource and special designation restrictions may limit fire suppression tactics and fuels treatment methods.

Impacts from Lands and Realty Management

Under all alternatives, issuance of power line ROWs would increase access and program costs because of the increased potential for fire in the ROW. There may also be slightly higher risk of human-caused ignitions from construction, maintenance, and use of power line ROWs. As new ROWs are developed, additional fuels treatments are necessary to address potential impacts from wildland fires.

Critical infrastructure ROW corridors would need maintenance throughout their life to keep vegetation at a level that would moderate fire behavior and allow for some protection from an unplanned wildfire. Vegetation maintenance would ensure that critical infrastructure would not fail at a time of need, such as during a wildfire.

Impacts from Habitat Restoration and Vegetation Management

Under all alternatives, the BLM and Forest Service would manipulate vegetation, use prescribed fire or manage unplanned wildfire for LUP objectives. This would affect the wildfire management program by reducing costs and potential for large, damaging wildland fires.

Vegetation treatments could also reduce fuel loading, which would affect fire intensity and allow fires to be more easily controlled.

Impacts from Invasive Species Management

Under all alternatives, invasive species treatments could reduce fuel loading, which would affect fire intensity and allow fires to be more easily controlled.

Impacts from Wildland Fire Management

Under all alternatives, management actions that are intended to improve, create, or reestablish healthy ecological conditions in various vegetation types would benefit the fire and fuels program. They would do this by promoting the most efficient use of fire and fuels fire management program resources. In addition, allowing a range of fuel treatment options and the possibility of unplanned wildfire for resource benefit provides needed management flexibility to reduce large fire costs and achieve fire and fuels goals and objectives.

Impacts from Minerals Management

The development of minerals resources may increase the risk of wildfires by introducing new ignition sources, although initial mine development also removes fuel sources by stripping the immediate area of vegetation. Facilities, infrastructure, and transmission lines can increase fire and fuels program costs, while decreasing fire management flexibility with regard to suppression options. Energy development also poses hazards to firefighters, including unknown toxins, facility protection, evacuation of industry personnel, and dangerous overhead power lines. Fire programs could incur additional costs to train firefighting personnel for emergencies associated with energy development.

The road infrastructure supporting energy and minerals development would provide increased accessibility to remote areas for fire suppression. Roads also provide fuel breaks in the event of wildfire.

Impacts from Recreation and Visitor Services Management
Under all alternatives, restrictions on recreation use would decrease the potential for human-caused ignition.

Transportation and recreation access also increase the risk of human-caused ignitions. All forms of travel encourage the spread of invasive weeds, particularly cheatgrass, which can shift fire regimes and increase fire behavior potential. When routes are closed and rehabilitated, they become unavailable for response to wildfires, limiting access opportunities and potentially delaying fire management actions.

Impacts from Livestock Grazing Management
Under all alternatives, livestock grazing may reduce fuels loading in certain areas. The impact would be greatest where grass fuel types are the main carrier of the fire.

4.5.4 Alternative A

Impacts from Lands and Realty Management
Current impacts would continue as would the increased risk of human-caused ignitions where power line ROWs are developed and operated.

Impacts from Habitat Restoration and Vegetation Management
Vegetation management and weed treatments would continue to decrease both standing and downed vegetation (i.e., fuel load) across the planning area. This would decrease the intensity of wildfires and allow them to be more easily controlled. These activities would also modify the composition and structure of vegetation communities by creating mosaic vegetation patterns and natural fuel breaks and by promoting healthy, diverse vegetation communities that generally fuel low-intensity fires. Specifically, efforts to reduce the incursion of nonnative annual grasses (primarily cheatgrass), the encroachment of shrubby vegetation, the buildup of biomass in forested areas, and the proliferation of noxious and invasive weeds would help to achieve this effect. Similarly, treatments for habitat improvement and forage would reduce fuels and reduce the likelihood for stand-replacing fire.

Impacts from Invasive Species Management
On average, the planning area would continue to experience a five- to seven-month fire season due to invasive annuals curing earlier than the perennial vegetation and being prone to ignition. Without targeted management actions in GRSG habitat to convert vegetation communities back to a perennial dominated community, there would continue to be an increased risk of wildfire over a longer period each year.

Impacts from Wildland Fire Management
The wildland fire management program would continue to be impacted by the spread of invasive annuals, which results in a longer fire season and the need for more resources to respond. There would also be a continued decrease in the hazardous fuels reduction program's ability to maintain reactive suppression and rehabilitation efforts in the wildland-urban interface (WUI).

Impacts from Nonenergy Leasable Minerals Management
Current impacts would continue and nonenergy mineral development would continue to pose a potential ignition risk.

Impacts from Locatable Minerals Management
Current impacts would continue and locatable mineral extraction would continue to pose a potential ignition risk.

Impacts from Salable Minerals Management
Current impacts would continue and mineral material disposal activities would continue to pose a potential ignition risk.

Impacts from Unleased Fluid Minerals Management
Unleased fluid minerals management would continue to have no detrimental impact on fire risk or management because there would be no surface-disturbing activities from fluid mineral leasing or development.

Impacts from Leased Fluid Minerals Management
Current impacts would continue and fluid mineral development would continue to pose a potential ignition risk.

Impacts from Recreation and Visitor Services Management
Recreation use would continue to increase the risk of human-caused ignitions, especially in areas with high visitation.

Impacts from Livestock Grazing Management
Grazing would continue to reduce fuels loading in certain areas. Impacts on the wildland fire management program would continue to be greatest where grass fuel types are the main carrier of the fire.

Impacts from Special Designations Management
Current impacts would continue, and there would be less management flexibility for fuels treatments and wildfire response in existing ACECs.

4.5.5 Alternative B

Management under Alternative B would focus on restrictions on resource uses and protection for and enhancement of sagebrush habitat. In general, this would reduce the risk of human-caused ignitions and would encourage a return to historic FRCC in sagebrush habitat. Use restrictions could also minimize the spread of invasive species by limiting human activities that disturb the soil disturbance or introduce seeds. This would likely reduce the frequency and intensity of wildfire. However, restrictions on response to wildfire could limit management options and increase costs for fire management programs.

Impacts from Lands and Realty Management
Limiting new development in PHMA to existing footprints would reduce opportunities for human-caused ignitions. The rest of the decision area would continue to experience current levels of risk for human-caused ignitions and the resultant shift in FRCC.

Impacts from Habitat Restoration and Vegetation Management
Prioritizing the reestablishment of sagebrush cover would promote a shift towards historic FRCC in sagebrush ecosystems. Vegetation treatments could reduce fuel loading, which would affect fire intensity and allow fires to be more easily controlled. Vegetation treatments also create early seral stage vegetation communities, which generally fuel low-intensity fires.

Active restoration of cheatgrass infestation areas in PHMA would result in less frequent or intense wildfires as native perennial species are reestablished.

Impacts from Invasive Species Management
An increased potential for invasive species treatments in grazing allotments in PHMA would decrease the intensity of wildfires and allow fires to be more easily controlled.

Impacts from Wildland Fire Management
Designing and implementing fuel breaks to protect existing sagebrush would discourage further shifts away from historic FRCC in these areas.

Using livestock in certain cases to reduce fine fuels would reduce the likelihood and severity of wildfire.

In PHMA, prioritizing suppression in GRSG habitat immediately after life, and then property, could limit management options and increase costs for the fire management program by requiring more resources (e.g., staff). However, the focus on suppression could also limit expansion of cheatgrass because fire increases opportunities for invasive species, such as cheatgrass, to expand (Brooks et al. 2004).

As a last resort in PHMA, the use of prescribed fire for fuel breaks that would disrupt the fuel continuity across the landscape could be considered in stands where cheatgrass is a minor component in the understory. Although this action would only be undertaken if all other treatment options have been explored, it would reduce the likelihood and severity of wildfire.

If livestock grazing, travel management, and other activities were to affect the success of restoration projects, management could be changed to encourage a higher success rate. This would help stabilize shifts in FRCC and reduce the likelihood and severity of wildfire by implementing more successful restoration projects across the planning area.

Impacts from Nonenergy Leasable Minerals Management
Prohibiting new leases in PHMA would reduce opportunities for human-caused ignitions. The rest of the decision area would continue to experience current levels of risk for human-caused ignitions and the resultant shift in FRCC.

Impacts from Locatable Minerals Management
If PHMA is withdrawn from mineral entry, there would be fewer opportunities for human-caused ignitions.

Impacts from Salable Minerals Management
Restoring salable mineral pits in PHMA would result in a temporary increase in the potential for human-caused ignitions. However, prohibiting mineral material sales in PHMA would reduce opportunities for human-caused ignitions over the long term.

Indirect impacts would reduce invasive species when salable mineral pits are restored. This would reduce the frequency and intensity of wildfire and promote the establishment of native perennial species that are less combustible.

Impacts from Unleased Fluid Minerals Management
Closing PHMA to leasing and letting existing leases expire would reduce future opportunities for human-caused ignitions. Geophysical exploration, especially when using overland travel, could temporarily increase the potential human-caused ignitions.

Over the long term, closures would protect against nonnative invasive species introduction, which would reduce the frequency and intensity of wildfire.

Impacts from Leased Fluid Minerals Management
Conservation measures in PHMA, including prohibiting new surface occupancy, would limit increased risk for human-caused ignitions.

Impacts from Recreation and Visitor Services Management
Limiting special uses in PHMA to those that are neutral or beneficial to GRSG could result in use restrictions that may reduce the risk of human-caused ignitions.

Impacts from Livestock Grazing Management
Potential restrictions on grazing, including retiring allotments, in PHMA could increase fine fuels and thus the severity of wildfires.

Evaluating, and potentially introducing, exotic grass seedings could increase the risk of wildfire, depending on the attributes of and range where the grass species is introduced.

Limiting the types of range improvements allowed in PHMA would decrease opportunities for human-caused ignitions during construction or maintenance.

Impacts from Special Designations Management
Impacts are the same as under Alternative A.

4.5.6 Alternative C

The complete removal of livestock grazing would reduce weed spread via livestock vector and could increase fire intensity due to increases in fine fuel from lack of fuel removal. In the short term, fuel buildup might lead to bigger fires, while in the long term, if weed spread

were reduced, smaller fires may result. Ultimately, the effect of no grazing on wildfires would be dependent on weather and fuel conditions at the time of ignition.

Impacts from Lands and Realty Management
Limiting development in occupied habitat to existing footprints would reduce opportunities for human-caused ignitions. The rest of the decision area would continue to experience current levels of risk for human-caused ignitions and would continue to increase the departure from historic reference conditions due to invasive annual grasses and an abundance of early successional vegetation.

Impacts from Habitat Restoration and Vegetation Management
Impacts are similar to those under Alternative B.

Impacts from Invasive Species Management
There are no management actions for invasive species management, and impacts are the same as under Alternative A.

Impacts from Wildland Fire Management
Impacts are similar to those under Alternative B, except that occupied habitat would be managed in good or better ecological condition to reduce the unnatural frequency and intensity of wildfire. In addition, removing grazing from GRSG habitat would limit the effectiveness of RFPAs because there would be fewer ranchers to serve as first responders and to implement comprehensive fuel break strategies. This reduced effectiveness would result in increased fire size and federal fire management costs.

Impacts from Nonenergy Leasable Minerals Management
Impacts are the same as under Alternative B.

Impacts from Locatable Minerals Management
Impacts are the same as under Alternative B.

Impacts from Salable Minerals Management
Impacts are similar to those under Alternative B.

Impacts from Unleased Fluid Minerals Management
Impacts are similar to those under Alternative B.

Impacts from Leased Fluid Minerals Management
Impacts are similar to those under Alternative B.

Impacts from Recreation and Visitor Services Management
Impacts are similar to those under Alternative A.

Impacts from Livestock Grazing Management
Eliminating grazing from the decision area would increase some pressures on the wildland fire management program, while lessening others. In either case, the impact would be greatest where grass fuel types are the main carrier of the fire. For example, in areas

dominated by grass fuel types, there would be no reduction in fine fuels, and the frequency and intensity of wildfires would increase. However, because the prohibition on grazing would reduce weed spread, some areas, in conjunction with efforts to reintroduce perennial vegetation, may experience a shorter fire season and less frequent or intense wildfires.

Impacts from Special Designations Management

Restrictions associated with the management of 39 new ACECs (covering 3.1 million acres of GRSG habitat) may limit fire suppression tactics and fuels treatment methods. ACEC designations may also result in fewer human ignitions due to restrictive management actions.

4.5.7 Alternative D

With an emphasis on balancing resources and resource use among competing human interests, land uses, and the conservation of natural resources, this alternative would reduce departure from historic reference conditions and FRCC shift toward condition class 3 and would result in a more natural (i.e., historic) frequency and intensity of wildfire.

Impacts from Lands and Realty Management

Certain uses would be excluded in PHMA, reducing the type of development allowed in those areas. This restriction would limit opportunities for human-caused ignitions. There would be no similar restrictions in IHMA or GHMA, meaning the reduction in ignitions would be confined to a smaller area than under other alternatives.

Impacts from Habitat Restoration and Vegetation Management

Alternative D proposes a more defined set of tools for wildfire management than other alternatives. In most instances, Alternative D allows for management flexibility to respond to sub-regional conditions in designing fuels treatments and response to wildfire. For example, in PHMA the use of chemical, mechanical, and seeding treatments with appropriate plant materials is emphasized to prevent the dominance of invasive weeds. This would allow a greater success of those treatments. Using mechanical and chemical treatments to prepare areas in FRCC2 and FRCC3 for prescribed fire would have a similar impact.

Strategic wildland fire planning would help return PHMA to historic FRCC and natural fire intensities and intervals. Key actions driving this impact are as follows:

- Strategically placed fire-resistant vegetation or green-strip seedings
- Strategically placed pretreated areas that reduce fine fuels by such practices as mowing vegetation along roadsides, implementing grazing strategies, and applying herbicides
- Planned wildfire suppression tactics in important GRSG habitat

Prioritizing wildfire suppression in PHMA and conducting burn-out/backfiring operations in a manner that minimizes the loss of sagebrush may have limited ability to restore historic FRCC in PHMA.

Impacts from Invasive Species Management

Education, inventory, prevention, control, rehabilitation, and monitoring would be emphasized. By limiting the spread of invasive species, more GRSG-occupied habitat would be retained as a perennial-dominated community, which has a shorter fire season than those communities characterized by invasive annuals (which cure earlier in the year and are more prone to ignition).

Impacts from Wildland Fire Management

Wildland fire management under Alternative D is similar to Alternative B, with additional management flexibility and guidance incorporated to tailor management to specific vegetation communities. The BLM and Forest Service would prioritize wildfire suppression planning and would consider targeted grazing to reduce fine fuels in PHMA. As a result, FRCC shift would be reduced and the frequency and intensity of wildland fire would be more natural. This is because post-fuel, restoration, and ESR management would be designed to ensure long term persistence of seeded or pre-burn native plants.

Likewise, several actions would improve the success of fuels treatments in PHMA. Specifically, ensuring chemical applications are used in fuels treatments and pretreating areas to reduce fine fuels through mechanical treatments, grazing strategies, chemical or biological application would dramatically improve the fuel program's ability to improve GRSG habitat conditions.

When reseeding following fire, using species varieties that are adapted to a warmer climate may, in combination with potential climate change, reduce potential for unnatural levels of fire frequency and intensity.

Stationing first response firefighting resources to higher fire occurrence areas would reduce response time.

Impacts from Nonenergy Leasable Minerals Management

Seasonal limitations and restrictions on development near leks would reduce the potential for human-caused ignitions.

Impacts from Locatable Minerals Management

Operations on mining claims would require additional mitigation within GRSG habitat, likely resulting in site-specific improvements to FRCC and wildfire intensity and frequency. Impacts may be lessened if the withdrawals decrease the amount of disturbance caused by operations authorized by the mining laws.

Impacts from Salable Minerals Management

The types of impacts are similar to those under Alternative B, except that prohibitions on mineral material disposal would extend only to areas around occupied leks. This would reduce the area where there would be lower risk of human-caused ignitions.

Impacts from Unleased Fluid Minerals Management
There would be several measures (e.g., TL and NSO stipulations and RDFs) restricting surface disturbance that would reduce the potential for human-caused ignitions.

Impacts from Leased Fluid Minerals Management
Allowing exploration and drilling on leased areas in IHMA from July through November would increase the risk of human-caused ignitions. Off-site mitigation requirements for new developments in PHMA could encourage a return to historic FRCC in areas where mitigation is implemented.

Impacts from Recreation and Visitor Services Management
Restricting SRPs in sensitive seasons or in PHMA could result in temporary and site-specific reductions in human-caused ignitions.

Minimizing adverse recreation effects on GRSG within recreation management areas that overlap PHMA could result in use restrictions that may reduce the risk of human-caused ignitions.

Impacts from Livestock Grazing Management
Impacts are similar to those under Alternative B.

Impacts from Special Designations Management
Impacts are the same as under Alternative A.

4.5.8 Alternative E

Alternative E focuses primarily on management for the threats of wildfire, invasive species, and large infrastructure projects. Secondarily it focuses on the threats of livestock grazing management and infrastructure, West Nile virus, and recreation. It recommends use of an adaptive management approach and implementation of triggers or thresholds that adjust zone criteria. Guidance to reduce wildfire response time, create fuel breaks, and improve the wildfire suppression baseline would increase demand on the wildland fire management program; however, it would result in long-term improvements in FRCC and lowered risk of wildfire.

Impacts from Lands and Realty Management
Impacts are similar to those under Alternative B.

Impacts from Habitat Restoration and Vegetation Management
Development of a restoration strategy for vegetation management would help focus priorities on the areas and communities identified as most pertinent to restoring sagebrush and GRSG habitat. This would constrain or reverse the current trend toward areas becoming dominated by invasive annuals that are more prone to ignition.

Native vegetation would be used for restoration to the extent practicable. In addition, invasive species would be controlled for three years after wildfire treatments. Together, these

actions would reduce the likelihood for weed invasion in burned or treated areas, thus reducing the frequency and intensity of wildland fires.

In Utah, reducing or eliminating the spread of invasive species, particularly cheatgrass, after a wildfire, is a high priority. If the spread of cheatgrass is slowed or stopped, these areas would be at lower risk for intense large-scale fires.

Impacts from Invasive Species Management

This alternative promotes active and aggressive control of invasive species, which would likely reduce the likelihood of large-scale wildfires.

Eradicating or controlling invasive weeds in GHMA may help some areas revert to perennial vegetation types, which would shorten the fire season and reduce the risk of large-scale wildfires.

Weed treatments in IHMA and GHMA would decrease fuel loads and vegetation density across these areas. Management flexibility would decrease the intensity of wildfires and allow them to be more easily controlled. Likewise, in IHMA, the use of chemical and mechanical methods to eradicate or control invasive species would result in more successful treatments and long-term reduction in fire frequency and intensity.

Impacts from Wildland Fire Management

Reducing the number and size of wildfires in PHMA (in accordance with updated IM 2013-128) would allow for more efficient management of wildfire program resources and would reduce risks to firefighters and public safety. The adaptive construct of Governor's Alternative provides a mechanism to protect GRSG from habitat loss due to wildfire. The short-term use of triggers and zones will provide the time to develop more proactive measures that demonstrate long-term success on the landscape. Fuel breaks will be implemented in priority areas to minimize the size of wildfires and reduce need for firefighting resources.

Close coordination with federal, state, and private firefighting personnel, local fire departments and local expertise, such as RFPAs, will improve strategies for initial attack and developing comprehensive fuel break strategies to minimize and reduce the size of wildfires threatening the PHMA and IHMA following ignition. The employment of specific, more aggressive wildlife and invasive species management practices to prevent further encroachment into the PHMA and IHMA should be driven by local planning efforts at the field office and ranger district level. The creation of RFPAs will ensure better and faster initial attack on wildfires threatening the PHMA and IHMA through the employment of additional trained firefighters and resources in rural parts of the GRSG Management Area. This management action is more likely to be used on areas with high fuel loads that are at a high risk of fire threatening PHMA and IHMA.

Impacts from Nonenergy Leasable Minerals Management

There would be over 2 million acres of GRSG habitat closed to leasing and nonenergy minerals development. This would prevent any human-caused ignitions in this area. In areas

open to leasing there would be multiple restrictions (e.g., timing, locational, and a five percent disturbance cap within nesting, winter, or other habitat in PHMA) on development that would reduce the potential for human-caused ignitions.

Impacts from Locatable Minerals Management
Impacts are the same as under Alternative A.

Impacts from Salable Minerals Management
Impacts in Idaho are the same as under Alternative A. In Utah, restrictions near leks and during certain times of the year would reduce the potential for human-caused ignitions.

Impacts from Unleased Fluid Minerals Management
Impacts in Idaho are the same as under Alternative A. In Utah, restrictions near leks and during certain times of the year would reduce the potential for human-caused ignitions.

Impacts from Leased Fluid Minerals Management
Impacts in Utah are similar to those under Alternative A. In PHMA and IHMA in Idaho, restrictions on development would result in the same type of impacts as described under Alternatives B and D.

Impacts from Recreation and Visitor Services Management
There would be numerous site-specific and seasonal restrictions on recreation facilities and activities near leks and during nesting, winter, and other PHMA. These restrictions would limit human activity and the associated ignition risks.

Impacts from Livestock Grazing Management
Targeted grazing would be allowed to reduce fine fuels, resulting in less need for mechanical or chemical fuels treatments. However, efforts to reduce grazing in PHMA and IHMA may increase fuels loading if they overlap with areas where grass fuel types are the main carrier of fire.

In Idaho PHMA, improving management of livestock in existing disturbed sites (e.g., seedings or cheatgrass sites) would complement hazardous fuels reduction program efforts, especially if the targeted grazing were to occur in the WUI.

Impacts from Special Designations Management
Impacts are the same as under Alternative A.

4.5.9 Alternative F

Alternative F closely mirrors management direction proposed in Alternative B but prescribes additional and more restrictive conservation measures. These measures would generally reduce the risk of human-caused ignitions but may reduce management flexibility for fuels treatments and other actions to reduce the long-term risk of wildfire.

Impacts from Lands and Realty Management
Impacts are similar to those described under Alternative B; however, Alternative F would not allow for exceptions to disposal criteria, which would reduce management flexibility and could have implications for fuels treatment effectiveness. Managing priority areas as exclusion areas for new ROW permits would reduce the amount of ROW development and associated risk for human-caused ignitions.

Impacts from Habitat Restoration and Vegetation Management
Impacts are the same as those described under Alternative C.

Impacts from Invasive Species Management
There would be little emphasis on treatments or other methods of invasive species control and consequently a greater risk for increased fuel load and vegetation density across the decision area. Areas dominated by invasive annuals would experience a longer fire season, increasing wildfire management costs.

Impacts from Wildland Fire Management
Wildland fire management under Alternative F would be similar to Alternative B, though Alternative F would require post-fire exclusion of grazing. Constructing livestock exclosures to monitor fire restoration progress would lead to more efficient fire restoration methods and associated improvements in wildland fire program resource allocations. Mowing grass in any fuel break may be less effective than other mechanical methods. This could result in less of a reduction in large fire costs than under other alternatives where there is greater management flexibility.

Impacts from RFPAs would be similar to those described under Alternative E, but their effectiveness may be limited due to a 25 percent reduction in grazing, which would result in fewer ranchers to serve as first responders.

Impacts from Nonenergy Leasable Minerals Management
Impacts are the same as under Alternative B.

Impacts from Locatable Minerals Management
Impacts are the same as under Alternative B.

Impacts from Salable Minerals Management
Impacts are the same as under Alternative B.

Impacts from Unleased Fluid Minerals Management
Allowing existing leases to expire would reduce the long-term potential for human-caused ignitions. Geophysical exploration, especially when using overland travel, could temporarily increase the potential human-caused ignitions.

Impacts from Leased Fluid Minerals Management
Impacts are the same as under Alternative B.

Impacts from Recreation and Visitor Services Management
Impacts are the same as under Alternative B.

Impacts from Livestock Grazing Management
Impacts are the same as Alternative B except that AUMs would be reduced, meaning impacts from livestock grazing may decrease in intensity. The exact location of reduction in AUMs and related impacts from livestock grazing would be determined at project implementation.

Impacts from Special Designations Management
Designating 17 or 18 new ACECs and 12 new Zoological Areas encompassing up to over 1 million acres of GRSG habitat would result in impacts similar to those under Alternative C, but they would occur over a larger area.

4.5.10 Proposed Plan

With an emphasis on balancing resources and resource use among competing human interests, land uses, and the conservation of natural resources, the Proposed Plan would reduce FRCC shift and would result in a more natural (i.e., historic) frequency and intensity of wildfire.

Impacts from Lands and Realty Management
Certain uses would be excluded in PHMA and avoided in IHMA, reducing the type of development allowed in those areas. These restrictions would limit opportunities for human-caused ignitions. There would be no similar restrictions in GHMA, meaning the reduction in ignitions would be confined to a smaller area than under some other alternatives.

Impacts from Habitat Restoration and Vegetation Management
The Proposed Plan uses a more defined set of tools for wildfire management than other alternatives. In most instances, the Proposed Plan allows for management flexibility to respond to sub-regional conditions in designing fuels treatments and response to wildfire. For example, in PHMA the use of chemical, mechanical, prescribed fire and seeding treatments with appropriate plant materials is emphasized to prevent the dominance of invasive weeds. This would allow a greater success of those treatments.

Strategic wildland fire planning would help return PHMA to natural fire return intervals. Key actions driving this impact are as follows:

- Strategically placed fuel breaks instead of fire-resistant vegetation or green-strip seedings
- Strategically placed pretreated areas that reduce fine fuels by such practices as mowing vegetation along roadsides, implementing biological treatments, seeding perennial species, and applying herbicides
- Planned wildfire suppression tactics in important GRSG habitat

Prioritizing wildfire suppression in PHMA and conducting burn-out/backfiring operations in a manner that minimizes the loss of sagebrush may have limited ability to restore historic reference conditions in PHMA.

Education, inventory, prevention, control, rehabilitation, and monitoring would be emphasized. By limiting the spread of invasive species, more GRSG-occupied habitat would be retained as a perennial-dominated community, which has a shorter fire season than those communities characterized by invasive annuals (which cure earlier in the year and are more prone to ignition).

Impacts from Wildland Fire Management

Wildland fire management under the Proposed Plan is similar to Alternatives B and D, with additional management flexibility and guidance incorporated to tailor management to specific vegetation communities. The BLM and Forest Service would prioritize wildfire suppression planning and would consider fuels management treatments to reduce invasive species in GRSG habitat. As a result, this alternative would reduce departure from historic reference conditions and FRCC shift toward condition class 3. Additionally, the frequency and intensity of wildfires would be more natural. This is because post-fuel, restoration, and ESR management would be designed to ensure long term persistence of seeded or pre-burn native plants.

The Proposed Plan would include GRSG wildfire, invasive annual grasses, and conifer expansion assessment (**Appendix D**). This assessment sets the stage for identifying important GRSG-occupied habitats and baseline data layers important in defining and prioritizing GRSG habitats. It would determine potential landscape scale management strategies by considering resilience to disturbance, resistance to invasive annual grasses, and GRSG land cover requirements. The management strategies considered in the assessment to increase GRSG habitat at landscape scales included conservation, prevention, restoration, and monitoring and adaptive management. The strategies are adapted for fire operations (preparedness, suppression, and prevention activities), fuels management, post-fire rehabilitation, and habitat restoration.

The Proposed Plan would create and maintain effective fuel treatments in strategic locations, and would prioritize fire suppression in accordance with the GRSG wildfire, invasive annual grasses, and conifer expansion assessment (**Appendix D**) for conservation and protection during fire operations and fuels management decision-making. Compared to Alternative D, this would reduce the size and intensity of wildland fires but would increase both fuels management and fire suppression costs.

Likewise, several actions would improve the success of fuels treatments in PHMA. Specifically, ensuring chemical applications are used in fuels treatments and pretreating areas to reduce invasive species through biological and mechanical treatments and chemical or biological application would dramatically improve the fuel program's ability to improve GRSG habitat conditions.

When reseeding following fire, using species varieties that are adapted to a warmer climate may, in combination with potential climate change, reduce potential for unnatural levels of fire frequency and intensity.

Stationing first response firefighting resources closer to higher fire occurrence areas would reduce response time.

Rural fire protection coordination would be stronger under the Proposed Plan than under any other alternative. Developing and implementing Rangeland Fire Protection Associations in coordination with the state would result in a more consistent inter-agency approach to wildland fire management. As a result, each agency's fire management team would deploy resources in a consistent manner, helping the BLM's fire and fuels program operate more efficiently.

Management under the Proposed Plan would prescribe added measures for analyzing prescribed fire and alternate uses of prescribed fire through site-specific NEPA analysis. The Proposed Plan includes added measures for fuels treatment effectiveness and post-fire rehabilitation and monitoring. These added measures would increase both fuels management planning and post-fire rehabilitation costs, but they would increase the awareness and encourage partnerships with other agencies and resource programs.

Impacts from Nonenergy Leasable Minerals Management

Seasonal limitations and restrictions on development in PHMA, IHMA, and GHMA outside of known phosphate leasing areas would reduce the potential for human-caused ignitions.

Impacts from Locatable Minerals Management

Impacts may be lessened in SFA if the lands that are recommended for withdrawal were to be withdrawn by the Secretary, thereby decreasing the amount of disturbance caused by operations authorized by the mining laws.

Impacts from Salable Minerals Management

Restoring salable mineral pits in GRSG habitat would result in a temporary increase in the potential for human-caused ignitions. Restoration would reduce invasive species, though. Over the long term, this would reduce the frequency and intensity of wildfire and promote the establishment of native perennial species that are less combustible.

Prohibiting mineral material sales in PHMA would also reduce opportunities for human-caused ignitions over the long term.

Impacts from Fluid Minerals Management

There would be several measures (e.g., TL and NSO stipulations and RDFs—restricting surface disturbance that would reduce the potential for human-caused ignitions. These restrictions would be most effective in SFA where waivers, exceptions, and modifications would not be allowed for the NSO stipulation. Not allowing modifications or waivers to NSO stipulations in PHMA would also likely reduce the potential for human-caused ignitions in those areas. COAs on post-leasing activity would have a similar impact on the

fire and fuels program. Applying CSU stipulations and timing limitations in GHMA would be less effective at reducing the potential for ignitions because development would be restricted but not prohibited.

Impacts from Livestock Grazing Management

Evaluating, and potentially introducing, exotic grass seedings could increase the risk of wildfire, depending on the attributes of and range where the grass species is introduced.

Limiting the types of range improvements allowed in PHMA would decrease opportunities for human-caused ignitions during construction or maintenance.

Impacts from Special Designations Management

Current impacts would continue, and there would be less management flexibility for fuels treatments and wildfire response in existing ACECs.

Impacts from Human Disturbance Management, Adaptive Management, and Coordination

Human disturbance excludes habitat disturbance from wildfire and fuels management therefore, the wildland fire and fuels program would retain management flexibility and a greater chance to meet goals and objectives over the life of the plan. The 3 percent human disturbance cap should limit human-caused ignitions in GRSG habitat over the long term and would decrease the probability of wildfire occurrence and the need for fire suppression. Coordinating with other land management agencies and landowners may promote improved habitat conditions across land management boundaries, thus improving the efficiency and effectiveness of fire and fuels treatments across the landscape. Additionally, implementing the Wildfire, Invasive Annual Grasses and Conifer Expansion Assessment would improve wildland fire management across the landscape via improved coordination across agencies.

4.6 Livestock Grazing/Range Management

4.6.1 Methods and Assumptions

Indicators

Indicators of impacts livestock grazing/range management are as follows:

- Changes in permitted AUMs in areas open to livestock grazing
- Changes in the kind of livestock permitted on allotments
- Prohibitions or limitations on the construction or maintenance of structural and nonstructural range improvements
- Modifications to or removal of structural range improvements
- Closures of areas to livestock grazing for the life of the plan
- Changes to the timing, duration, intensity, or frequency of permitted use, including temporary closures

- Changes in livestock management requirements
- Changes in quality or availability of forage and water for livestock

Assumptions

The analysis includes the following assumptions:

- All new and renewed leases and permits would be subject to terms and conditions determined to be necessary by the authorizing officer to achieve the applicable management and GRSG habitat objectives for BLM-administered and National Forest System lands and to meet land health standards for BLM-administered lands and desired conditions on National Forest System lands (see **Tables 2-3** and **2-6**).
- The construction and maintenance of range improvements would continue in the decision area and would vary according to the constraints imposed by each alternative. New range improvements would be subject to limitations and may require additional maintenance, as defined in the plan. Range improvements are generally intended to improve livestock distribution and management, which would maintain or improve rangeland health and could benefit the forage base and wildlife and GRSG habitat.
- By definition in this plan, livestock grazing and construction and maintenance of associated range improvements are not considered to be surface-disturbing activities and are not included in the calculations for the disturbance threshold under Alternatives B, C, F, and the Proposed Plan. However, they could affect the surface in areas where livestock concentrate, such as near water sources. Construction and maintenance of range improvements may result in limited temporary vegetation disturbance.
- If the ability to construct range improvements is limited, livestock grazing management options would be reduced.
- Livestock grazing directly affects specific GRSG habitat objective attributes and does not affect, or only indirectly affects, other GRSG habitat objectives. Modification of livestock grazing to benefit GRSG would be designed and implemented based on meeting or making progress toward habitat objectives that are affected by livestock grazing. Modifying or stopping livestock grazing alone may not be adequate to meet habitat objectives, depending on site history, current conditions, and the habitat objectives not being met.

4.6.2 Nature and Type of Effects

Impacts on livestock grazing are generally the result of activities that affect forage production, areas open to grazing, the class of livestock, the season of use and timing, the ability to construct and maintain range improvements, and impacts from human disturbance, including disruption of livestock movement or unwanted dispersal. Key types of impacts are detailed below.

Protecting GRSG habitat may directly affect livestock grazing if management requires limiting the areas open to grazing or available AUMs, modifying grazing strategies, or changing season of use. This could increase the time and costs to permittees and lessees. For example, management actions to enhance habitat for GRSG could affect livestock grazing by restricting grazing intensity or season of use, closing areas to grazing, or changing livestock rotation patterns in order to maintain residual herbaceous cover in sagebrush habitat (NTT 2011). The listed restrictions could also decrease opportunities for grazing, or even overall grazing operation viability (e.g., if no spring grazing areas were available).

However, managing vegetation to benefit GRSG may indirectly benefit livestock grazing by increasing herbaceous vegetation productivity and improving forage in the long term. This would be the case especially where current conditions are not meeting land health standards. For example, in allotments with a history of intensive grazing, transitions in the composition of sagebrush communities may have occurred that have reduced cover or forage for GRSG (Cagney et al. 2010) and forage for livestock. When grazing management is modified to promote health and vigor of the herbaceous community and meet sage-grouse habitat objectives, this may also increase amounts of palatable livestock forage. In general, when forage is abundant and easily available, livestock performance is higher; diverse or heterogeneous rangeland vegetation is also associated with improved livestock performance (Bailey 2005).

Some areas would not meet sage-grouse habitat objectives by modifying or even stopping livestock management due to the dominance of nonnative vegetation, recurring wildfire, and inadequate seed banks of desirable species. These areas would require additional restoration, such as reseeding native grasses and forbs or controlling invasive species or fire suppression. The effects of restoration and fire suppression on livestock grazing are addressed in the corresponding sections of this EIS.

Managing livestock grazing so that riparian and wetland systems maintain PFC is required for BLM-administered lands. Unregimented livestock grazing can have adverse impacts on riparian and wetland ecosystems (Armour et al. 1991); therefore, managing these ecosystems can directly impact livestock grazing by excluding livestock at specific sites, increasing herding, adding range improvements (such as cross fences and water gaps), and adjusting season of use and livestock numbers. Improvements in riparian and wetland conditions benefit grazing livestock by indirectly providing cleaner and more reliable water sources and more dependable forage availability. The BLM has been implementing grazing management to make progress toward PFC in riparian and wetland areas since at least 1997; however, additional impacts on livestock grazing could occur as additional riparian/wetland management needs are identified and implemented.

Protecting water quality and watershed health is a requirement of standards and guidelines, as well as state and federal water quality standards. If additional management needs are identified and implemented, changes could be required in livestock management, such as deferring or shortening grazing periods, adding range improvements, excluding grazing from riparian areas, establishing riparian pastures, and increasing livestock herding. In areas requiring exclusion of livestock or other restrictions on livestock management, these

limitations could have economic impacts on permittees and lessees. This would be a result of reduced AUMs or livestock numbers, changes in season that impact overall ranch operations, or increased livestock management costs, such as increased herding.

Recreation can affect livestock grazing directly through human disturbance and indirectly through rangeland degradation. Direct disturbance can include undesired animal dispersing or trespassing due to recreationists leaving gates open, as well as animal displacement, harassment, or injury from collisions or shooting. Direct disturbance can also include damage to range improvements, particularly from the use of recreational vehicles or from sport shooting. Disturbance could occur during the hunting season due to increased presence of people, vehicles, and noise. Limitations on recreation in GRSG habitat could indirectly benefit livestock by reducing direct disturbances, but it could also concentrate use in grazing allotments outside GRSG habitat, leading to more conflicts in those areas.

Other direct long-term recreation impacts include disturbance caused by increased levels of human activities. The degree of impacts would vary with the intensity of recreation (for example, large numbers of people attending an event under a special recreation permit [SRP] use would likely have a higher level of disturbance than frequent use by a small number of visitors), the timing of recreation (for example, livestock could be more susceptible to disturbance during calving or lambing periods), and location of recreation in the allotment (for example, disturbance could be more problematic if it were to occur near areas frequented by livestock, such as water sources or salt licks). As stated above, limitations on recreation in GRSG habitat could indirectly benefit livestock by reducing direct disturbances.

Limits on construction or use of transportation routes may affect livestock grazing practices. Road construction may cause loss of forage, harassment, and displacement; thus, reduction of these activities may benefit livestock by reducing disturbances. Closing roads or trails not used for livestock management would also increase forage availability when the area is rehabilitated or when natural rehabilitation occurs. Limitations on cross-country travel may impact permittees' and lessees' ability to effectively manage livestock if administrative access is not granted for allotment management purposes. Travel management actions for GRSG protection generally involve increased limitations or restrictions on vehicular travel.

Wildfire alters sagebrush habitat because sagebrush takes a long time to regenerate, and invasive annual grasses, such as cheatgrass, are adapted to frequent wildfire. In the absence of a robust perennial grass component, invasive annual grasses are likely to dominate these systems following wildfire (NTT 2011). Wildland or prescribed fire would remove vegetation and forage over the short term; however, they can increase forage a few years post-fire as herbaceous vegetation increases and woody vegetation is removed or reduced. Impacts on livestock operations could also occur when agency policies require a rest period following post-fire rehabilitation and before grazing is reintroduced.

Changes in wildfire suppression and fuels management to protect GRSG habitat would have varying effects on livestock grazing. Measures to protect sagebrush habitat might reduce the spread of wildfire and the associated disruption to grazing during suppression and post-fire

rehabilitation activities. Use of livestock to manage fuel loads may increase the opportunities for grazing at a site-specific scale and on a temporary basis.

The management of habitat for GRSG using natural disturbance regimes, such as fire, and using vegetative treatments to achieve biodiversity objectives and improve plant community resilience could also benefit livestock grazing. It would do this by maintaining a balance of seral stages that provide a heterogeneous forage base. In general, removing encroaching junipers benefits livestock grazing by maintaining the herbaceous components of the treated area.

Restricting ROWs or land transfers may indirectly impact grazing by reducing construction impacts from developing these ROWs (such as dust, displacement, and introduction of noxious weeds). Lands and realty actions taken to protect GRSG habitat would involve avoiding or excluding ROWs (e.g., for power lines, pipelines, and other structures) or land transfers in GRSG habitat. These measures could slightly decrease disturbance in these areas. However, the areas outside of GRSG habitat to which ROWs development may be relocated could see an increase in construction-related effects and associated disturbance or displacement of livestock.

Energy and mineral development could impact grazing. During the exploration and testing phase of mineral development, the footprint of disturbance is usually small and localized; therefore, minimal acres available for grazing would be directly impacted. However, during the exploration phase, impacts on livestock dispersal and trespass could occur, increasing time and cost to permittees and lessees. Outside of the exploration and testing phase, surface-disturbing mineral development directly affects areas of grazing in the short term, during construction of well pads, roads, pipelines, and other facilities.

A potential impact is the introduction and proliferation of noxious weeds that lack the nutritional value needed for productive grazing practices. Mining can also introduce heavy metals into the environment, where they can concentrate in forage plants or contaminate waters, possibly impacting livestock health (Fessler 2003). Other potential impacts are changes in available forage, limits on livestock movement, harassment, and temporary displacement of livestock. In the long term, a smaller amount of grazing acreage is permanently lost from mining following rehabilitation. Improving roads associated with mineral development could facilitate livestock management operations by maintaining or improving access to remote locations within allotments. Properly implemented BMPs and reclamation mitigation measures would likely maintain rangeland health and forage levels for livestock. Reducing mineral development in GRSG habitat could reduce potential impacts on grazing, described above.

Changes in livestock grazing management could impact grazing opportunities in a variety of ways. For example, implementing particular livestock grazing management requirements to benefit GRSG could affect livestock grazing by increasing operators' costs or changing required management actions. Some management requirements may result in short-term and long-term increased costs or decreased AUMs for some permittees and lessees due to the following:

- Implementation of modification of a grazing strategy
- Change in season-of-use or livestock class
- Construction or modification of range improvements, when ability to disperse livestock is impacted
- Viability of existing operations could be compromised if seasons or areas of use are eliminated or severely restricted from grazing

These management requirements could result in economic impacts on individuals and the community at large, both direct and indirect. For example, if a ranch were dependent seasonally on forage on BLM and National Forest System lands, a reduction or elimination of AUMs on BLM and National Forest System lands may affect the entire ranching operation by reducing the total amount of available forage (Torell et al. 2002). Socioeconomic effects of changes in livestock grazing are discussed in more detail in the socioeconomics section of this EIS.

Some management changes may require a short-term output of cost for permittees and lessees or agencies but would result in long-term benefits. For example, construction of range improvements to improve livestock distribution and allow for uniform use of the rangeland would generally enhance rangeland health in the long term; however, it would have short-term costs. Constructing off-site water sources and fencing riparian and spring sources could keep livestock away from sensitive riparian areas and provide a cleaner more reliable source of water for livestock; however, it would represent an increased cost for permittees and lessees. Other requirements could increase annual operating costs, such as increased time feeding animals on private land, transporting animals to alternate grazing lands, more complex pasture rotations or herding requiring increased labor and fuels costs for moving animals, or annually maintaining let-down fences. In instances where an allotment is closed to grazing or AUMs reduced to meet GRSG objectives, the permittee or lessee may be eligible for compensation for the value of range improvement projects constructed under a range improvement permit or cooperative agreement, in accordance with 43 CFR, Part 4120.3-6(c), and 36 CFR, Part 222.6 (a).

ACECs may be designated to protect sensitive habitat for the benefit of GRSG. Grazing availability would depend on the designated ACEC management objectives. Restrictions could include reducing grazing in the ACEC and limiting the class of livestock animal or the season of use, duration, or location that livestock are allowed to graze.

4.6.3 Impacts on Livestock Grazing Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative. Impacts on livestock grazing as described below are the same regardless of the alternative selected.

Impacts from Energy and Mineral Development

Impacts from Nonenergy Leasable Minerals Management
There are expected to be minimal impacts from nonenergy leasable minerals on livestock grazing across all alternatives due to a lack of leases in GRSG habitat.

Impacts from Coal Management
No economically viable coal resources are found in Idaho. Under the Dillon RMP, a plan amendment would be required to lease coal. As a result, coal development in the project area and related impacts on range management are likely to be limited under all alternatives.

Impacts from Recreation and Visitor Services Management

Under all alternatives, OHVs would be limited to existing roads and trails, thereby limiting the impacts on livestock grazing from dispersed travel as discussed under **Section 4.5.2**. Access to authorized agency uses, such as grazing allotments, would not be impacted under any alternative. Site-specific travel management planning could, when completed, reduce the potential for conflicts between range management and travel management.

4.6.4 Alternative A

No management areas would be designated for GRSG under this alternative. In general Alternative A would be the least restrictive alternative on resource uses, including livestock grazing. This alternative would also be the least restrictive for other resource uses and associated development. Therefore, there is an increased chance of disturbance from mineral development, recreation, and other uses, as compared to action alternatives.

Impacts from Lands and Realty Management

Under Alternative A, there would be approximately 1 million acres of ROW exclusion and 1.9 million acres of avoidance areas in the decision area; no new ROW exclusion or avoidance areas would be created. Livestock could be disturbed from development of ROWs, as discussed under **Section 4.5.2**. For these reasons, this alternative would have the highest potential for impacts from lands and realty on range management; however, access to range improvements for maintenance would be the least restricted.

Impacts from Habitat Restoration and Vegetation Management, Including Invasive Species Management

Under Alternative A, restoration would continue in the planning area, with long-term benefits to livestock forage. Vegetation could be managed to improve forage, and impacts on range management from vegetation management would be minimal; however, these actions could require adjustment to livestock grazing management. Management actions for invasive species would continue under the direction of current management plans, with the focus on areas not meeting land health standards or desired conditions.

Impacts from Wildland Fire Management

Under Alternative A, mechanical treatments, prescribed fires, and other treatments would be used to prevent conifer encroachment and remove undesirable annual grass and weed species. These actions could improve forage in the long term. Although most of the LUPs

do not provide specific direction for fire suppression in GRSG habitat, protection of GRSG habitat during suppression has become a priority in planning and operational discussions due to large fires in GRSG habitat in 2007 and 2012. Therefore, the risk of forage loss in these areas may be lower than in non-GRSG habitats.

A minimum rest period from livestock grazing of two growing seasons would typically be required after any major vegetative disturbance, including wildfire, for BLM-administered and National Forest System lands. Specific timing and the type of rest would be determined at the site-specific environmental assessment phase for all lands in the planning area. As a result, livestock grazing would typically be excluded from areas following a fire to some extent. Impacts on and costs and time for permittees and lessees would depend on the location of the fire in relation to grazing allotments, as well as the size and severity of the fire. Overall, impacts of required rest are likely to be minimal, compared to the action alternatives.

Impacts from Energy and Mineral Development

In general, Alternative A is the least restrictive on energy and mineral development of all alternatives. As a result, the indirect impacts of development on livestock grazing, including spread of noxious weeds and disturbance of livestock, are the greatest under this alternative.

Impacts from Locatable Minerals Management

Under Alternative A, 1.7 million acres of the decision area would be withdrawn from mineral entry. Impacts on range management would not occur in this area.

Impacts from Salable Minerals Management

Under Alternative A, 1.8 million acres of the decision area would be closed to mineral materials disposal. Impacts on range management would not occur in this area.

Impacts from Unleased Fluid Minerals Management

Under Alternative A, 2.7 million acres in the decision area would be closed to leasing. Alternative A would have the highest number of BLM-administered and National Forest System lands open to fluid mineral leasing with standard terms and conditions; therefore, conflicts between grazing and mineral development would be more likely to occur in this area.

Impacts from Leased Fluid Minerals Management

The Idaho BLM has four federal oil and gas leases. No drilling or exploration has occurred on any of the leases, nor has any activity been proposed; therefore, minimal impacts on livestock grazing are anticipated.

Impacts from Nonenergy Leasable Minerals Management

Under Alternative A, 2.2 million acres of the decision area would be closed to nonenergy mineral leasing. Impacts on range management would not occur in this area.

Impacts from Recreation and Visitor Services Management

Under this alternative, there would be no new restrictions to SRPs in the decision area; therefore, livestock could be disturbed by recreation in the planning area. Some limited potential for disturbance from general recreation is possible, as described under **Section 4.5.2**.

Under Alternative A, as under all alternatives, OHVs would be limited to designated routes, and site-specific travel management planning on BLM-administered lands would be developed, limiting disturbance to livestock. In addition, OHV use on National Forest Lands within the planning area is limited to roads, trails, and areas that have been designated through a transportation planning process; therefore, impacts on disturbance of livestock or access to allotments from travel management are the same across all alternatives for National Forest System lands.

Impacts from Livestock Grazing Management

Under Alternative A, livestock grazing would be allowed on approximately 11,730,785 acres in the planning area. This includes approximately 8,898,400 acres and 1,080,200 AUMs on BLM-administered lands within GRSG Habitat and 1,915,900 acres of National Forest System lands in GRSG habitat (see **Table 4-76**, Overview Comparison of Impacts on Range Management by Alternative within GRSG Habitat). AUM calculations are not available for National Forest System lands. While livestock grazing is currently permitted throughout the planning area, the population areas with the most acres open to grazing are mountain valleys, North Side Snake, and Southwest Idaho. Each has close to 2 million acres of BLM-administered lands open to grazing within occupied GRSG habitat in the planning area.

Note that outside of GRSG habitat in the planning area there are an additional approximately 2,832,339 acres and 374,202 permitted AUMs on BLM-administered lands and 7,700,600 acres on National Forest System lands. Livestock management decisions on these lands are not made in this document.

All leases and permits under Alternative A would continue to be required to meet or make progress toward meeting standards defined in the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management and the Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management for Montana and the Dakotas for BLM-administered lands. Achievement or significant progress toward achievement would continue to be evaluated. Grazing permits, including grazing systems, permitted AUMs, and allotment boundaries, would be modified as necessary at this point to conform to Standards and Guidelines for Livestock Grazing Management. This would be the case if grazing were determined to be the causal factor for a standard not being achieved, as required by regulation on BLM-administered lands. As a result, any changes to grazing management would occur on a rolling basis following the determination.

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Table 4-76
Overview Comparison of Impacts on Range Management by Alternative within GRSG Habitat

		BLM-Administered Lands by GRSG Population Area															
	Alternative A	Alternative B		Alternative C	Alternative D			Alternative E			Alternative F			Proposed Plan			
	All GRSG Habitat	GHMA	PHMA	PHMA	GHMA	IHMA	PHMA	PHMA	GHMA	IHMA	GHMA	PHMA	RHMA	GHMA	IHMA	PHMA	SFA
BLM																	
Acres open to grazing	8,898,400	1,831,200	7,024,000	0	1,874,400	1,109,700	5,914,200	2,444,600	2,314,300	4,124,600	1,831,200	7,024,000	482,600	2,111,900	2,669,000	1,000,400	3,397,000
Permitted AUMs	1,080,200	253,700	821,600	0	258,600	146,800	674,800	338,900	259,700	480,600	253,700	821,600	57,200	258,500	314,500	138,800	372,000
Forest Service																	
Open to grazing[1]	1,915,900	824,800	924,900	0	991,500	254,900	667,000	446,300	880,500	356,400	825,800	925,200	140	See text discussion below.			

BLM GIS 2015
[1]AUMs are not available for National Forest System lands

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On National Forest System lands, allotments with grazing permits would be required to meet or be moving toward desired conditions, as defined in the LRMP, or as described in an agency NEPA decision for the allotment. Permits would be reviewed and amended as needed and rangeland conditions would be assessed during site-specific NEPA analysis based on the Forest Allotment NEPA schedule.

Lands would be maintained and restored to maintain healthy native plant and animal species. Changes to rangeland management would be directed first to allotments not meeting one or more of the land health standards or desired conditions. On approximately 61 of the 2,220 allotments assessed on BLM-administered lands, on 660,900 acres, standards are not being achieved due to livestock management. Management actions have not yet been taken to make progress toward meeting standards. See **Section 3.8**, Livestock Grazing. Similarly, the focus in riparian areas and wetlands would be to improve functioning-at-risk and nonfunctioning riparian areas and wetlands toward PFC. As described under **Section 4.5.2**, managing riparian habitat can directly impact livestock grazing by excluding livestock at specific sites, increasing herding, adding range improvements (such as cross fences and water gaps), and adjusting season and duration of use and livestock numbers. Such changes in grazing management options may increase time or costs for lessees and permittees.

Measures for GRSG and other sensitive species habitat under Alternative A are limited to requirements for "habitat suitable to maintain suitable viable populations" (under the Idaho standard), or "habitat as necessary to maintain a viable and diverse population of native plant and animal species, including special status species," (under the Montana standards). This alternative would not direct the BLM or Forest Service to manage certain areas more intensively for GRSG habitat objectives; therefore, impacts on grazing in GRSG habitat are similar to those throughout the planning area.

Range improvements, including fences, vegetation treatments, and water developments, would be allowed in the decision area when needed to support grazing or to improve livestock distribution, allowing for management options for lessees and permittees. Fences would be constructed to protect and benefit livestock and wildlife, but no specific provisions are included for GRSG, so additional costs could be limited.

Under drought conditions under Alternative A, grazing use could be adjusted, as necessary, in accordance with BLM IM 2013-094. There would be potential impacts on authorized AUMs and management options, with increased time and costs for permittees and lessees if any changes were implemented on BLM-administered lands.

Impacts from Special Designations Management

Under Alternative A, 59 existing ACECs containing over 460,000 acres of occupied GRSG habitat would be maintained. Impacts on range management would be as described under **Section 4.5.2**.

4.6.5 Alternative B

Occupied GRSG habitat would be classified into PHMA and GHMA under this alternative, and impacts would primarily occur on range management in PHMA due to restrictions on resource uses.

Impacts from Lands and Realty Management

Under Alternative B, no new ROW authorizations would be permitted in PHMA unless the development would occur within the existing developed footprint. As a result, indirect impacts on livestock grazing from disturbance would be limited in this area and would decrease, compared to Alternative A.

Impacts from Habitat Restoration and Vegetation Management, Including Invasive Species Management

Under Alternative B, restoration projects in PHMA would be designed to benefit GRSG and based on the likelihood of success, with reestablishment of sagebrush cover as the highest priority. Projects to remove nonnative species and improve habitat would likely be in line with current grazing management practices and could improve livestock forage in the long term. Impacts could occur on range management when objectives for range management did not match those for GRSG habitat. Post-restoration management requirements could also result in changes to grazing systems or range management, with a resulting potential for an increase in costs and time for permittees and lessees.

Actions for invasive species management are similar to that described under Alternative A, with a greater focus on restoration and potential for impacts on grazing management in PHMA.

Impacts from Wildland Fire Management

Under Alternative B, fire suppression would be prioritized when PHMA is threatened. As a result, there is potential for fewer disturbances to grazing due to fewer wildfires. Fires burning outside of PHMA or GHMA may increase in size when they are prioritized for suppression after fires burning in PHMA and GHMA. This could slightly increase the disturbance to grazing outside of GRSG habitat.

Post-fire management actions to restore habitat could result in impacts on range management. Under this alternative, management activities may be adjusted to support successful restoration, which could temporarily or permanently reduce grazing in areas reseeded post-fire. The level of impacts would depend on size, location, and intensity of fire and on the related level of restoration needed.

Fuels management projects to reduce fine fuels include the use of targeted livestock grazing. This could result in site-specific temporary increases in available forage in PHMA, but impacts are likely to be minimal overall.

Impacts from Energy and Mineral Development

Under Alternative B, additional restrictions would be put on mineral development, as compared to Alternative A. Lands in PHMA would be recommended for withdrawal from mineral entry for locatable minerals, closed to mineral materials removal, and closed to new leasing for fluid minerals. For currently leased parcels, NSO stipulations would be applied in PHMA and around leks. As a result, disturbance of range management from mineral development would be minimized in PHMA.

Impacts from Recreation and Visitor Services Management

In PHMA, OHVs would be limited to existing roads and trails on BLM-administered and National Forest System lands. Travel plans (to be completed) would analyze PHMA for the need for road closures, and limitations would be implemented during development of new roads. Some reduction in routes, limitations on new routes, and upgrades to existing routes would be added, compared to Alternative A. This could indirectly reduce livestock disturbance in PHMA. If restrictions on cross-county travel were to apply to permittees and lessees, access to allotments and the ability to effectively manage livestock may be impacted.

SRPs in PHMA would be limited when they were found to have negative impacts on GRSG; therefore, overall SRPs may be reduced with potential benefits to livestock grazing due to decreased disturbance.

Impacts from Livestock Grazing Management

Under Alternative B, no management actions would result in direct changes to acres open to grazing and permitted AUMs (**Table 4-76,** Overview Comparison of Impacts on Range Management by Alternative within GRSG Habitat). In the long term, livestock grazing in PHMA may be reduced under Alternative B, compared to Alternative A, in order to conform to GRSG habitat objectives. However, the impacts would be site-specific and likely occur gradually.

This alternative provides GRSG habitat objectives, which will be incorporated into permit and lease renewals; therefore, impacts would occur at a site-specific level during the renewal process. Completion of land health assessments would be prioritized within PHMA on BLM-administered allotments. As a result, impacts on range management would be most likely to occur in these areas. Retirement of allotments would be an option in PHMA, resulting in potential reductions in AUMs in the planning area. Compensation for authorized range improvements would be provided, as appropriate.

Vegetation treatments that benefit livestock forage could only be completed if these treatments would also conserve, enhance, or improve GRSG habitat; therefore, the management options in PHMA could be reduced and the ability to fully use permitted AUMs could be impacted. On BLM-administered lands, land health assessments using ecological site descriptions (where available) would be required to determine if standards of rangeland health and GRSG habitat objectives were being met.

Under drought conditions, as under Alternative A, grazing management changes may be implemented; however, under Alternative B the focus would be on adjusting management in PHMA; therefore, impacts would be more likely to occur in this area.

Under Alternative B, riparian areas would be managed for PFC or similar standards at a minimum within PHMA. There could be limitations on grazing within these areas, increased use of fencing and herding, seasonal limitations on grazing, creation of water developments, or other measures to manage distribution of livestock so that pressure on these systems is limited. This could increase costs or time for permittees and lessees.

In the long term, livestock grazing in PHMA is likely to be reduced under Alternative B in order to conform to GRSG habitat objectives and other resource concerns. The timing and degree of reduction would depend on permit renewal timing and site-specific conditions.

Structural range improvements, such as fences and exclosures, in PHMA under Alternative B would be allowed but would have to be designed to conserve or enhance GRSG habitat. In addition, some fences would require marking, alternative siting, or other design features to lessen risk for GRSG impacts, so the cost of building or maintaining these structures may be increased, compared to Alternative A.

Similarly, new water developments from diverting spring or seep sources would be permitted only when GRSG habitat would also benefit and so would be limited. Permittees and lessees may not be able to fully use permitted AUMs if water were limited on a given allotment. Overall, water improvements and fences are likely to be removed or modified to some extent under this alternative, resulting in decreased grazing or shifts in grazing use patterns in the long term.

Impacts from Special Designations Management

No new ACECs or Zoological Areas would be designated under Alternative B, so impacts would be as described under Alterative A.

4.6.6 Alternative C

Alternative C would be the most restrictive on grazing management; no grazing would be authorized in occupied GRSG habitat following a two-year notice to cancel existing permits and leases, or portions thereof. Impacts from all other resources and resource uses on livestock grazing under Alternative C would be limited due to the limited permitted grazing outside of occupied habitat.

Impacts from Lands and Realty Management

Impacts are as described under Alternative B but would apply to all occupied habitat. Impacts on livestock grazing are minimal due to lack of grazing in all occupied GRSG habitat.

Impacts from Habitat Restoration and Vegetation Management, Including Invasive Species Management

Management actions and impacts are similar to that described in Alternative B, with some additional restrictions on removing sagebrush cover to improve forage production. Impacts, however, are limited due to the lack of authorized grazing in occupied habitat.

Impacts from Wildland Fire Management

Impacts from wildland fire management are minimal under Alternative C due to the lack of permitted grazing in occupied habitat.

Impacts from Energy and Mineral Development

Management would be similar to that described under Alternative B. Impacts from all energy and mineral development would be minimal due to lack of grazing in occupied habitat.

Impacts from Recreation and Visitor Services Management

Management would be the same as Alternative B but would apply to all occupied habitat. Impacts are minimal due to lack of grazing in occupied habitat.

Impacts from Livestock Grazing Management

Alternative C would remove livestock grazing from all allotments in occupied habitat, a 100 percent reduction from Alternative A (see **Table 4-76,** Overview Comparison of Impacts on Range Management by Alternative within GRSG Habitat). Grazing would be permitted outside of GRSG habitat on a total of approximately 2,875,600 acres, with 379.100 permitted AUMs on BLM -administered lands. Acres and AUMs are not available for National Forest System lands.

Removing grazing from all occupied habitat would result in economic impacts on permittees and lessees. As discussed under **Section 4.5.2**, permittees and lessees would be faced with reducing AUMs for their operations or locating replacement forage. This could have higher costs or limited availability with related impacts on individual leases and permits as well as the local community. Closures to grazing would also disrupt the viability of current seasonal rotations or other management strategies that use combinations of federal, state, and private lands and potentially reduce the value of private lands used for grazing. If ranches are not maintained or profitable, they could be sold and may be developed (Wilkins et al. 2003).

Existing structures under Alternative C could be required to be modified or removed if they are determined to have a high risk of GRSG strike. In addition, management actions would allow no new water developments, and existing water developments could be removed. It is unclear if there would be a concerted effort to remove any or all livestock management infrastructure under this alternative. However, permittees and lessees who have investments on federal lands in occupied habitat that would be impacted could be compensated. Compensation for BLM permittees and lessees with authorized range improvements would be provided as appropriate, based on requirements specified in 43 CFR 4120.3-6(c). Under certain limited circumstances, Forest Service permittees would be compensated in accordance with 36 CFR 222.6(a). BLM and Forest Service investments in range infrastructure could also be impacted under this alternative, as structures no longer are

maintained and go into disrepair. Furthermore, fencing may be required to prevent livestock from trespassing onto lands where grazing is excluded.

Removing range improvements and water developments on occupied habitat would also further restrict management options. Permittees and lessees who rotate pastures between private and federal lands may need to construct additional water developments and realign fences to keep livestock on private pastures, thereby increasing time and costs. Fencing density could increase in areas where federal, state, and private lands are interspersed and are grazed in common.

As a result of removing grazing from occupied habitat, there is also the potential for increased conflicts between grazing and other resources and resource uses on lands of other surface ownership, should livestock grazing increase in this area.

Impacts from Special Designations Management

Under Alternative C, 39 new ACECs encompassing approximately 3.1 million acres of occupied GRSG habitat would be designated in the planning area, a tenfold increase over Alternative A. Impacts would, however, be limited since grazing would be prohibited from occupied habitat on BLM-administered and National Forest System lands.

4.6.7 Alternative D

Occupied habitat is categorized into three categories, PHMA, IHMA and GHMA medial, and general, with associated management. Impacts for livestock grazing would be focused in PHMA and IHMA.

Impacts from Lands and Realty Management

Under Alternative D, new ROW and land use authorizations would be avoided whenever possible, with a goal of no net loss in GRSG habitat. ROW avoidance areas in PHMA, IHMA, and GHMA, as well as the exclusion of larger facilities in PHMA, would somewhat limit the indirect impacts of development on grazing in the avoidance and exclusion areas. Impacts would still occur in nonhabitat allotments.

Similarly, management actions prohibiting solar and wind development in PHMA and imposing restrictions on development in IHMA and avoidance areas in GHMA would limit any impacts of disturbance from development of these resources. However, this may shift impacts on nonhabitat allotments.

Impacts from Habitat Restoration and Vegetation Management, Including Invasive Species Management

Under Alternative D, vegetation rehabilitation would emphasize projects to achieve the greatest improvement in GRSG abundance and distribution. This includes sites with greater likelihood of success, as discussed under Alternative B. Reconnecting and expanding native plant communities would be an objective across all GRSG habitat types; restoring seasonal habitats would be emphasized in both PHMA and IHMA.

As discussed in Alternative B, these management actions would likely be in line with current grazing management practices and could improve livestock forage in the long term. Impacts could occur on range management when objectives for range management do not match those for GRSG habitat. Post-restoration management requirements could also change grazing or other range management systems. This could increase costs and time for permittees and lessees. Most management actions and related impacts on grazing would be applied across all three habitat types, so they would be similar to those discussed in Alternative B but increased in intensity.

Cooperative planning would be used to develop and implement habitat restoration projects, so local permittees and lessees would have the opportunity to provide input into the implementation process. This would allow for results that could limit impacts on grazing management or improve habitat for both GRSG and livestock.

Impacts from Wildland Fire Management

Under Alternative D, post-fire and restoration management would be undertaken to ensure long-term persistence of seeded or pre-burn native plants. It may also require short- or long-term change to grazing management. Management actions for post-fire restoration may reduce livestock grazing, with related impacts on permittees' and lessees' ability to fully use permitted AUMs. The degree of impacts would be determined by the location, size, and intensity of fires in GRSG habitat but would be increased over those in Alternative B. This is because all GRSG habitat types (priority, medial, and general) would be included.

Using grazing to manage fine fuels would also be considered in PHMA, IHMA, and GHMA, following certain conditions. Grazing management would be implemented strategically on the landscape. It would directly involve the minimum footprint and grazing intensity required to meet fuels management objectives and to conform to grazing standards and guidelines. As a result, additional site-specific opportunities for targeted grazing may be available, but these are likely to be limited and short term; thus, the overall impact in the planning area would be minimal.

Impacts from Energy and Mineral Development

Under Alternative D, some degree of mineral development would be allowed, with measures to avoid or mitigate impacts on GRSG. Specifically, new fluid minerals and undeveloped nonenergy mineral leases would be allowed in all GRSG habitat types, with BMPs applied. Similarly, mineral materials would be allowed to be leased in all habitat types, with stipulations. As a result of the flexibility in management for PHMA, unlike that in Alternative B, there is some potential for mineral development in PHMA and related impacts on disturbance of livestock; however, the impacts would likely be minimal and lower than that under Alternative A. Within IHMA and GHMA, the degree of disturbance from or conflicts with grazing from energy and mineral development would also be lower than that under Alternative A.

Impacts from Recreation and Visitor Services Management

Under Alternative D, OHV travel would be limited to existing roads, primitive roads, and trails, at a minimum. All open play areas designated for OHV use are outside GRSG habitat;

these would remain open, with the potential to disturb livestock or disrupt livestock movement in these areas. This would be due to gates left closed or open inappropriately. Seasonal restrictions for authorized activities could impact the ability of permittees and lessees to access and manage allotments.

Impacts from Livestock Grazing Management

Grazing would be allowed on all lands identified as available, as under Alternative A (see **Table 4-76,** Overview Comparison of Impacts on Range Management by Alternative within GRSG Habitat).

Grazing management action and impacts are similar to those described in Alternative B. There would be prioritized implementation of grazing systems or permit modifications to meet habitat objectives in areas that are not meeting these objectives. This would result in a moderate decline in permitted grazing over time as permits are modified to incorporate GRSG objectives at renewal. Under Alternative D, however, allotments containing PHMA would be prioritized for permit renewal, followed by IHMA and finally GHMA; impacts on range management would occur in this sequence. In addition, all allotments with federally threatened and endangered species may also be prioritized for permit renewal ahead of GRSG habitat; therefore, impacts on range management could also occur in these areas.

Under Alternative D, additional measures would be applied to limit impacts of trailing livestock on leks and structural range improvements on GRSG. This would result in some additional potential for increased time and costs for management.

Retiring grazing permits, as described under Alternative B, would be considered where grazing privileges are relinquished or the allotment is vacant in all GRSG habitat types. As a result, total areas open to grazing may be reduced in the long term.

During droughts, under Alternative D, grazing management would be adjusted, as under Alternatives A and B, with the emphasis on providing sufficient food and cover for GRSG. Impacts would depend on site-specific resource conditions.

Impacts from Special Designations Management

No new ACECs or Zoological Areas would be designated under Alternative D, so impacts are as described under Alterative A.

4.6.8 Alternative E

Under Alternative E, GRSG habitat would be separated into CHZ, IHZ, and GHZ, with the priority on allotment renewal in CHZ and IHZ where populations are declining. Management changes, if required, would be tailored to specifically address habitat objectives that need improvement, and the impacts on other resources or resource uses, such as wildland fire management, would be examined. As a result, impacts on livestock management may be limited, compared to other action alternatives, due to the increased flexibility to address site-specific needs.

Impacts from Lands and Realty Management

Under Alternative E, ROW avoidance areas in CHZ and IHZ, as well as the exclusion of new infrastructure in CHZ, would somewhat limit the indirect impacts of development on grazing.

Impacts from Habitat Restoration and Vegetation Management, Including Invasive Species Management

Impacts from habitat restoration are as described under Alternative A. Similarly, management actions of invasive species would likely be similar to Alternative A, with a focus on actions in CHZ and IHZ. Short-term impacts on grazing are minimal, with a change for long-term improvement of forage.

Impacts from Wildland Fire Management

Under Alternative E, management actions for wildfire include an emphasis on fire suppression and reduction in fire risk in CHZ, IHZ, and GHZ, with potential for reduction in fire risk and related disturbance in these areas. As under Alternatives B and D, actions include targeted livestock grazing to reduce fine fuels and invasive species and to maintain fuel breaks, particularly in areas with high fuel loads with high risk of wildfire threatening the CHZ and IHZ. This action could result in some site-specific temporary increases in available forage, but location and levels would be unpredictable; thus, impacts are minimal overall.

Impacts from Energy and Mineral Development

Impacts from mineral and energy development are generally the same as those described under Alternative A. Fluid mineral development would have some additional restrictions applied to limit disturbance; therefore, the likelihood of development and associated disturbance would be reduced in areas with potential for these resources.

Impacts from Recreation and Visitor Services Management

Impacts are similar to those described under Alternative B. On BLM-administered and National Forest System lands, restrictions on OHV use on existing routes before travel planning and seasonal restrictions on activities that could disturb nesting GRSG could impact the ability of permittees and lessees to access and manage allotments.

Impacts from Livestock Grazing Management

Under Alternative E, grazing would be allowed on all lands identified as available, as under Alternative A (see **Table 4-76**, Overview Comparison of Impacts on Range Management by Alternative within GRSG Habitat). Management actions and impacts would be based on GRSG population trends and focused on CHZ and IHZ. Allotments would be prioritized for permit renewal where populations of GRSG are. Changes to grazing management and associated impacts are most likely to occur in these areas.

Existing grazing management would be maintained unless the current grazing system does not meet GRSG habitat objectives and there is compelling information that changing the system would enhance habitat. Specifically, management actions in this alternative state that where population and habitat triggers are being maintained within a Conservation Area, this shows that the current grazing system is adequate to maintain viable GRSG populations and

therefore absent compelling information, no further changes to BLM grazing systems would be required pursuant to Standard 8 (Threatened And Endangered Plants And Animals) of the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management, with respect to GRSG. Modifications to grazing management would continue to be implemented, however, where Standards 2 (Riparian Areas and Wetlands) and 4 (Native Plant Communities) are not being met, or where Standard 8 is not being met for other species.

Adjustments would be applied at a site-specific level and specifically tailored to achieve objectives. As a result, changes to management and associated impacts would be limited. In addition, altering grazing systems within allotments may be possible under this alternative. This includes enhanced grazing opportunities in some areas with introduced seedings or areas with lower value to GRSG, such as GHZ. This limits overall impacts.

Under Alternative E, some additional limitations would apply to structural range improvements, as compared to Alternative A. This could increase the time or costs for construction and maintenance of improvements or could impact the ability to distribute livestock. These restrictions are more flexible than those under other action alternatives. They include avoiding construction of new fences within 1.2 miles (2 km) of leks and considering GRSG habitat needs and risks when designing and locating new water developments.

The location and level of adjustment needed to management cannot be determined and may change over time, lending some instability to the range management program. This is because of the unpredictable nature of areas that may be targeted for grazing management revision under this alterative (based on local GRSG population levels).

Impacts from Special Designations Management

No new ACECs or Zoological Areas would be designated under Alternative E, so impacts are as described under Alterative A.

4.6.9 Alternative F

As in Alternative B, all occupied habitat would be categorized into PHMA and GHMA, with potentially other restoration areas, each with associated management. Although grazing would be permitted under this alternative, the level of authorized grazing would be reduced by removing 25 percent of average billed AUMs in occupied GRSG habitat, following a two-year notice to cancel existing permits and leases, or portions thereof. In addition, the ability to construct improvements and other management options would be limited, with impacts on permittees and lessees.

Impacts from Lands and Realty Management

The type of impacts are as described under Alternative A, although the level of impacts would be reduced due to the reduction in authorized grazing.

Impacts from Habitat Restoration and Vegetation Management, Including Invasive Species Management

Management actions under this alternative are similar to those described under Alternative B but include additional restrictions on removing sagebrush cover to improve forage. As such, management options may be further limited. However, there is the potential that less forage improvement would be necessary under Alternative F for livestock grazing purposes, due to the reduction in authorized grazing in the planning area.

For invasive species management, activities that spread invasives would be restricted. As described under the range management section for this alternative, restrictions on range improvements may apply, with potential impacts on permittees and lessees.

Impacts from Wildland Fire Management

As for all action alternatives, actions to suppress and control the spread of wildfire under Alternative F could decrease the risk of disturbance from wildfire in GRSG habitat. Fires outside of GRSG habitat would be at risk of decreased suppression efforts.

Under Alternative F, measures to protect GRSG habitat post-fire could impact range management. Livestock grazing would be excluded from burned areas until woody and herbaceous vegetation meet GRSG objectives, which could result in long-term (10 to 50 years or longer) exclusion from burned sites. It would generally take more than a decade to reestablish adequate Wyoming sage cover in low precipitation areas. The level of impacts would depend on locations, size, and intensity of wildfire in GRSG habitat in relation to the location and level of authorized grazing. Requirements to include livestock exclosures to monitor fire restoration progress are anticipated to have negligible impacts, due to the limited size of exclosures.

Impacts from Energy and Mineral Development

Under Alternative F, no new mining claims would be allowed, and salable minerals sales would be prohibited in PHMA. Therefore, there would be limited potential from development-related disturbance of these resources.

Impacts from leased fluid minerals are the same as those described under Alternative A. New leasing in PHMA and GHMA would be limited, so there is some limited opportunity for disturbance from development of these resources.

Impacts from Recreation and Visitor Services Management

Impacts are similar to that described under Alternative B. In addition, seasonal camping closures within 4 miles (6.4 km) of active leks could impede implementation of required livestock movement and trailing activities.

Impacts from Livestock Grazing Management

Under Alternative F, management actions and impacts would occur in all occupied habitat. The reduction in authorized grazing in GRSG occupied habitat, while not as complete as under Alternative C, would include a 25 percent reduction below AUMs levels typically billed by permittees. While allotment-specific impacts would be determined at the

implementation level, overall, livestock grazing levels would be reduced in the decision area. Estimated AUMs under Alternative F are 689,962.

In some cases, this may involve loss of permitted grazing for individual allotments and, in other cases, may involve reduction of permitted grazing levels for allotments. These management actions would potentially require permittees to reduce grazing or locate alternative sources of forage, with potential for economic impacts on as discussed in Alternative C.

Where grazing is permitted, management would be similar to that described in Alternative B, with the addition of other protective measures for GRSG habitat (such as increased prohibitions on grazing after fire and restriction on all vegetation treatments). As a result, management options would be limited and time and costs for permittees would be increased as compared to Alternative A.

In addition, management actions would allow no new water developments or other structural range improvements. Prohibitions on new improvements could also limit the ability to effectively distribute livestock, resulting in indirect increases in time and costs for permittees. These actions are likely to further limit the abilities of permittees and lessees to fully use permitted AUMs and would increase time and cost for management.

Impacts from Special Designations Management

Under Alternative F, 17 or 18 new ACECs and 12 new Zoological Areas encompassing up to over 1 million acres of occupied GRSG habitat, would be designated in the planning area. This would be a 22-fold increase over Alternative A. Impacts would, however, be reduced in areas where grazing is reduced.

4.6.10 Proposed Plan

Under the Proposed Plan, GRSG habitat would be separated into SFA, PHMA, IHMA, and GHMA. Priority for review and processing of grazing permits/leases would be in SFA, followed by PHMA outside of SFA. Precedence would be given to existing permits/leases in these areas not meeting land health standards, with focus on those containing riparian areas, including wet meadows. Management changes, if required, would be tailored to meet GRSG habitat objectives.

Impacts from Lands and Realty Management

Under the Proposed Plan, PHMA and IHMA would be managed as ROW avoidance areas but would be subject to RDFs, BMPs, and a seasonal timing limitation, resulting in limited new development in GRSG habitat. Similarly, management actions would prohibit solar and wind development in PHMA, would impose restrictions on development in IHMA, and would classify GHMA as avoidance areas.

The Proposed Plan would include a cap on human disturbance; the -percent disturbance cap on discrete anthropogenic disturbances would be applied in PHMA at both the BSU and project levels. Human disturbances in PHMA and GHMA also would be mitigated to ensure

a net conservation gain to GRSG. In addition, conservation measures would be implemented in PHMA and GHMA, such as adaptive management and defined monitoring protocols (**Appendices G** and **E**), RDFs, and lek buffers (**Appendix DD**).

As a result, disturbance of livestock from development activities, as discussed in **Section 4.6.2**, including disturbance of forage or unwanted dispersal of livestock, would be limited in GRSG habitat.

Under the Proposed Plan on National Forest System lands, special use authorizations, land ownership adjustments, and land withdrawals would limit the direct and indirect impacts of development and surface disturbance on rangelands where livestock grazing is permitted, thereby maintaining forage availability.

Impacts from Habitat Restoration and Vegetation Management

Impacts under the Proposed Plan habitat from vegetation management would be similar to those discussed under Alternative D. The Proposed Plan would also include additional measures, such as conifer removal, improved wet meadows management, and RDF implementation. In addition, specific vegetation objectives in PHMA have been identified in the Proposed Plan based on vegetation modeling: approximately 77,000 acres identified for mechanical treatments, 30,000 acres of prescribed fire, and 620,000 acres for annual grass treatment to meet GRSG objectives on BLM Lands (see **Table 2-5**). As vegetation treatments are implemented, livestock grazing may be modified temporarily or permanently to help ensure treatment success and progress toward meeting GRSG habitat objectives. However, in most cases, treatments such as conifer removal, would maintain or improve forage conditions in the long term. Conversion of cheatgrass to sagebrush-steppe may reduce overall amounts of forage available but would increase perennial bunchgrasses, which provide higher nutritional quality and produce more consistent amounts of forage from year to year.

Impacts from Wildland Fire Management

Under the Proposed Plan, impacts from wildland fire management would be similar to those described for Alternative D. Management actions would include an emphasis on fire suppression and reduction of fire risk in PHMA and IHMA, with potential for reduction in long-term fire risk and related loss of livestock forage in these areas. Specific requirements include burn plans before use of prescribed fire in GRSG habitat and assessment of management needs based on local conditions, as detailed in **Appendix D**. Wildfire, Invasive annual grasses, and conifer expansion assessments would also identify priority areas and treatment opportunities for fuels management, fire management, and restoration.

As discussed under Alternative D, targeted grazing could result in some site-specific temporary increases in available forage, but location and levels would be unpredictable and temporary; thus, overall impacts on available forage would be minimal.

Under the Proposed Plan, GRSG habitat objectives would be incorporated into emergency stabilization and burned area emergency rehabilitation plans, in accordance with the restoration/rehabilitation strategy developed as a result of the wildfire, invasive annual

grasses, and conifer expansion assessments. Management activities may be altered to meet objectives. As a result, grazing could be modified or excluded from restoration sites until GRSG objectives were met. However, incorporating objectives would be based on site capability and potential and therefore would vary on a site-specific basis; site-specific changes to grazing management required would be determined at implementation.

In addition, grazing management may be adjusted on sites next to burned areas to mitigate the impact of a wildfire on GRGS populations. As a result, some permittees may be impacted by both exclusion of livestock from a burned area and reduction of grazing or changes to management in adjacent allotments. Specific management changes and intensity of impacts would vary based on site-specific conditions and wildfire occurrences.

As discussed in **Section 4.6.2**, fuels projects and fire suppression to protect sagebrush ecosystems and associated GRSG habitat would benefit livestock grazing where areas available to grazing overlap this habitat, due to a long-term reduction in the likelihood of high intensity wildfire. Short-term fuels reduction projects may result in temporary reduction in available forage on a site-specific basis. Under the Proposed Plan on National Forest System lands, measures to protect GRSG habitat from fire and associated fire operations would be beneficial to livestock grazing, especially in the 12-inch or less precipitation zone, because it would help prevent the expansion of nonnative invasive species, such as cheatgrass. Although management to suppress and control the spread of wildfire under the Proposed Plan would decrease the risk of disturbance from wildfire in GRSG habitat, fires outside of GRSG habitat could be at risk of decreased suppression. Management direction to protect GRSG habitat from fire in higher elevation sagebrush habitats (i.e., mountain big sagebrush) could indirectly negatively impact livestock grazing in the long term as sagebrush potentially increases and forage production decreases.

Impacts from Energy and Mineral Development

Similar to Alternative D, under the Proposed Plan, fluid mineral development would be permitted in GRSG habitat, with measures limiting surface disturbance. Specifically, SFA, PHMA, and IHMA would be available for leasing with NSO stipulations. GHMA would be available with CSU stipulations, SFA would be recommended for withdrawal from locatable mineral entry, and PHMA would be closed to mineral material leasing.

In addition, the Proposed Plan would include a 3 percent cap on human disturbance applied in PHMA at both the BSU and project levels. These measures, combined with the RDFs, buffers, and mitigation, would help to reduce potential disturbance of livestock forage and livestock, as compared to Alternative A. Due to the limited conflicts between livestock grazing management and energy development under existing conditions, impacts would be minimal.

On National Forest System lands, management direction prohibiting solar and wind development in PHMA and restricting development in IHMA would limit any impacts associated with ground disturbances from developing these resources. This management

direction would limit the direct impacts of development and surface disturbances on existing rangelands, which would be beneficial to livestock grazing.

Under the Proposed Plan on National Forest System lands, new fluid mineral leases would require a no surface occupancy stipulation in PHMA and controlled surface use and timing restrictions in GHMA. New leases would be prioritized in nonhabitat areas first and then in the least suitable habitat for GRSG.

For existing leases under the Proposed Plan on National Forest System lands, leaseholders would be required to avoid and minimize surface disturbance and disruption in PHMA for leases that are not yet developed. In addition, reclamation plans would be designed to restore habitat to the desired conditions described in **Table 2-6**. Fluid mineral operations would be mitigated in PHMA to reduce soil compaction to improve vegetation reestablishment and keep GRSG habitat disturbance to a minimum.

Surface disturbances would also be prohibited for unleased coal mines in PHMA as well as other mitigation measures to reduce disturbances for leased coal mines and associated facilities. Locatable mineral, nonenergy leasable, and mineral material operations in PHMA would be mitigated to protect GRSG habitat.

Minerals management direction under the Proposed Plan on National Forest System lands would not impact livestock grazing in priority and general GRSG habitats because development and surface disturbance would be limited and the potential from development related disturbance of rangeland and forage resources would be reduced.

Impacts from Travel and Transportation Management

Under the Proposed Plan, OHV travel would be limited to existing (and designated, where travel management is complete) roads, primitive roads, and trails. The ability of permittees to access range improvements for maintenance or to use motorized vehicles to gather livestock could be impacted, as exceptions for administrative access would generally be granted only at permit renewal if not provided for in existing grazing permits or leases. This could increase the time and costs of these management activities. Seasonal restrictions on motorized use could further impact the ability of permittees to access allotments for management. Limitations on OHV travel could also reduce any conflicts between livestock and recreation, as discussed in **Section 4.6.2**.

Under the Proposed Plan, temporary closures would also be permitted, as determined necessary for resource protection. Closures would further reduce livestock disturbance but could impact the ability of permittees to access allotments and livestock using motorized vehicles. Under the Proposed Plan, on National Forest System lands new road or trail and construction would be prohibited in GRSG habitat, and road construction within riparian and mesic meadows would be restricted. This direction would be beneficial to livestock grazing, indirectly improving forage production and improving overall rangeland conditions. However, impacts from roads and transportation would still occur in areas outside of PHMA and GHMA GRSG habitats, which could indirectly impact grazing conditions through increased development.

Impacts from Livestock Grazing Management

Grazing would be allowed on all lands identified as available, as under Alternative A (see **Table 4-76**, Overview Comparison of Impacts on Range Management by Alternative within GRSG Habitat), although limited areas may be closed through site-specific decisions to meet habitat objectives.

Grazing management actions and impacts are similar to those described in Alternatives B and D. As described in Alternative D, the effect of grazing management practices on attainment of GRSG habitat objectives would be determined through the range health evaluation process. Management designed to meet applicable habitat objectives would be incorporated into BLM grazing permits and leases through allotment management plans and permit renewals and into Forest Service permits through the Forest Service NEPA processes, with consideration for local objectives and site potential.

Similar to Alternatives B and D, a moderate decline in permitted grazing is anticipated over time as permits are modified to meet objectives. In addition, the Proposed Plan would require an analysis of management thresholds based on habitat objectives within SFA and PHMA. This could trigger modifications to annual grazing authorizations or grazing permits or leases within the term of the renewed grazing permit if monitoring data were to indicate that grazing management implementation is not progressing toward meeting habitat objectives. When alternatives with thresholds and triggers are selected for grazing permits, implementing the modifications within 10-year grazing permit would reduce operational certainty for permittees; it could impact their ability to plan and implement an economically feasible ranch or business plan. Because of this, the magnitude of impacts on livestock grazing would be relatively higher for allotments within SFA and PHMA.

Under the Proposed Plan, SFA would be prioritized first for land health assessment and permit renewal , followed by PHMA outside the SFA. Precedence would be given to existing permits and leases in these areas not meeting Land Health Standards, with a focus on those containing riparian areas, including wet meadows. Changes in management would follow this priority order.

Existing grazing management would be maintained, unless the current grazing system does promote applicable GRSG habitat objectives (**Table 2-6**, desired Seasonal Habitat Conditions), or if changes are needed to meet standards and guidelines or other resource objectives. Adjustments to grazing management or authorized grazing use level would be applied on a site-specific basis and tailored to achieve objectives for GRSG, based on habitat type in the areas assessed, for example breeding, nesting, and wintering, as detailed in **Table 2-6**.

Site-specific review of seasonal habitat types would be required as part of the land assessment process. (A quantitative analysis of current GRSG seasonal habitat conditions of allotments is not available and is likely to change over time, based on precipitation patterns, wildfire occurrence, and other factors.) Acres in nesting habitat may be likely to require changes to grazing management, due to the desired conditions for this habitat type, including

perennial grass height of at least 7 inches; acres in brood-rearing habitat may require adjustments to meet PFC and promote diversity and abundance of GRSG preferred forbs.

The level and intensity of impacts would vary on a site-specific basis; changes in management would be commensurate with the scale and magnitude of deficiencies in meeting habitat objectives as caused or contributed to by ongoing livestock management. The scale and extent of modifications to grazing would also vary, based on the relationships of allotments and pastures to seasonal habitat patches and the scale of grazed areas not meeting habitat objectives. Modifications in use of grazing areas outside of the target habitat may also occur in order to develop logical and feasible grazing systems (e.g., if the season of use is modified in one pasture containing nesting habitat, this may necessitate changes in season of use in all pastures in the allotment to coordinate grazing use and livestock movements).

Under the Proposed Plan, as under other alternatives, the BLM's grazing preference may be voluntarily relinquished, and grazing on Forest Service allotments may be waived without preference. Under the Proposed Plan, the BLM or Forest Service may determine whether AUMs associated with relinquished grazing preference or waived allotments should be retired, should remain available for livestock grazing, or should be used for other resource management objectives, in accordance with WO IM 2013-184. This may result in a long-term reduction of overall available AUMs, with the potential for economic impacts on local communities that depend on livestock grazing. Economic impacts are further discussed in **Section 4.22**, Socioeconomic Impacts. If AUMs associated with relinquished grazing preference are maintained as a forage reserve for use by permittees who are displaced by wildfire or restoration, disruption of livestock operations could be decreased over the long term.

Under the Proposed Plan some additional limitations would apply to structural range improvements, as compared to Alternative A, including limitations on fence construction and tall structures near occupied leks, as detailed in project RDFs and BMPs (**Appendix B**). New and existing structural range improvements would be required to have a neutral effect or to conserve, enhance, or restore GRSG. These restrictions could increase the time or costs for construction and maintenance of improvements but should allow sufficient flexibility so permittees could use range improvements to effectively manage livestock.

Under the Proposed Plan on National Forest System lands, livestock grazing would be managed to achieve or maintain desired conditions in GRSG seasonal habitats, as described in **Table 2-6**. Livestock grazing would also be managed in order to maintain residual perennial grass height to provide for adequate GRSG nesting cover, according to the guidelines described in **Table 2-6**.

Current direction for livestock grazing under Alternative A is generally less restrictive than direction described under the Proposed Plan; therefore, grazing use guidelines under the Proposed Plan would directly impact livestock grazing management on National Forest System lands. Impacts could include modifying grazing strategies or rotation schedules, changing the season of use or kind and class of livestock, closing a portion of an allotment,

or reducing livestock numbers. Implementing this management direction could reduce AUMs on some allotments and possibly overall operation viability.

The level and intensity of impacts could vary on a site-specific basis, with permitted grazing likely decreasing moderately over time as permits are modified to achieve desired conditions and meet annual grazing use guidelines.

Implementing Forest Service grazing guidelines could also directly impact permittees by increasing the amount of time permittees spend to manage livestock on National Forest System lands and the total costs to a livestock operation. Impacts would occur at the allotment scale as management direction is incorporated into permits, allotment management plans, and annual operating instructions.

Grazing use guidelines under the Proposed Plan on National Forest System lands would impact about 264 allotments, 1,409,546 acres, and 454,376 AUMs in nesting and brood-rearing seasonal habitats in active grazing allotments.

Under the Proposed Plan, on National Forest System lands, sheep camps would not be located within 1.2 miles of the perimeter of a lek during lekking season, and trailing livestock would be minimized during breeding and nesting seasons. This management direction would result in the need to modify grazing practices with increased costs for permittees in these areas.

Additional constraints under the Proposed Plan on National Forest System lands would also apply to structural range improvements in priority GRSG habitat, compared to Alternative A. These are as follows:

- Prohibiting fence construction or reconstruction within 1.2 miles of the perimeter of occupied leks, unless the collision risk could be mitigated through design features or markings
- Not constructing new permanent livestock facilities (e.g., windmills, water tanks, and corrals) within 1.2 miles of the perimeter of occupied leks
- Not constructing water developments in PHMA unless they are beneficial to GRSG

Prohibitions on new structural improvements could limit the ability of permittees to effectively distribute livestock, resulting in increases in time and costs to permittees and potentially the full use permitted AUMs. Although these constraints could increase the amount of time permittees spend to manage livestock on National Forest System lands, it should allow sufficient flexibility that permittees could continue to use structural range improvements to effectively distribute livestock.

Under the Proposed Plan, the Forest Service would consider closing grazing allotments, pastures, or portions of pastures or managing the allotment as a forage reserve as opportunities arise where removing livestock would enhance desired habitat conditions, as

described in **Table 2-6**. These actions would occur according to applicable regulations and, if implemented, would reduce the overall available AUMs.

Managing livestock grazing to achieve the desired conditions in **Table 2-6** and livestock use guidelines in **Table 2-8** may indirectly benefit rangeland conditions by increasing vegetation productivity and increasing forage in the long term. This in turn would provide managers and permittees with better management options, especially on those allotments where livestock numbers are approaching a sustainability threshold or during drought and other disturbances such as wildfire.

Impacts from Special Designations Management

No new special designation areas are proposed under the Proposed Action, so no impacts would occur on livestock grazing management.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

Livestock grazing and related range improvements are not included as anthropogenic disturbances in calculation of the anthropogenic disturbance cap, therefore, no direct impacts would occur to livestock grazing management as a result of the cap. Limitations of Anthropogenic disturbance would generally result in a reduction in development in GRSG habitat and a related reduction in disturbance of livestock and would maintain livestock forage.

If adaptive management triggers are met and livestock management is identified as a contributing factor, then short-term adjustment of management would be required, as identified in the Adaptive Grazing Management Response, **Appendix G**. Accelerated assessment of suspected habitat deficiencies would be used to identify management actions to ensure that livestock grazing is not contributing to further long-term declines in the affected conservation area. While management changes may be implemented in the short term on allotments where habitat is meeting GRSG habitat objectives, as discussed under livestock grazing management impacts, impacts would be limited in scale to that determined necessary to mitigate impacts in the short-term, while site-specific assessments and management actions are identified and implemented. Conservation areas that have tripped adaptive management triggers would be prioritized for HAF, rangeland health assessments, and grazing permit review.

4.7 Travel Management

This section discusses impacts on travel and transportation management from proposed BLM and Forest Service management actions. Existing conditions concerning travel and transportation management are described in **Section 3.10**.

Travel and transportation management supports and helps achieve the objectives of other resource programs, particularly such resource uses as recreation, mineral development, and lands and realty. At the resource management planning level, impacts on travel and transportation management occur when management restricts travel access, such as by closing an area to OHV travel.

Since travel management decisions impact other resource areas—for example, closing or limiting travel to protect sensitive soil resources—impacts of travel management actions on other resources and uses are discussed in the respective resource sections of this chapter. Accordingly, while impacts on travel and transportation management from other program areas do occur and are considered as part of transportation management planning, this section does not address the impacts on travel and transportation management from other resources and resource uses.

4.7.1 Methods and Assumptions

Indicators

Indicators of impacts on travel and transportation management from BLM and Forest Service management to protect GRSG are changes in the following:

- The acreages designated as open, limited, or closed to OHVs
- The types and timing of transportation activities occurring on routes that could impact GRSG or its habitat

Assumptions

In addition to the assumptions in **Section 4.1.1**, this analysis includes the following assumptions:

- The BLM recognizes roads, primitive roads, and trails as the three types of linear features that comprise the existing transportation system. These features are formally recognized based on an inventory of the planning area. Some routes may be designated for specific uses in a travel management plan. Other linear features used for transportation but not formally designated or recognized are considered linear disturbances. These features are not part of the BLM transportation system (BLM 2006b).
- Some primitive roads and trails in the northern portion of the planning area and higher elevations may not be used during GRSG lekking and wintering seasons because they are not passable, while those in the southern part of planning area and in lower elevation areas may receive higher use.
- The demand for general access to travel routes on BLM-administered and National Forest System lands would remain steady or increase over the life of the LUPs.
- The BLM and Forest Service acknowledge that over-snow vehicles and mechanized access in the snow is expanding but generally occurs in higher elevations, where there is consistent snow pack and less GRSG habitat.
- Administration of updated agency travel management policy, rules, and planning and design guidelines is improving public land travel systems, making them more sustainable, while decreasing potential impacts on resources.

- OHV use will continue to increase, with the potential for resource and user conflict to increase.
- The designation of individual routes is an implementation-level process and typically follows the planning process.
- Travel systems are dynamic and will be changed through subsequent implementation-level planning.
- Implementation of a travel management plan would increase public education, signing, enforcement, and resource monitoring.

4.7.2 Nature and Type of Effects

Impacts on travel and transportation management are those that restrict or enhance travel, such as managing areas as closed or limited to OHV travel or restricting where new routes can be created and existing ones expanded.

Table 4-77 summarizes OHV designations by alternative in GRSG management areas.

Table 4-77
OHV Area Designations by Alternative in GRSG Habitat Management Areas[1]

		Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F	Proposed Plan
BLM	Open	2,880,300	254,800	50	50	1,783,000	254,800	3,360
	Limited to existing routes	5,725,000	8,798,000	8,563,300	8,605,300	6,815,800	8,798,000	8,856,100
	Closed	711,400	716,800	706,200	711,400	707,900	716,800	710,600
Forest Service	Limited to designated routes	2,040,700	1,861,800	1,861,900	2,040,700	1,867,000	1,861,800	1,560,700

Source: BLM GIS 2015
[1] Table shows OHV area designations overlaid with GRSG Habitat Management Areas (e.g., PHMA, IHMA, GHMA, CHZ, IHZ, GHZ) for each alternative. Alternative A acres reflect designations overlaid with PPH and PGH.

Management actions that prohibit OHV travel would minimize the creation of new transportation linear disturbances, enabling the BLM and Forest Service to manage and improve access on linear features in the transportation system.

Restricting new route construction or routes expansion would direct users elsewhere in the transportation network, potentially impacting those areas from the added activity. Additionally, management actions that restrict future route construction, including adaptive management strategies that prohibit future disturbance on reaching a disturbance cap, would arbitrarily limit the ability of the transportation system manager to accommodate increased travel demands over time or to address minimization techniques (i.e., effects on wildlife, in

accordance with Criterion B, 8340.1). Conflicts among route users could increase if the existing network were to become congested.

Implementing management for all other resources and uses would have negligible or no impact on comprehensive travel and transportation management; therefore, they are not discussed in detail.

4.7.3 Impacts on Travel Management Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative.

Under all alternatives the BLM would defer travel management route designations to a separate process following the current LUPA process. As such, for each alternative, the BLM would maintain current management of areas closed to OHV travel and would manage varying acreages as limited to existing routes. The Forest Service has already undertaken a route designation process. As a result, OHV travel is limited to designated routes on National Forest System lands under all alternatives. Areas of disturbance associated with these designated routes vary slightly by alternative. **Table 4-77**, OHV Area Designations by Alternative, summarizes the total areas open, limited, and closed to OHV travel by alternative.

4.7.4 Alternative A

In accordance with 43 CFR 8342.1, current BLM management limits OHV travel to existing roads and trails within portions of the planning area, while allowing OHV travel in other areas. Under Alternative A, the BLM and Forest Service would maintain current levels of travel management, as identified in the existing planning documents. For example, BLM-administered lands currently designated as open to cross-country OHV use (over 2.8 million acres) would continue to be managed as such. OHV travel on National Forest System lands would continue would continue to be limited to designated routes. There would be no new restrictions on GRSG habitat management and no change in impacts on travel management.

4.7.5 Alternative B

Under Alternative B, the BLM would limit OHV travel to existing roads and trails in PHMA. OHV travel on National Forest System lands would continue to be limited to designated routes with a total disturbance area of over 2 million acres. The area designation change on BLM-administered lands from open to limited would reduce cross-country access in those portions of PHMA that were previously managed as open. Applications for upgrading or realigning routes would be required to meet certain design, location, and mitigation criteria intended to protect GRSG habitat. These requirements may preclude the construction of some new routes but would be unlikely to reduce access across the decision area.

Alternative B would also require increased signs and education alerting OHV users of limitations on cross-country travel. It would add processing requirements for transportation-related projects in GRSG habitat. Signs and education would likely improve travel

management by reducing user and resource conflicts; added processing requirements could increase the time needed to approve new projects and result in site-specific increases in congestion if portions of the current route system become overcrowded. Alternative B's restrictions on OHV travel would make active livestock management more difficult because of the difficulty of access to the allotments.

4.7.6 Alternative C

Alternative C would result in the greatest reduction in access, when compared to Alternative A. For example, under Alternative C, OHV travel would be prohibited in all GRSG habitats. Additionally, in PHMA, new road construction within 4 miles (6.4 km) of active leks would be prohibited. Upgrading existing routes where it would damage occupied GRSG habitat would also be precluded. Together, these actions would result in site-specific losses of opportunity for OHV travel, future route construction, and improved access. Similar to Alternative B, Alternative C's restrictions on OHV travel would make active livestock management more difficult because of the difficulty of access to the allotments.

4.7.7 Alternative D

Under Alternative D, OHV travel in PHMA would be limited to existing routes on BLM-administered lands and designated routes on National Forest System lands. Undesignated routes would be designated as part of a future travel management planning process. There would be no areas within GRSG habitat managed as open to cross-country OHV travel under Alternative D, which would reduce cross-country access in areas previously managed as open. In those areas managed as limited to existing routes, impacts on travel and transportation management under Alternative D are the same as Alternative B and are consistent with **Section 4.6.2**. Similar to Alternative B, Alternative D's restrictions on OHV travel would make active livestock management more difficult because of the difficulty of access to the allotments.

4.7.8 Alternative E

Impacts under Alternative E are the same as described for Alternative A.

4.7.9 Alternative F

Impacts under Alternative F are the same as described for Alternative B.

4.7.10 Proposed Plan

Impacts from Travel and Transportation Management

Impacts from limiting OHV travel to existing routes on 99 percent (10,416,800 acres) of the planning area would be consistent with those described in the ***Nature and Types of Effects***.

During subsequent travel management planning, the designation of individual routes would allow BLM to manage the types of travel on individual routes to avoid impacts on GRSG and its habitat. Restricting OHV travel on roads and primitive roads in lower elevations of

the planning area would result in greater effects on travel opportunities because these routes are passable year-round and have higher traffic volumes.

Seasonal restrictions to minimize impacts on GRSG and its habitat would prevent road maintenance and could make certain roads impassable until the required maintenance could be performed.

RDFs for roads and travel management would likely limit the number of routes in GRSG habitat but would enhance the long-term condition of routes available for public or permitted use by requiring design features to ensure that routes accommodate their anticipated uses. Best practices for decommissioning routes would likewise direct traffic to higher-quality routes that remain open for use and will adequately facilitate access over the long term.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

If there is a future decline in GRSG or its habitat and the decline is attributable to travel management, the BLM would evaluate management alternatives that could result in more restrictions on travel and decrease travel opportunities.

Where re-routing new roads is required to avoid GRSG impacts (habitat and/or disturbance), those actions could result in longer roads with overall greater surface disturbance.

If the 3 percent disturbance cap within a BSU is reached, new surface disturbance within the BSU would be prohibited, thus preventing new road development. In these areas, the BLM and Forest Service would be unable to accommodate additional travel demand until the disturbance falls below the disturbance cap.

4.8 Lands and Realty

BLM-administered and National Forest System lands are used for a variety of purposes. Major focus areas for the lands and realty program include land use authorizations, land tenure adjustments, and land withdrawals. The Forest Service completes landownership adjustments (purchase, exchange, donation, and ROW acquisition), while the BLM conducts land tenure adjustments (exchanges, disposals, and acquisitions).

This section discusses impacts on lands and realty from proposed management actions of other resources and resource uses. Existing conditions concerning lands and realty are described in **Section 3.11**.

4.8.1 Methods and Assumptions

Indicators

Indicators of impacts on lands and realty are as follows:

- Acres of BLM-administered and National Forest System surface ownership, which include federal surface with private minerals, in the planning area
- Acres of BLM-administered and National Forest System surface ownership affected by ROW and SUA allocations (i.e., exclusion, avoidance, and open)
- Acres of BLM-administered and National Forest System surface ownership affected by ROW and SUA restrictions (e.g., BMPs, RDFs, seasonal restrictions, and buffers)
- Acres and miles of designated ROW corridors open to ROW and SUA development in the planning area
- Number, acres, type, and density of surface-disturbing ROWs, SUAs, and leases in the planning area
- Acres of potential land tenure adjustments (i.e., lands identified as suitable for disposal, acquisition, or exchange) in the planning area

Assumptions

This analysis includes the following assumptions:

- Authorized ROWs, SUAs, permits, and leases would continue to be managed subject to valid existing rights.
- Mitigation would bury, collocate, or include power lines in design features (e.g., perch deterrents) to reduce impacts on GRSG.
- The demand for both energy and nonenergy ROWs/SUAs is anticipated to remain steady or to gradually increase over time.
- No utility-scale (20 MW) solar energy ROWs/SUAs are anticipated due to low solar energy potential.
- Activities proposed or approved for mineral exploration or development have potential implications for lands and realty decisions for associated ROWs/SUAs.
- Collocation does not eliminate the potential for new temporary or permanent surface disturbance.
- The BLM and Forest Service would continue to manage all previously withdrawn lands as withdrawn from entry, appropriation, or disposal under the public land laws. Withdrawals would be reviewed as needed and recommended for extensions, modifications, revocations, or terminations. All existing withdrawals initiated by other agencies would be continued unless the initiating agency, the BLM, or the Forest Service requests that the withdrawal be extended, modified, revoked, or terminated.
- Any lands that become unencumbered by withdrawals or classifications would be managed according to the decisions made in this LUPA. If the LUPA has not

identified management prescriptions for these lands, they would be managed the same as adjacent or comparable public lands in the decision area.

- Designated utility corridors have a higher probability for development because of their designation in existing land use plans.
- Power lines would be upgraded in existing designated corridors, unless an alternate route would benefit GRSG.

4.8.2 Nature and Type of Effects

The BLM and Forest Service management of resources and uses affects the lands and realty program by increasing or decreasing the BLM and Forest Service lands and realty programs' ability to carry out land use authorization or land tenure/landownership adjustment actions. The effects on the lands and realty program are typically the result of management that excludes or avoids ROWs or SUA in certain areas, requires stipulations on land use activities, or applies criteria for land tenure actions.

Forest Service land use plan prescriptions are similar to BLM exclusion and avoidance areas. Prescriptions can restrict or prohibit certain uses in a planning area. The Forest Service grants SUAs, while the BLM grants ROWs on their respective agency lands. In addition, each agency issues permits, easements, and leases. The Forest Service completes landownership adjustments (purchase, exchange, donation, and ROW acquisition), while the BLM conducts land tenure adjustments (withdrawals, disposals through sale or exchange, and acquisitions through purchase or exchange).

Within a BLM ROW exclusion area, the authorization of new ROWs is not allowed under any conditions; SUA authorizations would be prohibited on National Forest System lands. A ROW avoidance area may be available for ROW location but requires special stipulations such as resource surveys and reports, construction and reclamation engineering, long-term monitoring, special design features, special siting requirements, timing limitations, regional mitigation, and rerouting. Such stipulations could restrict project location or delay the availability of an energy supply by delaying or restricting construction of pipelines, transmission lines, or renewable energy projects. Additionally, such stipulations could limit future access, delay or increase the cost of energy supplies, or delay or restrict communications service availability. As a result of such stipulations, alternative routes may need to be identified and selected to protect GRSG habitat, and there may be increased processing time and costs due to the potential need to relocate facilities or due to greater design, mitigation, and siting requirements.

Management that restricts ROW development in a certain area will eventually increase the concentration of ROW development in adjacent areas where restrictions are not present. Increased ROW density can limit new siting options in non-restricted areas, decrease service reliability to rural areas, increase conflict among facilities, and intensify impacts on other resources and uses.

Collocating infrastructure in existing ROWs, corridors, or disturbed areas reduces land use conflicts, limits disturbance to the smallest footprint, and limits impacts on GRSG and their habitats. Collocation policies also clarify the preferred locations for utilities and potentially simplify processing on BLM-administered and National Forest System lands. However, collocating can limit options for infrastructure development and could reduce network redundancy and potentially affect service reliability in some areas.

Land tenure and landownership adjustments are intended, among other things, to maintain or improve the landownership pattern for the protection and management or resources, including management of GRSG habitat. Land disposal, exchange, purchase, or sale can result in a more contiguous decision area, thus increasing the efficiency of BLM and Forest Service management. However, while consolidation may be beneficial for certain resources and uses, it may not necessarily reduce the effects on GRSG habitat.

Implementing management for the following resources would have negligible or no impact on lands and realty management and are not discussed in detail: travel and transportation management, recreation, range management, locatable minerals, nonenergy leasables, mineral split-estate, fire and fuels management, habitat restoration and vegetation management, and ACECs.

4.8.3 Impacts on Lands and Realty Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative.

Impacts from Recreation and Visitor Services

BLM and Forest Service management goals and objectives are to preserve a desired setting and recreation experience for users within SRMAs and developed recreation sites. Land uses in the SRMAs and developed recreation sites should not conflict with recreation uses. Under all alternatives, the BLM and Forest Service would continue to evaluate land use authorizations on a case-by-case basis in the special recreation areas and near recreation sites so as to avoid conflicting uses.

Impacts from Special Designations Management

Under all alternatives, the BLM and Forest Service would continue to manage existing special designation areas according to the existing LUP designations. Limiting ROW development in special designation areas impacts the ability of the BLM and Forest Service to accommodate ROW authorization demands within the planning area. This is particularly the case in locations where special designation areas separate energy sources (e.g., wind or geothermal) from likely demand centers. Routing transmission lines around exclusion areas could result in longer ROWs with greater surface disturbance and extended processing times.

4.8.4 Alternative A

Sage-Grouse Management

GRSG management actions have been incorporated in the Dillon Field Office and for the Beaverhead/Deerlodge and Caribou National Forests. Within these areas, impacts on the lands and realty program are as follows:

- Additional siting criteria for ROWs proposed next to leks or within breeding or nesting habitat
- Required design features for certain types of infrastructure
- Extended processing times to review ROW applications for compliance with GRSG habitat management objectives

In the portions of the planning where land use plans do not contain GRSG management actions, there would be no impacts on lands and realty under Alternative A.

Impacts from Travel and Transportation Management

Under Alternative A, existing transportation routes would continue to provide motorized access to ROW infrastructure and communication sites for construction and maintenance. Refer to **Section 4.6** for further analysis.

Impacts from Lands and Realty

Land Use Authorizations

Under Alternative A, 1,956,200 acres on both BLM-administered and National Forest System would continue to be managed as ROW avoidance areas, and 1,028,500 acres would continue to be managed as ROW exclusion. Within exclusion areas, new ROW development would be prohibited, which would prevent the lands and realty program from approving new applications within these areas. All other lands within the decision area would continue to be open for ROW development. Alternative A would not prevent the BLM or Forest Service from accommodating future demand for ROW development within the planning area.

BLM-administered and National Forest System lands would continue to be available for multiple-use and single-use communication sites and road access ROW authorizations on a case-by-case basis, in accordance with Title V of FLPMA, 43 CFR Part 2800 regulations, and Section 704(c) of the Telecommunications Act of 1996 (47 USC 332). All ROW applications would be reviewed using the criteria of collocating new ROWs within or next to existing ROWs wherever practical to avoid the proliferation of separate ROWs.

Wind and Solar ROWs

Wind and solar energy projects would be permitted through the ROW permitting process. For wind and solar energy development under Alternative A, the BLM would manage 1,715,800 acres as ROW exclusion and 320,200 acres as ROW avoidance. The Forest Service

would continue to manage 227,700 acres as closed to new wind and solar use authorizations, while new wind and solar development would be avoided on 1,018,900 acres on National Forest System lands.

ROW exclusion and avoidance designations decrease the amount of BLM-administered and National Forest System land available for new development. Under Alternative A, the BLM and Forest Service management would provide sufficient opportunities to accommodate future wind and solar energy development within the planning area. Therefore, there would be little to no impacts on wind or solar energy development under Alternative A. (Refer to **Section 4.8.2** for impact analysis regarding geothermal resources)

Withdrawals
There would continue to be 4,032,400 acres of land withdrawals in the planning area, including 2,224,100 acres in GRSG habitats.

Impacts from Special Designations Management
Under Alternative A, nine ACECs would continue to be managed primarily as ROW exclusion. This would affect ROW permit application processing times, available development locations, and design standards for proposed ROWs on approximately 426,700 acres within the planning area. Refer to **Section 4.12**, Special Designations, for further analysis.

4.8.5 Alternative B

Sage-Grouse Management
Management actions under Alternative B to protect GRSG habitat would impact lands and realty by closing areas to ROW authorizations, additional criteria for land exchanges, and limitations on new mineral development and road construction. Primary impacts under Alternative B are from the designation of an additional 7.3 million acres as ROW exclusion and an additional 582,800 acres as ROW avoidance, compared to Alternative A.

In exclusion areas, the BLM and Forest Service would be prohibited from approving new ROW development. In avoidance areas, development would be allowed only if certain siting and design requirements could be met. ROW restrictions under Alternative B would substantially reduce the ability of the BLM and Forest Service to accommodate demand for interstate and intrastate gas pipelines and electric transmission lines, wind and solar energy development, fiber optic lines, and communication sites.

Impacts from Travel and Transportation Management
Impacts from travel and transportation management under Alternative B are the same as under Alternative A. Proposed action under Alternative B to prioritize travel management planning in PHMA, which would design and designate a travel system that minimizes adverse effects on GRSG habitat, is an activity-level process and would be accompanied by separate environmental review and documentation. Refer to **Section 4.6** for further analysis.

Impacts from Lands and Realty

Land Use Authorizations
Under Alternative B, 8.3 million acres would be designated as ROW exclusion. Neither the BLM nor the Forest Service would authorize new ROWs in these areas unless the infrastructure could be located entirely within an existing ROW footprint. Additionally, 2.5 million acres would be designated ROW avoidance. As noted above in **Section 4.7.2**, managing GRSG habitat as ROW exclusion or avoidance would prevent the BLM and Forest Service from accommodating new ROW development in those areas.

With a continuing demand for new ROWs in the planning area, including major interstate and intrastate electrical transmission lines, gas pipelines, and communication ROWs, developments would be diverted to adjacent private or state lands or would be prevented altogether. Development on adjacent lands could result in direct and indirect impacts on GRSG populations and habitat (e.g., vehicle traffic on roads crossing BLM-administered and National Forest System lands). This would be the case especially if the development is close to GRSG habitat on BLM-administered or National Forest System lands.

If new ROW development, particularly interstate electrical transmission, fiber optic, and gas pipelines, could not be feasibly developed due to ROW exclusions on BLM-administered and National Forest System lands in the planning area, then energy and communication development opportunities needed to meet a growing demand would be reduced until alternative routes or technology could be developed.

Within avoidance areas, the BLM and Forest Service would continue to process ROW applications but would require additional requirements before authorizing the ROW. Supplemental design criteria and siting limitations would decrease the level of future ROW development in avoidance areas.

Additionally, under Alternative B, the BLM and Forest Service would take advantage of opportunities to remove, bury, or modify existing power lines. Limitations on new ROWs and aboveground lines, such as transmission lines and pipelines, could restrict the availability of energy or service availability and reliability for communication systems.

Wind and Solar ROWs
Under Alternative B, utility-scale wind and solar energy would be excluded on 8.5 million acres and would be avoided on 2.3 million acres. ROW exclusion and avoidance decreases the BLM's and Forest Service's ability to accommodate new wind and solar energy development in GRSG habitats. However, impacts would occur only in areas statewide that are considered developable, such as locations where wind speeds are greater than 23 feet [7 meters] per second). Therefore, excluding or avoiding wind and solar energy development in GRSG habitat would reduce but not eliminate renewable energy development potential within the sub-region.

Land Tenure and Landownership
The BLM and Forest Service would retain administration of public land in PHMA. Exceptions would be where land tenure adjustments would result in more contiguous federal ownership patterns or where disposal accompanied by a habitat mitigation agreement or conservation easement would result in more effective management of GRSG habitat. Impacts would be consistent with those described in **Section 4.7.2**.

Withdrawals
Under Alternative B, land withdrawals in PHMA and GHMA would total 2,223,100 acres. Additionally, the BLM or Forest Service would recommend all PHMA for mineral withdrawal. However, withdrawal would be subject to Congress's approval. The BLM or Forest Service would not recommend approval of withdrawals for reasons other than mineral activity. In withdrawn areas, BLM-administered or National Forest System lands would not be available for mineral extraction for a defined period. Impacts on mineral development are described in **Sections 4.8** through **4.11**.

Impacts from Special Area Designations
Under Alternative B there would be no impacts from ACECs or Zoological Areas on lands and realty.

4.8.6 Alternative C

Sage-Grouse Management
Management actions under Alternative C to protect GRSG habitat would impact lands and realty through by designating over 10 million additional acres as ROW exclusion, compared to Alternative A. A ten-fold increase in ROW exclusion area would result in the most ROW restrictions of any alternative. It would prevent the BLM and Forest Service from accommodating demand for new transmission lines, gas pipelines, communication sites, wind energy facilities, and other types of ROWs. Additional management prescriptions for land tenure and road construction would further constrain BLM-administered and National Forest System lands and realty program functions in GRSG habitat.

Impacts from Travel and Transportation Management
Impacts from travel and transportation management under Alternative C would prohibit new road construction within four miles (6.4 km) of active leks. The proposed management under Alternative C would limit new road construction on BLM-administered and National Forest System lands throughout occupied habitat. Limitations on road construction would reduce the number of new road ROW applications submitted to the BLM. The limitations would make certain areas impractical for new ROW authorizations, particularly in areas where there are few or no ROWs or roadways. Refer to **Section 4.6** for further analysis.

Impacts from Lands and Realty

Land Use Authorizations
Under Alternative C, all occupied habitat (11.1 million acres) would be designated as ROW exclusion. The BLM and Forest Service would not authorize new ROWs in exclusion areas

unless the infrastructure could be located in an existing ROW. Impacts under Alternative C are similar to Alternative B except that under Alternative C exclusion areas would apply to a larger land area. Therefore, Alternative C would further reduce opportunities for communication facilities, gas pipelines, fiber optic cables, electrical transmission lines, and similar ROW development. There is a continuing demand for these ROWs in the planning area to meet energy and communication needs outside the planning area; Alternative C would reduce the ability of the BLM and Forest Service lands and realty programs from meeting those needs.

Wind and Solar ROWs
Management of 11.1 million acres as exclusion for utility-scale wind and solar energy development would eliminate the BLM and Forest Service's ability to accommodate any new wind or solar energy demand on that portion of GRSG habitat. ROW exclusions would also inhibit development on adjacent private and state land where transmission infrastructure would be needed across BLM-administered or National Forest System lands.

Land Tenure and Landownership
Under Alternative C, the BLM and Forest Service would retain public ownership in PHMA, with no exceptions. Impacts would be consistent with those described in **Section 4.7.2**.

Withdrawals
Under Alternative C, the total acres of land withdrawals are the same as under Alternative A. However, GRSG-occupied habitat, would be withdrawn from mineral entry. Impacts under Alternative C from withdrawals are the same as under Alternative B, except that mineral withdrawal would apply to all GRSG habitat. Refer to **Sections 4.8** through **4.11** for further analysis related to mineral development.

Impacts from Special Designations Management
Under Alternative C, the BLM would designate 39 new ACECs, equivalent to approximately 3.1 million acres. No Forest Service Zoological Areas would be designated. Management for the ACECs would be tailored to protect the relevant and important values (i.e., GRSG habitat) for which the ACECs would be designated. All lands within the ACECs would be managed as ROW exclusion, which would prohibit new ROW development in those areas. Under Alternative C, infrastructure development and other ROWs would be directed to adjacent BLM-administered or National Forest System lands or to private lands. Alternative F would result in an overall reduction in new land use authorizations. New land use authorizations would be further reduced if ROW applicants could not find suitable alternative development locations outside ACECs. Refer to **Section 4.12**, Special Designations, for further analysis.

4.8.7 Alternative D

Sage-Grouse Management
Management proposed under Alternative D would enable the BLM and Forest Service to accommodate certain types of ROW development, because there would be no exclusion

areas. However, it would exclude ROWs for large infrastructure development, such as electrical transmission lines greater than 50kV, and renewable energy testing and generation, on over 6.2 million acres. In addition, there would also be 2 million more acres of ROW avoidance areas, compared to Alternative A. Under Alternative D, the BLM-administered and National Forest System lands and realty programs would be prevented from accommodating any new demand for electrical transmission or renewable energy development in exclusion areas. A large increase in avoidance areas, even if Alternative D would require no absolute exclusion areas, would affect the ability of the BLM and Forest Service to grant new ROWs in GRSG habitat.

Impacts from Travel and Transportation Management

Impacts from travel and transportation management under Alternative D are the same as under Alternative B. Refer to **Section 4.6** for further analysis.

Impacts from Lands and Realty

Land Use Authorizations

Alternative D would designate over 1 million acres as ROW exclusion for all ROW types, similar to Alternative A. However, it would also exclude large transmission lines, renewable energy ROWs, and new roadways on 6.2 million acres. An additional 3.9 million acres would be managed as ROW avoidance for all ROW types.

Alternative D would impact the BLM-administered and National Forest System lands and realty programs by reducing their ability to authorize ROWs, such as electrical transmission lines greater than 50kV, within PHMA. Within avoidance areas, additional stipulations for the development of electrical transmission lines could result in the denial of projects that cannot meet ROW grant requirements to protect GRSG habitat. Limitations on electrical transmission line development, renewable energy development, and new roadways under Alternative D would be similar to Alternative C and are consistent with **Section 4.7.2**. Impacts on other types of ROWs and land use permits, such as electrical distribution lines, communication sites, fiber optic lines, pipelines, and water infrastructure, would result when an applicant could not find a suitable location outside avoidance or exclusion areas or could not meet the design and placement criteria for an ROW or other land use permit within an avoidance area. For communication facilities in particular, stipulations in avoidance areas could diminish the effectiveness of the communication infrastructure to the point where the development would not be practical, resulting in an impact on that type of infrastructure development and the communication network.

Wind and Solar ROWs

Alternative D would exclude wind and solar energy testing and generation facilities on 6.7 million acres in GRSG habitat. These types of ROWs would be avoided on an additional 4.3 million acres in GRSG habitat. Impacts on wind energy ROWs would be consistent with **Section 4.7.2**. While excluding or avoiding wind and solar energy development in GRSG habitat would reduce development potential, impacts are concentrated primarily in areas south of Twin Falls and near Pocatello, where average wind speeds are greater than 23 feet (7 meters) per second (NREL 2009). This is the typical threshold for utility-scale wind

energy to occur (NREL 2012). Therefore, Alternative D would reduce but not eliminate wind energy development potential within the sub-region. Impacts on solar energy development would be negligible due to a lack of solar potential in the planning area.

Land Tenure and Landownership
Under Alternative D, the BLM and Forest Service would retain public ownership in all GRSG habitats, except where there is mixed ownership and land tenure adjustment would promote a more contiguous land pattern in GRSG habitat. Management actions to retain public ownership would increase land management efficiency, as described in **Section 4.7.2**.

Withdrawals
There are no impacts from withdrawals under Alternative D.

Impacts from Special Designations Management
Under Alternative D, there are no impacts from ACECs or Zoological Areas on lands and realty.

4.8.8 Alternative E

Sage-Grouse Management
Management actions under Alternative E to protect GRSG habitat would impact lands and realty through a 5.3 million-acre increase in ROW avoidance areas, compared to Alternative A. ROW avoidance criteria would impact the lands and realty program by limiting the areas where new ROW authorizations could be approved without supplemental siting and design criteria to protect GRSG habitat. Avoidance criteria would reduce the number of ROW applications, increase processing times for applications submitted for projects in avoidance areas, and direct new development to adjacent lands, where fewer restrictions would be present.

Impacts from Travel and Transportation Management
Impacts from travel and transportation management under Alternative E are the same as Alternative A. Refer to **Section 4.6** for further analysis.

Impacts from Lands and Realty

Land Use Authorizations
Under Alternative E, 7.3 million acres in CHZ and IHZ would be designated as ROW avoidance, while 979,100 acres would continue to be managed as ROW exclusion. New infrastructure would be prohibited in PHMA, unless the infrastructure could be collocated in an existing ROW footprint and the infrastructure is critical for meeting increasing demands. Limitations on new infrastructure outside existing ROWs and ROW stipulations for avoidance areas would prevent the BLM and Forest Service from accommodating additional demand for ROW development within CHZ and in IHZ. This could result in ROW applications being denied. With the expected demand for new ROWs in the planning area, particularly interstate and intrastate electrical transmission and gas pipeline ROW

developments, new ROW development could be diverted to adjacent private or state lands. If new ROW development could not be feasibly developed there would be a reduction in energy and communication development opportunities to meet growing demand.

Wind and Solar ROWs
Alternative E would continue to exclude wind and solar energy testing and generation facilities on 1.8 million acres, while avoiding these types of ROWs on 2.6 million acres. Alternative E would further restrict wind and solar ROWs through the use of triggers, stipulations, and BMPs. Avoiding or excluding wind and solar energy development would reduce or eliminate development potential, especially in areas considered to have developable (i.e., average wind speeds greater than 23 feet [7 meters] per second) wind resources. Impacts on solar energy development are negligible due to a lack of solar potential in the planning area.

Land Tenure and Landownership
There are no impacts on lands and realty from land tenure requirements under Alternative E.

Withdrawals
There are no impacts from withdrawals under Alternative E.

Impacts from Special Designations Management
Under Alternative E, there are no impacts from ACECs or Zoological Areas on lands and realty.

4.8.9 Alternative F

Sage-Grouse Management
Management actions under Alternative F to protect GRSG habitat would impact lands and realty by designating over 7 million additional acres as ROW exclusion, compared to Alternative A. Similar to Alternative B and consistent with **Section 4.7.2**, ROW exclusion areas under Alternative F would restrict the BLM and Forest Service from accommodating demand for new transmission lines, gas pipelines, communication sites, wind energy facilities, and other types of ROWs.

Impacts from Travel and Transportation Management
Impacts from travel and transportation management under Alternative F are the same as under Alternative A. Refer to **Section 4.6** for further analysis.

Impacts from Lands and Realty
Alternative F would designate 8.4 million acres as ROW exclusion and 2.5 million acres as avoidance. By not authorizing new ROWs in exclusion areas, the ability of the BLM and Forest Service to accommodate the demand for land use authorizations would be diminished. Impacts are consistent with **Section 4.7.2** and would result in an overall decline in energy or service availability and reliability, when compared to Alternative A.

Wind and Solar ROWs
Alternative F would exclude wind and solar energy testing and generation facilities on 2.3 million acres in GRSG habitat. These types of ROWs would be avoided on 486,100 acres. Impacts on wind energy ROWs under Alternative F are similar to Alternative B and are consistent with **Section 4.7.2**. While excluding or avoiding wind and solar energy development in GRSG habitat would reduce development potential, impacts would be concentrated in areas with average wind speeds greater than 23 feet (7 meters) per second since this is the typical threshold needed for utility-scale wind energy to occur (NREL 2012). Therefore, Alternative F would reduce but not eliminate wind energy development potential within the sub-region. Impacts on solar energy development are negligible due to a lack of solar potential in the planning area.

Land Tenure and Landownership
There are no impact on lands and realty from land tenure requirements under Alternative F.

Withdrawals
There are no impacts from withdrawals under Alternative F.

Impacts from Special Designations Management
Under Alternative F, the BLM would designate 17 or 18 new ACECs and Forest Service would designate 12 new Zoological Areas, encompassing up to 1 million acres. Management for the ACECs and Zoological Areas would be tailored to protect the relevant and important values (i.e., GRSG habitat) for which the ACECs and Zoological Areas would be designated. All lands within the ACECs and Zoological Areas would be managed as ROW exclusion, which would prohibit new ROW development in those areas. Under Alternative F, infrastructure development and other ROWs would be directed to adjacent BLM-administered or National Forest System lands or to private lands. Alternative F would result in an overall reduction in new land use authorizations. These would be further reduced if ROW applicants could not find suitable alternative development locations outside ACECs or Zoological Areas. Refer to **Section 4.12**, Special Designations, for further analysis.

4.8.10 Proposed Plan

The Proposed Plan would enable the BLM and Forest Service to accommodate a portion of the anticipated future demand for ROW development, while conserving and enhancing GRSG habitat. The most notable impacts on the lands and realty program under the Proposed Plan would occur in PHMA. In addition to managing PHMA as avoidance areas for future land use authorizations, including ROWs, leases, and permits, the Proposed Plan would require land use authorizations for the following outcomes:

- Achieve a net conservation gain to GRSG
- Incorporate RDFs
- Avoid tall structures within key GRSG habitat areas
- Meet noise requirements

- Abide by lek buffer requirements
- Avoid disturbing more than 3 percent of any BSU in PHMA (and IHMA in Idaho)

Collectively, these GRSG conservation management actions would increase mitigation requirements for land use authorizations, which could result in more complex project designs, potentially exclude infrastructure placement in the most cost-effective locations, and potentially result in overall greater development costs. A corresponding effect could be a reduction in the number of authorization applications received for activities in PHMA (and IHMA in Idaho) and longer, more complicated review periods for those that are proposed in PHMA. Implementing the GRSG habitat conservation management actions listed above would also place NSO stipulations on fluid mineral development in PHMA and IHMA, which would further reduce the demand for new ROW development in those areas.

Less restrictive management for new land use authorizations in GHMA and in GRSG habitat outside BLM-administered and National Forest System lands would allow for more ROW/SUA development, leases, and permits in those areas, compared to PHMA. However, because the Proposed Plan would still require discretionary surface-disturbing land use actions to achieve a net conservation gain, incorporate RDFs, and abide by lek buffers, project proponents in GHMA could seek less restrictive locations outside GRSG habitat or, if located in GHMA, could incur added costs and longer project review periods.

Impacts from Lands and Realty Management

Land Use Authorizations

Unless a new ROW/SUA is proposed within an existing designated corridor (**Figure 2-7**), which the BLM and Forest Service would manage as open but still subject to the disturbance cap, new major and minor ROW/SUA development would be avoided in PHMA and IHMA (8,365,000 acres). Within PHMA and IHMA, there are a total of 59,900 acres of designated corridors. New development proposed within and outside corridors would be subject to RDFs, and disturbance mitigation requirements.

Management of PHMA and IHMA as avoidance, combined with RDFs, have the potential to increase project costs and could result in a greater proportion of new development occurring outside PHMA and IHMA. Concentrating new development in corridors, GHMA, and nonhabitat areas could lead to higher density of ROW/SUA development in those areas, with impacts consistent with the **Nature and Types of Effects**.

The Boardman to Hemingway and Gateway West projects are exempt from the Proposed Plan decision to designate PHMA/GHMA as an avoidance area (Proposed Plan decisions LR-1, LR-5 and LR-13). The projects are also exempt from the proposed GRSG screening criteria, RDFs, buffers, tall structure requirements, and disturbance cap requirements identified in Chapter 2.

The Obama Administration identified these transmission projects as priority projects, as part of the President's commitment to job creation and modernizing America's Infrastructure.

These transmission projects were two of seven projects identified for expedited permit review and federal agency coordination among an interagency Rapid Response Team for Transmission (RRTT) established to foster coordination, expedite simultaneous permitting processes and resolve permitting challenges, while ensuring appropriate environmental reviews.

The BLM is currently processing the application for the Boardman to Hemingway and Gateway West projects, both high-voltage transmission lines, which include alternatives through this avoidance area/GRSG habitat. The BLM is analyzing conservation measures for GRSG as part of the review process for Boardman to Hemingway and Gateway West.

Boardman to Hemingway and Gateway West are analyzed in detail in the cumulative impacts section of this plan (**Chapter 5**).

Although existing designated corridors would be considered first for new ROW development in GRSG habitat areas, because corridors are typically located adjacent to existing infrastructure, power companies are reluctant to locate new infrastructure in those areas given redundancy concerns. New ROW development would be likely in corridors where those corridors provide a cost effective, direct route to demand centers that also avoid conflicts with populated areas. If an area outside PHMA and IHMA provide this option, then a developer would likely pursue that route instead of placing within a corridor.

In GHMA, 1,764,500 acres on BLM-administered lands would be open for proposals for new major and minor ROW/SUA development, while only major ROWs in Montana (828,100 acres) would be avoided. RDFs for new ROW/SUAs in GHMA could further deter development in those areas resulting in a greater likelihood for development in nonhabitat areas. Any decline in new ROW and SUA development applications in GHMA would be less than in PHMA and IHMA.

The overall proposed increase in ROW restrictions under the Proposed Plan could affect the BLM and Forest Service's ability to accommodate the demand for new linear energy-related ROW development. Compared to Alternative A, energy suppliers under the Proposed Plan could have fewer options to place new transmission lines without costly route adjustments or design modifications.

Wind and Solar

BLM and Forest Service management of PHMA as ROW/SUA exclusion areas for wind and solar would prevent the development of new utility-scale wind and solar energy generation facilities on 6,352,300 acres of GRSG habitat. Due to low solar energy potential in the planning area, there would be negligible to no impacts on solar energy development. Because wind resources in the planning area are sufficient to support utility-scale wind energy development, excluding wind energy ROW/SUAs in PHMA would restrict the BLM and Forest Service ability to accommodate future demand. Projects currently proposed would not be authorized. Excluding wind energy development in PHMA and avoiding it in IHMA would distribute new development to GHMA and nonhabitat areas where fewer restrictions would apply. Demand for new transmission lines, access roads, and related

ancillary features to serve new wind generation projects on nonhabitat or private lands could result in new ROW/SUA applications in GRSG habitat. Where transmission lines, access roads, and related ancillary features would cross PHMA and IHMA, management of those areas as ROW/SUA avoidance areas could deter or prevent wind energy development on nonhabitat or private lands.

Although GHMA would be open for proposals for new wind development on BLM-administered lands, RDFs and requirements to achieve a net conservation gain to GRSG (e.g. buffers, disturbance mitigation, and tall structure restrictions) could affect wind development by limiting the number of turbines per project and the ability to access generation sites. Where wind development on private land or nonhabitat requires new access roads, RDFs for roadways, including requirements to use existing roads, could limit access and subsequent energy development opportunities on private land or nonhabitat areas.

Other Land Use Authorizations

Excluding landfills and commercial service airports in PHMA and avoiding them in IHMA would shift any new development and associated disturbance to GHMA or nonhabitat areas. However, because there is little to no demand for these uses within GRSG habitat, managing PHMA as exclusion for these uses is not anticipated to affect the BLM lands and realty program or hinder future refuse disposal or air services opportunities in the planning area. Landfill areas, even if transferred to non-federal ownership, would be considered a disturbance.

In all GRSG habitat areas, restrictions on temporary (less than 3 years on BLM-administered lands and limited to 1 year on National Forest System lands) authorizations (e.g., apiaries and filming) would be subject to seasonal or timing restrictions and mitigation requirements regarding habitat loss. Seasonal or timing restrictions on temporary uses could prevent those uses during certain times of year (e.g., lekking season) and could prevent the BLM and the Forest Service from accommodating demand for those uses.

Impacts from management of water development ROW/SUAs would be minimal. Seasonal timing restrictions may temporarily limit the use of some water developments with minimal to no long-term impacts.

Land Tenure

Land tenure actions would be allowed in PHMA and IHMA if they can demonstrate a net conservation gain to GRSG. Allowing certain land tenure actions could create a more contiguous decision area and increase short- and long-term land management efficiency, as described in the **Nature and Types of Effects**. Land exchanges or disposal to remove low-quality habitat from BLM-administered land and National Forest System land would also increase efficiency where those lands are isolated and difficult to manage.

Recommending SFA for mineral withdrawal would decrease the overall long-term demand for ROWs/SUAs to support mineral development. The recommended withdrawal would be for locatable minerals only and would not result in a land withdrawal. The BLM and Forest

Service would retain their respective administration and primary management responsibilities.

Impacts from Salable Minerals Management

Closing PHMA to new salable mineral authorizations would decrease the need for new ROWs/SUAs to serve those uses. It also would require source material for maintenance of existing gravel road ROWS to be obtained from existing sites in PHMA and IHMA, or existing or expanded sites in GHMA or nonhabitat. If the amount of source material is insufficient to properly maintain the road, access via those roadways to valid existing ROW/SUAs (e.g., transmission lines) and leases (e.g., communication sites) could be impacted. Requiring existing sites to be subject to RDFs and GRSG conservation measures (e.g., buffers, disturbance mitigation, and seasonal timing restrictions) could impact the ability of the sites to remain open and the availability of source material.

Impacts from Leased Fluid Minerals Management

Restrictions on surface occupancy for new fluid mineral development in PHMA and IHMA could decrease the potential for new fluid mineral development in those areas and subsequently the demand for associated ROWs/SUAs to serve those uses. Surface-disturbing activities could be shifted, additional protective measures could be required, and extraction delays could occur.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Mitigation

Limits on anthropogenic disturbance in biologically significant unit (BSU) within PHMA and IHMA where a disturbance threshold objective has been met or exceeded or an adaptive management trigger has been tripped would decrease the potential for new ROW/SUAs in those areas. Requiring and ensuring mitigation that provides a net conservation gain could prevent new development where infrastructure could not be co-located or relocated outside PHMA or IHMA. If infrastructure authorized by land use authorizations is determined as a causal factor in the decline of GRSG populations in a BSU, incorporation of adaptive management could result in additional restrictions on ROW/SUA authorizations in that BSU, including exclusion of future ROWs/SUAs until a positive GRSG trend is observed over a 3-year period.

4.9 Leasable Minerals (Leased and Unleased), Including Fluid Minerals and Nonenergy Solid Leasable Minerals

4.9.1 Fluid Minerals

This section discusses impacts on fluid minerals from proposed management actions for other resources and resource uses. Existing conditions concerning fluid minerals are described in **Section 3.12**.

Methods and Assumptions

The analysis of impacts on fluid minerals from this LUPA focuses on the impacts of proposed management actions to protect GRSG. These impacts may be direct or indirect.

For example, a direct impact on oil and gas development would result from closing an area to fluid mineral leasing, particularly an area that has moderate to high potential for the discovery of an oil or gas resource. An indirect impact would result from managing an area as a ROW exclusion, which could prohibit construction of necessary off-lease facilities and access, thereby changing the economic feasibility of developing the leased resource. Additional actions or conditions that could cause direct or indirect impacts on oil and gas leasing and development are described under below.

Indicators
Indicators of impacts on fluid minerals are as follows:

- Acres of unleased land with medium oil and gas potential identified as closed to fluid mineral exploration and development
- Acres of unleased land with medium oil and gas potential subject to NSO stipulations
- Acres of unleased land with medium oil and gas potential subject to controlled surface use (CSU) or timing limitation (TL) stipulations
- Number of leases and acres over which COAs would be applied to oil and gas development on leased parcels for the protection of GRSG
- Acres subject to restrictions on geophysical exploration in GRSG habitat
- Acres managed as ROW avoidance areas
- Acres managed as ROW exclusion areas

Assumptions
The analysis includes the following assumptions:

- Under all alternatives, reclamation bonds would be required, in accordance with 43 CFR, Part 3104, and 36 CFR, Part 228.109(a), in an amount sufficient to ensure full restoration of lands to the condition in which they were found. In addition, BLM approval of applications for permit to drill would continue to be required before drilling under all alternatives, in accordance with 43 CFR, Part 3162.
- The lands in the Curlew Grassland area, as described in the Pocatello RMP, that are administratively unavailable for leasing are included in the total number of acres closed to leasing under Alternative A.
- Management actions proposed in this LUPA would apply to oil and gas activity where the BLM and Forest Service manage the surface over federal fluid mineral estate and where federal fluid mineral estate lies beneath private or state surface (split-estate).
- For planning purposes, development would occur as described in **Appendix O**, Reasonably Foreseeable Development Scenario, and **Section 3.12**, Mineral

Resources. Interest in oil and gas in Idaho is expected to remain sporadic. As the demand for energy increases, so would demand for extracting energy resources in areas with potential.

Nature and Type of Effects

In order to describe the effects of imposing GRSG management actions on oil and gas leasing and development, the above indicators were calculated within GRSG habitat for each alternative. All of these factors are considered to be impediments to oil and gas leasing and development, to varying degrees. In general, an alternative with greater acreages of such restrictions is considered to have a greater impact on oil and gas leasing and development potential than an alternative with fewer acres of such restrictions, especially in areas with medium oil and gas potential.

Closing public lands to fluid mineral leasing, especially those with moderate to high oil and gas potential, within GRSG habitat would directly impact the oil and gas program by removing the opportunity afforded US citizens by the Mineral Leasing Act to explore and develop mineral resources in those areas. Oil and gas operators would be limited to exploring and developing non-federal lands, but only if favorable geologic conditions exist. The opportunity for discovery may be lost altogether if such conditions are unique to the federal lands. Closing lands to leasing in areas of moderate to high potential may also result in a loss of royalties to the federal, state, and county governments from oil and gas development.

Management actions that prohibit or restrict surface occupancy or disturbance (such as TL stipulations, NSO stipulations, CSU stipulations, and limitations on the total amount of surface disturbance in areas) overlying federal oil and gas resources could also directly impact the development of those resources.

In areas where NSO stipulations are applied, federal fluid minerals could be leased, but the leaseholder/operator's access to the mineral resource is limited to those areas that are not covered by the NSO stipulation. Proposed drill sites may need to be relocated to an area with lower potential for discovery of a valuable mineral resource, resulting in development delays, increased expenses, lower resource recovery and lower royalties collected. While off-site methods, such as directional drilling, may be employed to access the mineral resource, the area where directional drilling can be effectively used is limited. Where an NSO stipulation covers a large area or where no leasing is allowed on surrounding lands, the mineral resource may be inaccessible. Additionally, because it is not economically practical to use directional drilling for wildcat wells, an NSO stipulation may preclude drilling of those wells because the operator does not want to put forth the financial resources to do so. Applying an NSO stipulation can be nearly as restrictive to oil and gas leasing and development as closing an area to leasing, however, the operator is aware of the stipulations when the lease was purchased.

Application of CSU stipulations allows some use and occupancy of the surface, while limiting development under certain conditions. While less restrictive than an NSO, a CSU stipulation allows the BLM to require special operational constraints, to shift the surface-

disturbing activity associated with fluid mineral leasing more than the standard 656 feet, or to require additional protective measures (e.g., restrictions on noise levels) to protect GRSG. For example, a CSU stipulation might create a buffer around leks, wherein surface disturbance is not allowed. While not prohibiting surface-disturbing activities, a CSU stipulation can influence the location and level of operations within the subject area.

TL stipulations may be necessary to protect GRSG from impacts of development during critical seasons or times of day. These stipulations are necessary if impacts cannot be mitigated by prohibiting proposed activities for up to 60 days in any lease year, as deemed reasonable and within lease rights granted (see 43 CFR, Part 3101.1-2). Leases with TL stipulations would be temporarily off limits to fluid mineral exploration and development, surface-disturbing activities, and intensive human activity during identified time frames, based on seasons or GRSG breeding times. While some routine activities would be allowed at all times (e.g., vehicle travel and maintenance), construction, well drilling and completions, and other operations considered to be intensive would not be allowed during the restricted time frame. However, most activities could be initiated and completed outside of the restricted dates specified in the TL stipulation.

Applying appropriate RDFs (see **Appendix B**) and management actions outlined in **Chapter 2** to post-lease activities as COAs could directly impact oil and gas operations. These RDFs and management actions include such standards as noise restrictions, height limitations on structures, design requirements, water development standards, remote monitoring requirements, and reclamation standards. Additional site-specific planning, such as master development plans and unitization, and reclamation bonding requirements may also be required. Applying these requirements may impact oil and gas operations by increasing costs and causing delays to develop the resource.

Placing limits on geophysical exploration could reduce the ability to collect geologic data concerning oil and gas resources on federal mineral estate. TLs on geophysical exploration could lead to equipment scheduling delays.

Management actions creating off-lease ROW exclusion or avoidance areas could indirectly increase the cost of oil and gas extraction by limiting the available means for transporting oil and gas from the lease to processing facilities and markets. For example, a new natural gas pipeline could not be built in a ROW exclusion area. The pipeline may need to take a less direct route to its destination to avoid the exclusion area, or another mode of conveyance of the resource may be required. Oil and gas operations may move to nearby private lands where transport is easier, thereby reducing the number of operations on federal lands. Impacts would be mitigated where exceptions were allowed for collocating new ROWs within existing ROWs to recognize valid existing rights.

Implementing management for the following resources would have negligible or no impact on oil and gas; therefore, they are not discussed in detail: travel and transportation management, recreation, range management, solid minerals, fire and fuels management, habitat restoration and vegetation management, and special designations.

Alternative A

Impacts from Lands and Realty Management
Under Alternative A, 1,028,500 acres (4 percent of BLM-administered and National Forest System surface in the decision area) would continue to be managed as ROW exclusion areas. Another 1,956,200 acres (8 percent of BLM-administered and National Forest System surface in the decision area) would continue to be managed as ROW avoidance areas. This management would continue to impact the fluid minerals program, as described under **Nature and Type of Effects**.

Impacts from Fluid Minerals Management
Under Alternative A, new leases in most areas within the decision area (6,327,500 acres) would continue to be open subject to standard terms and conditions. NSO stipulations would continue to be applied to 931,000 acres of federal oil and gas estate. Approximately 2,714,700 acres of the decision area would remain closed to leasing. These management actions would continue to have the types of impacts described under **Nature and Type of Effects**.

Error! Reference source not found.Error! Reference source not found.**Table 4-78** breaks down the unleased medium potential acres within the decision area as to whether they would be open or closed to leasing and what stipulations would be applied.

Table 4-78
Oil and Gas Leasing Categories in Unleased Medium Potential Areas by Alternative

Constraint	Alternative A	Alternatives B and F	Alternative C	Alternative D	Alternative E	Proposed Plan
Closed to leasing	289,500	496,300	601,000	289,500	289,500	257,400
Open subject to NSO Stipulations	170,400	100,000	51,400	176,900	186,200	348,100
Open subject to CSU/TL Stipulations	201,100	112,200	65,900	252,800	201,100	121,900
Open subject to standard terms and conditions[1]	117,000	76,200	66,400	65,600	107,900	57,300

Source: BLM GIS 2015
[1]May have stipulations protecting resources other than GRSG.

Under Alternative A, 289,500 unleased acres with medium development potential (37 percent of the unleased federal oil and gas estate with medium development potential) would remain closed to oil and gas leasing. Acres closed in this category would have the greatest impact on the fluid minerals program by prohibiting oil and gas development on unleased portions of federal mineral estate with medium potential for such development. Impacts of closing these areas to leasing are the same type as those described under Nature and Type of Effects.

Approximately 170,400 unleased acres of federal oil and gas estate with medium development potential (22 percent of the unleased federal oil and gas estate with medium development potential) would remain open to leasing subject to NSO stipulations. Acres subject to NSO stipulations in areas with medium development potential for oil and gas would have a greater impact on the fluid minerals program, compared to acres subject to NSO stipulations in areas with low development potential. This is because the likelihood of developing acres in areas with medium development potential is greater. Impacts of applying NSO stipulations to these areas are the same type as those described under **Nature and Type of Effects**.

Approximately 117,000 unleased acres of federal mineral estate in medium potential areas would be available for fluid mineral leasing and development with standard lease stipulations. These lands would not be subject to additional NSO, CSU, or TL stipulations, thereby providing the most flexibility for oil and gas exploration and development.

Geophysical exploration would continue to be allowed in areas open to fluid mineral leasing. In areas closed to leasing where geophysical exploration would not be allowed, impacts would continue to be the type described under **Nature and Type of Effects**.

Under this alternative, 25 new oil and gas exploratory wells are projected to be developed on federal mineral estate in the decision area in the next 20 years. This rate of development would allow oil and gas exploration to continue.

Under Alternative A, reclamation bonds would continue to be required, in accordance with 43 CFR 3104. In addition, applications for permits to drill, including drilling plans and surface use plans of operations, would continue to be required, in accordance with 43 CFR 3162. Unitization would continue to occur on a case-by-case basis at the discretion of operators.

Under Alternative A, restrictive measures to mitigate impacts from oil and gas development on GRSG would continue to be considered on a case-by-case basis during implementation-level planning. Wherever these measures are applied to the 63 leases on 69,200 acres within GRSG habitat in the decision area, they would have impacts similar to those described for conservation measures under **Nature and Type of Effects**.

Alternative B

Impacts from Lands and Realty Management

Under Alternative B, over 8 million acres (32 percent) of BLM-administered and National Forest System surface in the decision area (including all PHMA) would be managed as ROW exclusion areas. However, because all PHMA would be closed to fluid mineral leasing under Alternative B, managing areas as ROW exclusion in PHMA would have no impact on fluid minerals.

Like Alternative A, over 2.5 million acres (10 percent) of BLM-administered and National Forest System surface in the decision area (including all GHMA) would be managed as

ROW avoidance under Alternative B. This management would have significant impact on oil and gas leasing as compared to Alternative A.

Impacts from Fluid Minerals Management
Under Alternative B, 19,632,700 acres, or 70 percent of the decision area, including all federal oil and gas estate in PHMA, would be closed to oil and gas leasing. These closures would include 496,300 unleased acres with medium potential (63 percent of the unleased medium potential acres in the decision area). Closure of these acres would directly impact the fluid minerals program, as described under **Nature and Type of Effects**. Existing leases would remain valid through their term but could not be renewed.

Under this alternative, 71 percent more unleased acres with medium development potential would be closed to leasing than under Alternative A (**Table 4-78**). Approximately 10 percent (76,200 acres) of unleased areas with medium development potential would be open subject to standard terms and conditions, while another 13 percent (100,000 acres) would be open subject to NSO stipulations. Closures of unleased areas with medium potential would have the greatest impacts on oil and gas development in the decision area because these areas would be the most likely to be developed if no constraints existed. Impacts would be the same type as those described under **Nature and Type of Effects**.

The 18,585,200 acres of federal oil and gas estate within GHMA and outside occupied habitat (66 percent of the federal oil and gas decision area) would be subject to the same stipulations and management as under Alternative A.

Geophysical exploration would be allowed on the over 8 million acres of federal mineral estate within PHMA but would be subject to TLs and other restrictions. Most notably, geophysical exploration would be allowed only for gathering information about fluid mineral resources outside PHMA. Because of these limitations and the fact that PHMA would be closed to fluid mineral leasing, geophysical exploration in PHMA would decrease under this alternative. Decreases in geophysical exploration in PHMA could impact the fluid minerals program, as described under **Nature and Type of Effects**.

Under Alternative B, 15 new oil and gas exploratory wells are projected to be developed on federal mineral estate in the decision area in the next 20 years. This represents a 40 percent decrease in projected wells on federal mineral estate, compared to Alternative A.

Under Alternative B, conservation measures and RDFs would be applied as COAs to 48 existing leases on 55,000 acres of PHMA overlying federal mineral estate. These RDFs and conservation measures would include such requirements as surface disturbance limitations, TLs, noise restrictions, structure height limitations, design requirements, water development standards, remote monitoring requirements, and reclamation standards. The types of impacts from these COAs are the same as those described under **Nature and Type of Effects**.

In addition to the requirements described above, the COAs would require unitization when necessary to minimize harm to GRSG and would call for completion of master development plans for developing fluid mineral resources instead of processing individual applications for

permit to drill. Requiring these plans would result in the impacts described under **Nature and Type of Effects**.

The BLM and Forest Service could not apply COAs that would eliminate reasonable opportunities to develop the lease. Therefore, although restrictions on development would increase where COAs were applied, oil and gas development would still be allowed.

Alternative C

Impacts from Lands and Realty Management
Under Alternative C, over 11 million acres (43 percent) of BLM-administered and National Forest System surface in the decision area (including all BLM-administered and National Forest System surface in GRSG habitat) would be managed as ROW exclusion areas. However, because all GRSG habitat would be closed to fluid mineral leasing under Alternative C, managing areas as ROW exclusion would have no impact on fluid minerals.

Impacts from Fluid Minerals Management
Under Alternative C, over 22 million acres, or 85 percent of the decision area (including all federal oil and gas estate in occupied habitat) would be closed to oil and gas leasing (**Table 4-78**). Closure of the area to leasing would directly impact the fluid minerals program, as described under **Nature and Type of Effects**; however, because nearly two times more acres in the decision area would be closed under Alternative C than under Alternative A, the magnitude of those impacts would increase. This alternative would prohibit any new oil and gas leasing in occupied habitat.

Geophysical exploration would be subject to the same restrictions as those under Alternative B; however, these restrictions would apply to more acres under Alternative C (20,168,900 acres). Therefore, the types of impacts described under **Nature and Type of Effects** would increase under this alternative.

Under this alternative, over two times as many more unleased acres with medium development potential would be closed to leasing compared with Alternative A (**Table 4-78**). Approximately 8 percent (66,400 acres) of unleased areas with medium development potential would be open subject to standard terms and conditions, while another nearly 7 percent (51,400 acres) would be open subject to NSO stipulations. Closures of unleased areas with medium potential would have the greatest impacts on oil and gas development in the decision area because these areas would be the most likely to be developed if no constraints existed. Impacts would be the same type as those described under **Nature and Type of Effects**.

Under this alternative, 13 new oil and gas exploratory wells are projected to be developed on federal oil and gas estate in the decision area in the next 20 years. This represents a 48 percent decrease in projected wells on federal oil and gas estate, compared to Alternative A.

Management actions applicable to existing leases under Alternative C would be similar to those under Alternative B, but they would apply to 48 existing leases on 55,000 acres of

federal mineral estate. In addition to applying the restrictive management under Alternative B to more acres, Alternative C would call for COAs implementing seasonal restrictions on vehicle traffic and human presence associated with exploratory drilling. This alternative also would limit new surface disturbance on existing leases to 3 percent per section, with some exceptions. Impacts of these operating and siting restrictions are the same type as those described under **Nature and Type of Effects**.

Alternative D

Impacts from Lands and Realty Management
Like Alternative A, under Alternative D, over 1 million acres (4 percent) of BLM-administered and National Forest System surface in the decision area would be managed as ROW exclusion areas. Nearly 4 million acres (6 percent), including all IHMA and GHMA, would be managed as ROW avoidance areas. Where these exclusion or avoidance areas overlap with areas open to fluid mineral leasing, impacts on the fluid minerals program would occur, as described under **Nature and Type of Effects**. Because three times more acres would be managed as ROW avoidance under Alternative D than under Alternative A, the magnitude of impacts would increase.

Impacts from Fluid Minerals Management
Under Alternative D, fluid mineral allocations in PHMA and IHMA would vary depending on oil and gas development potential. Federal mineral estate with no or low oil and gas potential would be closed to leasing, while federal mineral estate with medium oil and gas development potential would be subject to CSU and TL stipulations, and an NSO stipulation would apply within 0.6 mile (1 km) of leks. A total of 19,415,000 acres (75 percent of the decision area) would be closed under this alternative. Approximately 1,379,700 acres (5 percent) would be subject to NSO stipulations, 1,595,000 acres (6 percent) would be subject to CSU stipulations, and 2,170,000 acres (8 percent) would be subject to TL stipulations. Approximately 3,668,800 acres (14 percent of the decision area) would be open to leasing subject to standard terms and conditions. Impacts of these stipulations would be the types described in **Nature and Type of Effects**. Closures would cause the most impacts out of all these management actions due to a 50 percent increase compared with Alternative A. However, 98 percent of the acres that would be closed under Alternative D (19,117,900 acres) have low or very low development potential and are less likely to be developed even without management constraints.

New leases in GHMA (regardless of oil and gas potential) would be subject to TLs, and the 0.6-mile NSO buffer would also apply.

Under Alternative D, 289,500 unleased acres with medium development potential (37 percent of total unleased acres with medium development potential in the oil and gas decision area) would be closed to leasing, the same amount as Alternative A (**Table 4-78**). Approximately 176,900 acres (22 percent) of unleased areas with medium development potential would be subject to NSO stipulations. This represents a 4 percent increase compared with Alternative A. Approximately 252,800 acres (32 percent) of unleased federal oil and gas estate with medium development potential would be subject to CSU and/or TL

stipulations. Because unleased moderate-potential acres subject to CSU and/or TL stipulations would increase 26 percent compared with Alternative A, the impacts of these stipulations would increase under Alternative D. Impacts would be the same type as those described under **Nature and Type of Effects**. Overall, because more acres with medium development potential would be closed or subject to NSO or CSU/TL stipulations under Alternative D compared with Alternative A, impacts on unleased oil and gas from fluid mineral allocations would increase under Alternative D.

New leases within PHMA and IHMA would be subject to density limitations and a 3 percent disturbance cap for each section. These limitations on surface disturbance would have the cost impacts described under **Nature and Type of Effects**.

Geophysical exploration in GRSG habitat would be subject to TL stipulations. Impacts of these stipulations are the same types as those described under **Nature and Type of Effects**. Because these types of stipulations would not be applied under Alternative A, impacts on the fluid minerals program would increase under Alternative D.

Under this alternative, 23 new oil and gas exploratory wells are projected to be developed on federal mineral estate in the decision area in the next 20 years. This represents an eight percent decrease in projected wells on federal mineral estate compared with Alternative A.

Management of existing fluid mineral leases under Alternative D would be the same as that under Alternative B, except that all management actions other than RDFs would apply to 63 existing leases on 69,200 acres within GRSG habitat. For this reason, impacts on the fluid minerals program from these actions are more similar to Alternative C. Existing leases in GHMA could be subject to discretionary mandatory RDFs.

Alternative E

Impacts from Lands and Realty Management
Like Alternative A, under Alternative E, nearly 1 million acres (4 percent) of BLM-administered and National Forest System surface in the decision area would be managed as ROW exclusion areas. Over 7 million acres (28 percent), including all CHZ and IHZ not already managed as ROW exclusion areas, would be managed as ROW avoidance areas. Where these exclusion or avoidance areas overlapped with areas open to fluid mineral leasing, impacts on the fluid minerals program are as described under **Nature and Type of Effects**. Because more acres would be managed as ROW avoidance under Alternative E than under Alternative A, the magnitude of impacts would increase. Impacts would be mitigated where exemptions were allowed for ROW development subject to certain conditions.

Impacts from Fluid Minerals Management
Under Alternative E, fluid mineral management would differ between portions of the decision area in Idaho and Montana and portions in Utah.

Within Idaho and Montana, new leases on federal oil and gas estate within CHZ and IHZ would be subject to NSO stipulations. Application of NSO stipulations would have the type of impacts described under Nature and Type of Effects; however, the impacts on fluid minerals would be mitigated by waivers where certain criteria were met.

Within Utah, new leases on federal oil and gas estate within PHMA would be subject to CSU and TL stipulations. Impacts of these stipulations are the same type as those described under **Nature and Type of Impacts**.

Under Alternative E, 289,500 unleased acres with medium development potential (37 percent of total unleased acres with medium development potential in the oil and gas decision area) would be closed to leasing, the same amount as Alternative A (**Table 4-78**). Approximately 186,200 acres (24 percent) of unleased areas with medium development potential would be subject to NSO stipulations. This represents a 9 percent increase compared with Alternative A. No CSU stipulations would be applied, the same as under Alternative A. Impacts would be the same type as those described under **Nature and Type of Effects**. Overall, because more unleased acres with medium development potential would be closed or subject to NSO stipulations under Alternative E compared with Alternative A, impacts on unleased oil and gas from fluid mineral allocations would increase under Alternative E.

Within Idaho and southwestern Montana, management of geophysical exploration would be the same as that under Alternative A, with the same impacts. Within Utah, geophysical exploration in PHMA would be subject to the same CSU and TL stipulations applied to new leases in PHMA. Impacts are the same type as those described under **Nature and Type of Effects**. Because geophysical exploration in Utah would be restricted under this alternative and would not be restricted under Alternative A, impacts would increase, compared with Alternative A.

Under this alternative, 13 new oil and gas exploratory wells are projected to be developed on federal mineral estate in the decision area in the next 20 years. This represents an 18 percent decrease in projected wells on federal mineral estate, compared to Alternative A.

Management of existing leases in the decision area would be similar to that under Alternative A, except that BMPs would be applied. Because these BMPs would not be mandatory, their application would not necessarily result in additional impacts on fluid minerals.

Alternative F

Impacts from Lands and Realty Management

Like Alternative C, under Alternative F, over 8.5 million acres (33 percent) of BLM-administered and National Forest System surface in the decision area (including all BLM-administered and National Forest System surface within GRSG habitat) would be managed as ROW exclusion areas. However, because all occupied habitat would be closed to fluid mineral leasing under Alternative F, managing areas as ROW exclusion in the decision area would have no impact on fluid minerals.

Impacts from Fluid Minerals Management
Unleased fluid minerals management would be the same under Alternative F as that under Alternative B (**Table 4-78**). All PHMA (70 percent of the decision area) would be closed to leasing.

Under Alternative F, the 52 existing leases in PHMA would be subject to management, similar to that under Alternative B. However, under Alternative F, TLs would prohibit human presence and surface-disturbing activities during the nesting and brood-rearing season. This management would be the most restrictive of all the alternatives.

Proposed Plan
Impacts from Lands and Realty Management
Under the Proposed Plan, 8,365,000 acres (33 percent) of BLM-administered and National Forest System surface in the decision area (including all PHMA and IHMA) would be managed as ROW avoidance areas. However, because all acres in PHMA and IHMA would be either closed to leasing or open subject to NSO stipulations, no oil and gas activities on future leases within these areas would require new rights-of-way. Therefore, oil and gas activity in PHMA and IHMA would not be impacted by management of ROW avoidance areas under the Proposed Plan.

All BLM-administered surface in GHMA would be managed as ROW avoidance for high voltage transmission lines and major pipelines but open to other fluid mineral-related ROW location under the Proposed Plan. Fluid minerals beneath those acres would be impacted by the ROW avoidance area, as described under **Nature and Type of Effects**. Overall, more acres in GHMA would be managed as ROW avoidance under the Proposed Plan than under Alternative A; therefore, impacts on the fluid minerals program from these ROW avoidance areas would increase under the Proposed Plan.

Application of RDFs, BMPs, buffers, and seasonal timing restrictions to ROW construction in all GRSG habitat would also limit construction of new ROWs for oil and gas development. If these limitations made it uneconomic to develop a ROW for oil and gas development, development of federal oil and gas resources in the planning area could decrease.

Impacts from Fluid Minerals Management
Under the Proposed Plan, approximately 257,400 unleased acres with medium development potential (33 percent of the federal oil and gas estate with medium development potential) would remain closed to oil and gas leasing (**Table 4-78**). Closing unleased lands to leasing, especially those with medium potential, would have the greatest impact on the fluid minerals program by prohibiting oil and gas development. Impacts of closing these areas to leasing are the same type as those described under **Nature and Type of Effects**.

Approximately 348,100 acres, or 44 percent of unleased federal oil and gas estate with medium development potential (including all areas in PHMA and IHMA not already closed) would be open to oil and gas leasing subject to NSO stipulations. The Proposed Plan would apply NSO stipulations to twice as many unleased acres with medium oil and gas

development potential compared with Alternative A. Impacts would be increased because of the acreage increase and the fact that there would be no waivers or modifications to the NSO stipulation. Only one exception would exist. A total of 77 percent of unleased federal oil and gas estate with medium oil and gas potential in the decision area would be inaccessible, either due to closure or NSO, under the Proposed Plan.

Under the Proposed Plan, approximately 121,900 unleased acres, or 17 percent of the unleased federal oil and gas estate with medium development potential would be open to oil and gas leasing, subject to lek buffers and TL stipulations. This would include all areas in GHMA not already closed. These stipulations would restrict the timing and location of oil and gas exploration and development activities, as described under **Nature and Type of Effects**.

Under the Proposed Plan, it is reasonably foreseeable for planning purposes that 15 new oil and gas exploratory wells would be developed on federal fluid mineral estate in the decision area in the next 20 years. This represents a 40 percent decrease in projected wells on federal mineral estate compared to Alternative A.

Management of geophysical exploration activities under the Proposed Plan would be the same as that under Alternative B, with the same impacts.

Under the Proposed Plan, the same RDFs would be applied to a larger acreage than under Alternative B (including GHMA and to existing leases). However, only management actions related to master development plans and unitization would apply. Impacts of these restrictions would be the same type as those described under **Nature and Type of Effects**.

Application of the 3 percent disturbance cap in PHMA and IHMA and lek buffers in GHMA could impact both new and existing fluid mineral activities by preventing or restricting new surface development. New fluid mineral activities and new surface development on existing leases could be affected or temporarily delayed if the cap were exceeded. Applying lek buffer distances when approving actions could also restrict development of infrastructure related to fluid mineral development.

Under the Proposed Plan, the same RDFs described under Alternative B would be applied as COAs to 41 existing leases on 64,000 acres of occupied habitat overlying federal mineral estate (2 in Idaho over 4,000 acres; 39 in Montana over 60,000 acres). The types of impacts from these COAs are the same as those described under **Nature and Type of Effects**. The BLM and Forest Service could not apply COAs that would eliminate reasonable opportunities to develop the lease. Therefore, although restrictions on development would increase where COAs were applied, oil and gas development would still be allowed. There are no post-lease activities pending the BLM's approval.

4.9.2 Geothermal

Methods and Assumptions

The analysis of impacts on geothermal resources from this LUPA focuses on the impacts of conservation measures to protect GRSG. These impacts may be direct or indirect. For example, a direct impact on geothermal resources would result from closing an area, to fluid mineral leasing, particularly a moderate to high geothermal potential area. An indirect impact would result from managing an area as ROW exclusion, which would restrict off-lease infrastructure, such as access roads and transmission lines, and could change the economic feasibility of developing a site. Additional actions or conditions that might cause direct or indirect impacts on geothermal leasing and development are described under below.

Indicators

Indicators of impacts on geothermal leasing and development are as follows:

- Acres of unleased land with moderate to high geothermal potential identified as closed to fluid mineral leasing and geophysical exploration
- Acres of unleased land with no or low geothermal potential identified as closed to fluid mineral leasing and geophysical exploration
- Acres of unleased land with moderate to high geothermal potential subject to NSO stipulation.
- Acres of unleased land with low geothermal potential subject to NSO stipulations
- Acres of unleased land with moderate to high geothermal potential subject to CSU and TLs
- Acres of unleased land with no or low geothermal potential subject to CSU and TLs
- Number of leases and acres over which COAs would be applied on geothermal development activities on leased parcels to protect GRSG
- Acres managed as ROW avoidance areas
- Acres managed as ROW exclusion areas

Assumptions

The analysis includes the following assumptions:

- Existing fluid mineral leases would not be affected by the closures proposed under this LUPA.
- Fluid mineral operations on existing federal leases, regardless of surface ownership, would be subject to project-specific COAs by the authorizing officer. The BLM can deny surface occupancy on portions of leases with COAs to avoid

or minimize resource conflicts if this action does not eliminate reasonable opportunities to develop the lease or affect lease rights.

- Existing leases would be managed under the stipulations in effect when the leases were issued; new stipulations proposed under this LUPA would apply only on new leases. See the glossary for definitions of stipulations versus COAs.
- Under all alternatives, reclamation bonds would be required, in accordance with 43 CFR, Parts 3261.18 and 3214.10, in an amount sufficient to ensure full restoration of lands to the condition in which they were found. In addition, BLM approval of geothermal drilling permits would continue to be required before drilling begins under all alternatives, in accordance with 43 CFR, Part 3260.
- The lands in the Curlew Grassland area, as described in the Pocatello RMP, that are administratively unavailable for leasing would be included in the total number of acres closed to leasing under Alternative A.
- As the demand for alternative energy increases, so would the demand for extracting geothermal resources in areas with potential. Technological advancements could lead to changes in levels of geothermal development potential throughout the planning area as developers find ways to produce power from lower temperature resources and from hot dry rock.
- As discussed in **Section 3.12**, Mineral Resources, interest in geothermal leasing in Idaho is expected to remain sporadic. For planning purposes, the assumption is that development would occur as described in **Appendix O**, Reasonably Foreseeable Development Scenario.

Stipulations would also apply to geothermal leasing on lands overlying federal mineral estate, which includes federal mineral estate underlying BLM-administered and National Forest System lands, as well as private lands underlain by federal mineral estate.

Nature and Type of Effects

For geothermal energy, the above criteria were evaluated in addition to areas closed to leasing, areas with NSO, CSU, and TL stipulations, and areas managed as ROW avoidance or exclusion within GRSG habitat. All of these factors are considered to be impediments to geothermal energy development, to varying degrees. Alternatives with greater acreages of such restrictions are considered to have a greater impact on geothermal energy development potential than alternatives with fewer acres of such restrictions, especially in areas with moderate to high geothermal potential.

Geothermal resource leasing and development would be precluded in areas closed to fluid mineral leasing. Such closures would directly impact the fluid minerals program by removing the opportunity afforded US citizens by the Mineral Leasing Act and the Geothermal Steam Act. These acts allow citizens to explore for and develop geothermal resources in those areas, especially if they have moderate to high geothermal potential.

Geothermal developers would be limited in their choice of project locations and could be forced to develop in areas that are challenging to access or have fewer economic resources because other more ideal areas are closed to leasing. This could raise the cost of geothermal development in the decision area and could result in operators moving to nearby nonfederal minerals if similar geologic conditions exist, or the opportunity for discovery may be lost altogether if such conditions are unique to the federal lands.

In areas with NSO stipulations, geothermal resources can be accessed only by directional drilling from a point on the surface that is not covered by NSO. If much of the lease is covered by an NSO stipulation, directional drilling may not be feasible. NSO stipulations can be nearly as restrictive to geothermal energy development as closing an area to leasing. Any geothermal projects on leases with CSU or TL stipulations could have added costs and scheduling challenges.

Applying COAs, which include RDFs (see **Appendix B**) and conservation measures outlined in **Chapter 2,** to post-lease activities could directly impact fluid mineral operations. These RDFs and conservation measures include such standards as noise restrictions, height limitations on structures, design requirements, water development standards, remote monitoring requirements, and reclamation standards. Additional site-specific planning, such as master development plans and unitization and reclamation bonding requirements may also be included. Applying these requirements through COAs may impact fluid mineral operations by increasing costs, causing delays, and frustrating attempts to develop the resource.

Placing limits on geophysical exploration could reduce the ability to collect geologic data concerning geothermal resources on federal mineral estate. TLs on geophysical exploration could lead to equipment scheduling delays.

Lands and realty management actions, such as requiring off-lease utilities to be collocated within designated corridors, could impact geothermal resource development by limiting options for ROW and facility design, and increasing development costs. While ROW grants are not needed for roads or transmission lines within a leased area, such grants are required for roads and transmission lines that are outside the leased areas. The identification of an area of land as a ROW exclusion area is likely to hinder any geothermal development in the area due to restrictions of access and transmission. ROW avoidance areas can result in reroutes and limited options for access and transmission and could either stop a project from being developed or increase development costs.

Impacts Common to All Alternatives

There are no impacts common to all alternatives. **Table 4-79**, Management Actions Affecting Geothermal Development, provides an overview of impacts across the alternatives on geothermal development potential. It shows the various restrictions placed on leasing, exploration, and development for both unleased and already leased lands. **Table 4-80**, Management Actions by Geothermal Potential, provides an overview of impacts across the alternatives in areas of high and low geothermal potential.

Alternative A

Impacts from Fluid Minerals Management

Much of the acreage in the decision area has at least moderate geothermal potential. Under Alternative A, the federal mineral estate currently open to geothermal leasing would remain open.

Table 4-79
Management Actions Affecting Geothermal Development

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
ROW Exclusion	1,028,500	8,484,100	11,023,100	1,028,500	979,100	8,523,400	1,013,800
ROW Avoidance	1,956,300	2,539,000	0	10,224,300	7,343,400	2,556,300	8,365,000
Closed to Leasing (Acres)	12,513,900	19,598,800	21,901,100	17,526,500	12,513,900	19,598,800	11,296,800
Open Subject to NSO Stipulations (Acres)	1,910,500	1,262,100	959,600	1,461,700	7,441,600	1,262,100	9,630,000
Open Subject to CSU/TL Stipulations (Acres)	2,841,600	1,940,900	1,542,700	5,450,000	2,237,300	1,940,900	3,834,400
Open Subject to Standard Terms and Conditions (Acres)	10,525,200	5,061,000	3,387,700	3,353,100	5,598,300	5,061,000	3,071,500

Source: BLM GIS 2015

Table 4-80
Management Actions by Geothermal Potential

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
Moderate to High Potential							
Closed to Leasing (Acres)	2,939,400	5,287,800	6,137,200	3,215,600	2,939,400	6,137,200	2,832,800
Open Subject to NSO Stipulations (Acres)	2,516,800	566,100	454,500	752,500	2,199,400	566,100	2,906,800
Open Subject to CSU/TL Stipulations (Acres)	756,800	496,600	382,700	3,027,900	527,400	496,600	1,278,100
Open Subject to Standard Terms and Conditions (Acres)	4,323,400	2,497,100	1,801,600	1,780,000	2,650,500	2,497,100	1,764,385

Table 4-80
Management Actions by Geothermal Potential

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
Low to No Potential							
Closed to Leasing (Acres)	9,574,600	14,311,000	15,763,900	14,311,000	9,574,600	14,311,000	8,464,000
Open Subject to NSO Stipulations (Acres)	1,154,000	696,000	505,100	709,100	4,782,800	696,000	6,723,200
Open Subject to CSU/TL Stipulations	2,084,800	1,444,300	1,160,000	2,422,000	1,710,000	1,444,300	2,556,300
Open Subject to Standard Terms and Conditions (Acres)	6,201,800	2,564,000	1,586,100	1,573,100	2,947,800	2,564,000	1,307,100

Source: BLM GIS 2015

There are 18,200 acres of federal geothermal leases in GRSG habitat in the decision area. Development of these leases would continue to be subject to the stipulations placed on them. Leases in occupied habitat would continue to be developed in accordance with their lease terms, which may include lek buffers and TLs in GRSG habitat. RDFs and BMPs can be applied as COAs to mitigate or prevent impacts on GRSG on public lands, so long as they are consistent with existing lease terms and stipulations. Many BLM-administered and National Forest Service land use plans require GRSG habitat to be mitigated by applying such stipulations as lek buffers and seasonal timing restrictions, as discussed in **Chapter 3**. The existing geothermal leases were issued with stipulations in place, thus no additional stipulations can be added to those leases. Geothermal development in the population areas would be subject to COAs placed on the project at the time of NEPA analysis. Development would be subject to any restrictions resulting from ESA Section 7 Consultation with the USFWS regarding any listed species in the project area. Applying stipulations from existing land use plans in some of the planning area but not all of it could degrade important habitat, if post-lease activities are proposed. Under Alternative A, 756,800 acres of high geothermal potential areas and 2,084,800 acres of low potential areas would be subject to TLs and CSUs.

Continuing to apply disturbance buffers and seasonal TLs on surface-disturbing and disruptive activities in portions of GRSG breeding, nesting, and winter habitat would directly impact development of geothermal resources. It would do this by limiting the siting, design, and operations of geothermal development projects. This, in turn, could force operators to use more costly development methods (such as horizontal drilling) than they otherwise might have used. Equipment shortages could result from applying TLs because a bottleneck could be created during the period in which activity would be allowed.

Alternative A would manage 12,513,900 acres (49 percent of the planning area) as closed to geothermal leasing. Of this, 2,939,400 acres (33 percent of high potential) would be in areas with moderate to high geothermal potential, and 9,574,600 acres (37 percent of low potential) would be in areas with low to no geothermal potential. Geophysical exploration would continue to be allowed in the decision area wherever acres are open to geothermal leasing. However, geophysical exploration in GRSG habitat would continue to be subject to any applicable disturbance buffers or TLs required in current LUPs. In areas closed to leasing, where geophysical exploration would not be allowed, impacts would continue to be the type described under **Nature and Type of Effects**.

Impacts from Lands and Realty Management
Under Alternative A, 1,028,500 acres (4 percent of BLM-administered and National Forest System land in the decision area) would continue to be managed as ROW exclusion areas. Another 1,956,300 acres (8 percent of BLM-administered and National Forest System land in the decision area) would continue to be managed as ROW avoidance areas. This management would continue to impact the fluid minerals program, as described under **Nature and Type of Effects**.

Alternative B

Impacts from Fluid Minerals Management
Table 4-79, Management Actions Affecting Geothermal Development, compares the acres of geothermal potential within the decision area as to whether they would be open or closed to leasing and what stipulations would be applied.

Under Alternative B, all PHMA (8,235,900 acres) would be closed to geothermal leasing; 19,598,800 total acres would be closed to geothermal leasing. Of these, 5,207,800 are in high geothermal potential areas, and 14,311,000 are in low geothermal potential areas. Alternative B would manage an additional 7,084,900 acres more than Alternative A as closed to fluid mineral leasing. As such, Alternative B would be more restrictive of geothermal exploration and development than Alternative A. An additional 1,940,900 acres would be managed as CSU/TL (496,600 within high potential areas and 1,444,300 within low potential areas), and 1,262,100 acres would be managed as NSO (566,100 in high potential areas and 696,000 in low potential areas).

Continuing to apply disturbance buffers and seasonal TLs on surface-disturbing and disruptive activities in portions of GRSG breeding, nesting, and winter habitat would have the same impacts as described under Alternative A.

Under Alternative B, conservation measures in addition to RDFs would be applied as COAs to existing leases within PHMA overlying federal mineral estate. These RDFs and conservation measures would include such requirements as surface-disturbance limitations, seasonal restrictions on activities in certain areas, noise restrictions, structure height limitations, design requirements, water development standards, remote monitoring requirements, and reclamation standards. Application of these requirements through COAs would impact geothermal operations by increasing costs if they resulted in the application of

additional requirements or use of more expensive technology (such as remote monitoring systems). To avoid costs, operators could move to nearby nonfederal minerals.

Existing geothermal leases were issued with stipulations in place, and no additional stipulations could be added to these leases. The potential for the development of geothermal resources within the geothermal reasonable foreseeable development scenario (RFDS) area under Alternative B is the same as under Alternative A.

Geophysical exploration would be allowed on the 8,735,300 acres of federal mineral estate within PHMA, but it would be subject to TLs and other restrictions. Most notably, geophysical exploration would be allowed only for gathering information about fluid mineral resources outside PHMA. Because of these limitations and the fact that PHMA would be closed to fluid mineral leasing, geophysical exploration in PHMA would decrease under this alternative. Decreases in geophysical exploration in PHMA could impact the fluid minerals program, as described under **Nature and Type of Effects**.

Impacts from Lands and Realty Management
Under Alternative B, 8,484,000 acres (32 percent) of BLM- and National Forest System-administered surface in the decision area (including all PHMA) would be managed as ROW exclusion areas. However, because all PHMA would be closed to fluid mineral leasing under Alternative B, managing areas as ROW exclusion in PHMA would have no additional impact on fluid minerals.

Alternative C

Impacts from Fluid Minerals Management
Table 4-79, Management Actions Affecting Geothermal Development, compares the acres of geothermal potential within the decision area as to whether they would be open or closed to leasing and what stipulations would be applied.

Under Alternative C, 21,901,100 acres would be closed to geothermal leasing. Alternative C would close to leasing an additional 9,387,200 acres over Alternative A. Of the 21,901,100 acres, 6,137,200 are within high potential geothermal areas, and 15,763,900 acres are in low potential geothermal areas. An additional 1,542,700 acres would be managed as CSU/TL (382,700 within high potential areas and 1,160,000 within low potential areas), and 959,600 acres would be managed as NSO (454,500 in high potential areas and 505,100 in low potential areas).

Management applicable to existing leases under Alternative C would be similar to those under Alternative B, but they would apply to 24,400 acres of existing leases on federal mineral estate within PHMA. In addition to applying the restrictive management under Alternative B to more acres, Alternative C would also call for COAs implementing seasonal restrictions on vehicle traffic and human presence associated with exploratory drilling. This alternative also would limit new surface disturbance on existing leases to 3 percent per year across the entire planning area, with some exceptions. Impacts of these operating and siting restrictions are the same type as those described under Alternative B.

Geophysical exploration would be subject to the same restrictions as those under Alternative B; however, these restrictions would apply to more acres under Alternative C (12,039,500 acres). Therefore, the types of impacts described under **Nature and Type of Effects** would increase under this alternative.

Impacts on the geothermal RFDS area from fluid minerals management are the same as those described under Alternative B.

Impacts from Lands and Realty Management
Under Alternative C, 11,048,000 acres (43 percent) of BLM-administered and National Forest System surface in the decision area (including surface in GRSG habitat) would be managed as ROW exclusion areas. However, because all GRSG habitat would be closed to fluid mineral leasing under Alternative C, managing areas as ROW exclusion would have no additional impact on fluid minerals.

Alternative D

Impacts from Fluid Minerals Management
Table 4-79, Management Actions Affecting Geothermal Development, compares the acres of geothermal potential within the decision area by whether they would be open or closed to

Under Alternative D, 17,526,500 acres would be closed to geothermal leasing. Alternative D would close to leasing an additional 5,012,600 acres over Alternative A. Of the 17,526,500 acres, 3,215,600 are within high potential geothermal areas, and 14,311,000 acres are in low potential geothermal areas. An additional 5,545,000 acres would be managed as CSU/TL (3,027,000 within high potential areas and 2,422,000 within low potential areas), and 1,461,700 acres would be managed as NSO (752,500 in high potential areas and 709,100 in low potential areas).

The CSU stipulations would include noise and tall structure limitations and, at times, a site-specific plan of development to limit habitat fragmentation. Application of these surface disturbance restrictions, TLs, and other operating standards would limit the siting, design, and operations of geothermal development projects in the manner described under Alternative A. However, these impacts would be mitigated in GHMA, where off-site mitigation would allow operators to waive the applicable stipulations.

For existing leases, the BLM and Forest Service would apply the same RDFs from Alternative B to all three GRSG management areas. However, exceptions to application of RDFs could mitigate impacts. Exceptions would occur where a design feature was not applicable (e.g., a resource is not present on a given site) or where the design feature would not actually provide additional protection for GRSG or its habitat.

Alternative D's RDFs would be the same under Alternative B, except that surface occupancy buffers and TLs would not apply to surface disturbance; rather, the BLM and Forest Service would aim to minimize habitat loss, fragmentation, and direct and indirect effects on GRSG and habitat. The impacts of applying these RDFs and conservation measures are the same

type as those described under Alternative B. On- or off-site mitigation would be used to minimize impacts on GRSG. Where operators use such mitigation to protect GRSG, geothermal development costs would increase compared with Alternative A due to the additional expense of mitigation activities.

Geophysical exploration in GRSG habitat would be subject to TL stipulations. Impacts of these stipulations are the same types as those described under **Nature and Type of Effects**. Because these types of stipulations would not be applied under Alternative A, impacts on the fluid minerals program would increase under Alternative D.

Impacts on the geothermal RFD area from fluid minerals management are the same as those described under Alternative A.

Impacts from Lands and Realty Management
Like Alternative A, under Alternative D, 1,028,500 acres (4 percent) of BLM-administered and National Forest System surface in the decision area would be managed as ROW exclusion areas. A total of 10,244,300 acres (40 percent), including all IHMA and GHMA, would be managed as ROW avoidance areas. Where these exclusion or avoidance areas overlap areas open to fluid mineral leasing, impacts on the fluid minerals program would occur, as described under **Nature and Type of Effects**. Because three times more acres would be managed as ROW avoidance under Alternative D than under Alternative A, the magnitude of impacts would increase.

Alternative E

Impacts from Fluid Minerals Management
Table 4-79, Management Actions Affecting Geothermal Development, compares the acres of geothermal potential within the decision area as to whether they would be open or closed to leasing and what stipulations would be applied.

Under Alternative E, no additional acres of geothermal development would be closed to geothermal leasing when compared with Alternative A. NSO stipulations would be applied to 7,441,600 acres including 2,199,400 with high geothermal potential and 4,782,800 with low geothermal potential.. An additional 2,237,000 acres would be managed as CSU/TL (527,000 within high potential areas and 1,710,000 within low potential areas). Existing leases would remain valid through their term but could not be renewed.

However, under Alternative E, fluid mineral management would differ between portions of the decision area in Idaho and Montana and portions in Utah. Within Idaho and Montana, new leases on federal mineral estate within CHZ and IHZ would be subject to NSO stipulations. Application of NSO stipulations would have the type of impacts described under Nature and Type of Effects; however, the impacts on fluid minerals would be mitigated by waivers where certain criteria were met. Within Utah, new leases on federal mineral estate within PHMA would be subject to CSU and TL stipulations. Impacts of these stipulations are the same type as those described under **Nature and Type of Impacts**.

Overall, because more unleased acres with medium development potential would be closed or subject to NSO stipulations under Alternative E compared with Alternative A, impacts on geothermal development from fluid mineral allocations would increase under Alternative E.

In Idaho and southwestern Montana, management of geophysical exploration would be the same as that under Alternative A, with the same impacts. In Utah, geophysical exploration in PHMA would be subject to the same CSU and TL stipulations applied to new leases in PHMA. Impacts are the same type as those described under **Nature and Type of Effects**. Because geophysical exploration in Utah would be restricted under this alternative and would not be restricted under Alternative A, impacts would increase, compared with Alternative A.

Management of existing leases in the decision area would be similar to that under Alternative A, except that BMPs would be applied. Because these BMPs would not be mandatory, their application would not necessarily result in additional impacts on fluid minerals.

Impacts from Lands and Realty Management
Similar to Alternative A, under Alternative E, 979,100 acres (4 percent) of BLM-administered and National Forest System land in the decision area would be managed as ROW exclusion areas. However, under Alternative E more acres (7,343,400 or 20 percent), including all CHZ and IHZ not already managed as ROW exclusion areas, would be managed as ROW avoidance areas. Where these exclusion or avoidance areas overlap areas open to fluid mineral leasing, impacts on the fluid minerals program would be as described under **Nature and Type of Effects**.

Because more acres would be managed as ROW avoidance under Alternative E than under Alternative A, the magnitude of impacts would increase. Impacts would be mitigated where exemptions were allowed for ROW development subject to certain conditions.

Alternative F

Impacts from Fluid Minerals Management
Table 4-79, Management Actions Affecting Geothermal Development, compares the acres of geothermal potential within the decision area as to whether they would be open or closed to leasing and what stipulations would be applied.

Under Alternative F, 19,598,800 acres would be closed to geothermal leasing. Alternative C would close to leasing an additional 7,084,900 acres more than Alternative A. Of the 19,598,800 acres, 6,137,200 are within high potential geothermal areas, and 14,311,000 acres are in low potential geothermal areas. An additional 1,940,900 acres would be managed as CSU/TL (496,600 within high potential areas and 1,444,300 within low potential areas), and 1,262,100 acres would be managed as NSO (566,100 in high potential areas and 696,000 in low potential areas).Management applicable to existing leases under Alternative F would be similar to that under Alternative B, but it would apply to 4,360 acres of existing leases on federal mineral estate within GHMA. In addition to applying the restrictive management under Alternative B to more acres, Alternative F would also call for COAs implementing

seasonal restrictions on vehicle traffic and human presence associated with exploratory drilling. This alternative also would limit new surface disturbance on existing leases to 3 percent per section, with some exceptions. Impacts of these operating and siting restrictions are the same type as those described under Alternative B.

Under Alternative F, geophysical exploration would be prohibited on 19,400 acres of federal mineral estate within PHMA. The closure of this area would reduce the lands available for geothermal exploration, compared with Alternative A.

Impacts on the geothermal RFDS area from fluid minerals management are the same as those described under Alternative B.

Impacts from Lands and Realty Management
Like Alternative B, under Alternative F, 8,523,400 acres (33 percent) of BLM-administered and National Forest System land in the decision area (including all that in GRSG habitat) would be managed as ROW exclusion areas. However, because all occupied habitat would be closed to fluid mineral leasing under Alternative F, managing areas as ROW exclusion in the decision area would have no additional impact on fluid minerals.

Proposed Plan

Impacts from Fluid Minerals Management
Under the Proposed Plan, 11,296,800 acres, or 44 percent of planning areas, would remain closed to geothermal leasing. This includes 2,832,200 acres with moderate to high geothermal potential (32 percent of the moderate to high geothermal potential acres in the decision area). An additional 8,464,000 acres (34 percent) with no or low geothermal potential would remain closed to geothermal leasing.

The Proposed Plan would manage the fewest acres with geothermal potential to geothermal leasing. Closures in no and low geothermal potential areas would have less of an impact on geothermal resource development than closures in moderate to high geothermal potential areas, due to a lower likelihood of discovery of a valuable geothermal resource.

In addition to fluid mineral closures, 3,834,400 acres would be subject to TL and CSU (including 1,278,100 acres in moderate to high geothermal potential areas and 2,556,300 acres in low geothermal potential areas) and 9,630,000 acres would be subject to NSO stipulations (including 2,906,800 acres in moderate to high geothermal potential areas, and 6,723,200 acres in low geothermal potential areas).

Under the Proposed Plan, RDFs and BMPs would be applied as COAs when a geothermal drilling permit or other post-lease activity is approved. In addition to affecting new leases, the COAs would be applied to the 25,571 acres of existing leases within GRSG habitat, consistent with existing lease terms and special stipulations. These RDFs and proposed management actions would include such requirements as noise restrictions, structure height limitations, design requirements, water development standards, remote monitoring requirements, and reclamation standards as described in **Appendix B**.

The BLM and Forest Service could not apply COAs that would eliminate reasonable opportunities to develop an existing lease. Therefore, although restrictions on development would increase where COAs were applied, geothermal development would still be allowed.

Impacts from Lands and Realty Management
Under the Proposed Plan, 8,365,000 acres (33 percent) of BLM-administered and National Forest System surface in the decision area (including all PHMA) would be managed as ROW avoidance areas where development of new ROWs for land uses could not occur unless the Anthropogenic Disturbance Development and Screening Criteria (AD-3 and AD-4) were satisfied (including the requirement that the project would not exceed the 3 percent disturbance threshold and would be collocated within existing the footprint of existing infrastructure). These restrictions would only allow new ROWs to be developed pursuant to a valid existing authorization.

Another 1,013,800 acres (4 percent) of BLM-administered and National Forest System surface in the decision area (including all IHMA) would be managed as ROW exclusion areas where development of new ROWs for land uses could not occur unless the Anthropogenic Disturbance Development Criteria (AD-4) were satisfied (including the requirement that the project would not exceed the 3 percent disturbance threshold). Lessees would be unable to site off-lease features, such as transmission lines, roads, and pipelines that may be necessary to transport the product to market, on public lands. These actions could result in the stranding of a geothermal lease and its resources, if surrounded by federal lands subject to these constraints.

Application of RDFs, BMPs, buffers, and seasonal timing restrictions to ROW construction in GRSG habitat would also limit the construction of new ROWs for geothermal development to certain times of the year or in certain locations. If these limitations made it uneconomic to develop a ROW for geothermal development, development of federal geothermal resources in the planning area could decrease.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination
Under the Proposed Plan, anthropogenic disturbance, including leasable mineral development, would be limited to 3 percent of nesting and wintering habitat within PHMA and IHMA within a Conservation Area (i.e., BSUs). In BSUs where the 3 percent cap is already exceeded, new development of federal leasable mineral resources would be prohibited until enough habitat was restored to maintain the area under the threshold. Development of federal leasable mineral resources that would result in exceedance of the 3 percent cap in a BSU would also be prohibited. Impacts would be greatest where these caps limited development in unleased portions of high geothermal potential because these areas have the highest potential for leasable mineral development. The uncertainty wrought by this limitation would decrease the value of the lease, disincentivize renewable energy development in the western United States, and could affect valid existing rights on any lease offered in the future.

4.10 Locatable Minerals

This section discusses impacts on locatable minerals from proposed management actions of other resources and resource uses. Existing conditions concerning locatable minerals are described in **Section 3.12**.

4.10.1 Methods and Assumptions

The analysis of impacts on locatable minerals from this LUPA focuses on the impacts of proposed management actions to protect GRSG. These impacts may be direct or indirect. For example, a direct impact on locatable minerals would result from withdrawing an area from locatable mineral entry. An indirect impact would result by removing a road, which would change the economic feasibility of developing a site. Additional actions or conditions that might cause direct or indirect impacts on locatable minerals are described below.

Indicators

Indicators of impacts on locatable minerals are as follows:

- Acres withdrawn from locatable mineral entry
- Acres recommended for withdrawal from locatable mineral entry
- Acres over which restrictions, such as RDFs and management actions, are placed on locatable mineral development activities to prevent unnecessary or undue degradation of GRSG habitat as the law allows

Where information is available, consideration is given to the potential for locatable minerals on lands recommended for withdrawal from locatable mineral entry. For example, an indicator of an impact on locatable minerals is if there were substantial withdrawals from locatable mineral entry recommended in high potential areas.

Assumptions

The analysis includes the following assumptions:

- Management actions proposed in this LUPA would apply to locatable mineral activity where the BLM and Forest Service manage the surface over federal locatable mineral estate as well as where federal locatable mineral estate lies beneath private or state surface (split-estate).
- Areas recommended for withdrawal would be withdrawn. Current mining claims have valid existing rights, provided they meet the requirements of the General Mining Law of 1872. One of these requirements is that the claim be supported by the discovery of a valuable mineral.
- Locatable mineral development trends, described in **Section 3.12**, Mineral Resources, are assumed to continue for the life of the analysis.
- Because many different and unrelated mineral commodities are considered locatable, mineral potential was determined by looking at current mining claim

densities in the planning area, as well as the number of mining plans and notices. Areas with a high mining claim density and more mining plans and notices are considered to have higher potential for locatable minerals than areas with lower claim densities and fewer plans and notices.

4.10.2 Nature and Type of Effects

In order to describe the effects of imposing GRSG management actions on locatable mineral discovery and development, the above indicators were evaluated for each alternative. Each of these factors is considered to be an impediment to locatable mineral discovery and development, to varying degrees. In general, an alternative with greater acreages of such restrictions is considered to have a greater impact on locatable mineral discovery and development potential than an alternative with fewer acres of such restrictions, especially in areas with moderate to high locatable mineral potential.

Withdrawing lands from locatable mineral entry reduces the amount of land available to US citizens by the General Mining Law of 1872, as amended, to access and locate mining claims. Withdrawing lands removes the potential for future mineral development on public domain lands. Withdrawing more than 5,000 acres requires approval by Congress.

A valid mining claim in areas withdrawn from mineral entry would be considered a valid existing right. A valid mining claim is one where there has been a discovery of an economically valuable mineral deposit on or before the date of withdrawal. A examination could be required to determine claim validity.

For each area proposed for withdrawal, a detailed mineral potential analysis must be prepared by a geologist or mining engineer that includes an evaluation of the area's present and potential market demands. Mining claims with a discovery of a valuable deposit on the date of the withdrawal are valid and would be exempt from withdrawal for as long as the claimant maintains the claim; all other claims would become void.

The need to perform mineral potential reports in areas proposed to be withdrawn from locatable mineral entry would greatly increase the burden on the BLM and Forest Service.

Applying mitigation measures required to prevent unnecessary or undue degradation as defined in 43 CFR 3809.415, as well as reasonable and appropriate RDFs consistent with applicable law (see **Appendix B**), and management actions outlined in **Chapter 2** to plans of operations could directly impact locatable mineral operations by increasing costs, causing delays, and frustrating attempts to develop the resource. These RDFs include such standards as noise restrictions, height limitations on structures, design requirements, water development standards, remote monitoring requirements, and reclamation standards. Applying these requirements may impact locatable mineral operations by increasing costs, causing delays, and frustrating attempts to develop the resource.

Implementing management for the following resources would have negligible or no impact on locatable minerals; therefore, they are not discussed in detail: GRSG, habitat restoration

and vegetation, invasive species, wildland fire, nonenergy solid leasable minerals, salable minerals, fluid minerals, recreation and visitor services, livestock grazing, and special designations.

4.10.3 Impacts on Locatable Minerals Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative.

Impacts from Locatable Minerals Management

Under all alternatives, approximately 5,380,200 acres, 18 percent of the total federal mineral estate open to mineral entry, would remain withdrawn from the location of mining claims, precluding new exploration and mining. **Table 4-81**, Quantitative Impacts on Locatable Minerals, illustrates the change in acres open to locatable mineral entry and to be petitioned for withdrawal from locatable mineral entry in the decision area across the alternatives.

Table 4-81
Quantitative Impacts on Locatable Minerals

Locatable Minerals	Alternatives A, D, and E	Alternatives B and F	Alternative C	Proposed Plan
Total federal mineral estate for locatable minerals	29,754,300	29,754,300	29,754,300	29,754,300
Total acres withdrawn from locatable mineral entry	5,380,200	5,380,200	5,380,200	5,380,200
High likelihood of interest	*38,700*	*38,700*	*38,700*	*38,700*
Moderate likelihood of interest	*100,400*	*100,400*	*100,400*	*100,400*
Low likelihood of interest	*5,241,200*	*5,241,200*	*5,241,200*	*5,241,200*
Total acres recommended for withdrawal from locatable mineral entry	0	7,928,700	11,555,000	2,968,200
High likelihood of interest	*0*	*150,600*	*415,700*	*55,900*
Moderate likelihood of interest	*0*	*224,700*	*382,100*	*42,600*
Low likelihood of interest	*0*	*7,553,400*	*10,757,200*	*2,869,600*
Total acres open to locatable mineral exploration or development	24,374,100	16,373,400	13,904,300	21,405,600
High likelihood of interest	*817,500*	*609,700*	*428,200*	*761,500*
Moderate likelihood of interest	*875,900*	*651,200*	*511,100*	*833,300*
Low likelihood of interest	*22,680,600*	*15,112,500*	*12,965,100*	*19,810,900*

Source: BLM GIS 2015

The management actions being considered in this LUPA could affect both existing and future mining claims. Exploration on mining claims would require that a notice be submitted to the BLM with a cumulative surface disturbance of five or fewer acres and a plan of operations for exploration greater than five acres, as outlined in 43 CFR Part 3809. Development of any size requires a plan of operations. On National Forest System lands, a

Notice of Intent is required for minor minerals activities on mining claims, or a Plan of Operations if the proposed operations "will likely cause a significant disturbance of surface resources(36 CFR 228A).

4.10.4 Alternative A

Impacts from Locatable Minerals Management

Under Alternative A, 5,380,200 acres, 18 percent, of locatable mineral estate in the decision area would remain withdrawn from location under the General Mining Act of 1872. This includes 38,700 acres where there is a high likelihood of future interest in locatable mineral development (5 percent of total acres with a high likelihood of interest in the decision area). Withdrawal of areas with a high likelihood of future interest in locatable mineral development has greater impacts than withdrawal of areas with moderate or low likelihood of interest because high likelihood areas are more likely to be sought after for development. Under current management, exploration and development would continue in PHMA and GHMA for new claims and for prior existing, valid mining claims. Impacts on existing and future mining claims are similar to those described under **Effects Common to All Alternatives**.

There are 41 plans of operations and notices in the locatable mineral decision area for Alternative A. Development of these operations would continue unrestricted under Alternative A.

No additional BMPs to protect GRSG are identified under this alternative.

4.10.5 Alternative B

Impacts from Locatable Minerals Management

Under Alternative B, 7,928,700 acres of federal locatable mineral estate in PHMA would be recommended for withdrawal from location under the General Mining Act of 1872. Combined with the additional 5,380,200 acres previously withdrawn under Alternative A, the availability of locatable minerals would be limited on over 13 million acres, or 45 percent of the federal locatable mineral estate (over two times the acreage under Alternative A). Approximately 189,300 acres with a high likelihood for locatable mineral interest would be withdrawn or recommended for withdrawal under this alternative (22 percent of total acres with high likelihood of locatable mineral interest in the decision area). This represents nearly 5 times more high likelihood acres withdrawn under Alternative B compared with Alternative A. The types of impacts are the same as those described under **Section 4.9.2** and **Section 4.9.3**. However, because more acres with a high likelihood of locatable mineral interest would be withdrawn or recommended for withdrawal under Alternative B, the magnitude of the impacts would increase compared with Alternative A.

Of the 41 plans of operations and notices within the locatable mineral decision area for Alternative B, 28 (65 percent) would be in PHMA under this alternative and therefore within

the area to be petitioned for withdrawal. The types of impacts are the same as those described under **Nature and Type of Effects**.

Accessing and extracting locatable minerals of federal mineral estate would not be impacted by applying the RDFs listed in **Appendix B**; however, mining operations and practices could be affected if any of the RDFs were applied, consistent with applicable law, on a project-specific basis.

4.10.6 Alternative C

Impacts from Locatable Minerals Management

Impacts under Alternative C are the same as those described under Alternative B, except that more acres would be recommended for withdrawal (11,555,000 acres of federal locatable mineral estate in the decision area). Combined with the 5,380,200 acres withdrawn, a total of over 16 million acres (54 percent) of the locatable mineral decision area would be impacted. This includes 454,400 acres (53 percent) of federal locatable mineral estate with a high likelihood of future interest in locatable mineral development. Management under Alternative B would impact nearly 12 times the acres with a high likelihood of interest compared with Alternative A. The types of impacts are the same as those described under **Section 4.9.2** and **Section 4.9.3**; however, the magnitude of impacts under this alternative would increase since more acreage would be affected.

Of the 41 plans of operations and notices within the locatable mineral decision area for Alternative C, all would be in PHMA under this alternative and therefore within the area to be petitioned for withdrawal. The types of impacts are the same as those described under **Section 4.9.2**.

Impacts from applying the RDFs in **Appendix B** are the same as those described under Alternative B.

4.10.7 Alternative D

Impacts from Locatable Minerals Management

Impacts under Alternative D are the same as those described under Alternative A, except that additional measures to avoid or minimize adverse effects on GRSG and their habitat would be required for notices and plans of operations in all habitat types. Impacts from these additional measures would be highly variable, depending on their extent. If these measures resulted in the potential for these mineral resources not to be accessed or extracted, an impact on the potential discovery, development, and use of those resources would occur because the availability of mineral resource would decrease.

Impacts from applying the RDFs in **Appendix B** are the same as those described under Alternative B.

4.10.8 Alternative E

Impacts from Locatable Minerals Management
Impacts under Alternative E are the same as those described under Alternative A.

4.10.9 Alternative F

Impacts from Locatable Minerals Management
Impacts under Alternative F are the same as those described under Alternative B.

4.10.10 Proposed Plan

Impacts from Locatable Minerals Management
Under the Proposed Plan, 2,968,200 acres of federal locatable mineral estate (including all acres in the SFA) would be recommended for withdrawal from location under the General Mining Act of 1872. Combined with the additional 5,380,200 acres already withdrawn under Alternative A, locatable minerals would be unavailable on 8,348,400 acres, or 28 percent of the federal locatable mineral estate (twice the acreage as under Alternative A). Impacts on locatable minerals would increase compared with Alternative A in the manner described under **Nature and Type of Effects**.

Of the 56 plans of operations and notices within the locatable mineral decision area for the Proposed Plan, 7 (13 percent) would be within the SFA under this alternative and therefore within the area to be recommended for withdrawal. A valid existing rights determination would be required to determine whether a valuable discovery has been made. The types of impacts are the same as those described under **Nature and Type of Effects**.

4.11 Mineral Materials (Salables)

This section discusses impacts on mineral materials from proposed management actions of other resources and resource uses. Existing conditions concerning mineral materials are described in **Section 3.12**.

4.11.1 Methods and Assumptions

Analysis of impacts on mineral materials from this LUPA focuses on the impacts of proposed management actions to protect GRSG. These impacts may be direct or indirect. For example, a direct impact on mineral materials would result from closing an area to mineral material disposal. An indirect impact would result from removing a road, which would change the economic feasibility of developing a site. Additional actions or conditions that might cause direct or indirect impacts on mineral materials are described under *Indicators*, below.

Indicators
Indicators of impacts on mineral materials are as follows:

- Acres closed to mineral material disposal
- Acres subject to timing limitations
- Acres managed as ROW avoidance areas
- Acres managed as ROW exclusion areas
- Acres over which RDFs would be applied to mineral material disposals.
- Application of restoration requirements

Where information is available, consideration is given to the potential for mineral materials on lands closed to mineral material disposal. For example, an indicator of an impact on mineral materials is if there were substantial closures to mineral material disposal in areas with high occurrence of mineral materials.

Assumptions

The analysis includes the following assumptions:

- Management actions proposed in this LUPA would apply to mineral material disposal activity where the BLM or Forest Service manages the surface over federal mineral material estate as well as where federal mineral material estate lies beneath private or state surface (split-estate).
- Mineral material development trends described in **Section 3.12**, Mineral Resources, are assumed to continue for the life of the analysis.
- Historical patterns of mineral material development in the planning area are used to assess the level of mineral material potential throughout the planning area. Areas with a high level of historical development are considered to have high potential for mineral materials. There is higher demand in more populated areas.

4.11.2 Nature and Type of Effects

In order to describe the effects of imposing GRSG management actions on mineral materials disposal, the above indicators were evaluated for each alternative. Each of these factors is considered to be an impediment to disposal of mineral materials, to varying degrees. In general, an alternative with greater acreages of such restrictions is considered to have a greater impact on disposals of mineral materials than an alternative with fewer acres of such restrictions, especially in populated areas where material sources are scarce. Mineral material disposal by the BLM and Forest Service is discretionary.

Closing areas to mineral material disposal and closing community pits would directly impact the public, commercial operators, and county highway districts by removing the mineral material source from availability. This can be a serious problem in some Idaho counties that are covered by vast expanses of volcanic rock, with few sand and gravel occurrences. Highway districts may need to seek out sites on private lands, which may not offer materials free of charge, as the BLM and Forest Service do. This could result in higher haul costs,

higher road maintenance costs, and poorer road conditions. In addition, closing areas could increase trespassing.

Applying TLs could delay extraction of mineral material resources. County road districts would be required to schedule their projects around the TL, which could result in the need to stockpile materials off-site and handle materials twice, thereby increasing costs.

Implementing management for the following resources would have negligible or no impact on mineral materials, therefore they are not discussed in detail: travel and transportation management, recreation, range management, solid minerals, fire and fuels management, habitat restoration and vegetation management, and special designations.

Table 4-82, Mineral Materials by Alternative, shows the number of acres open or closed to mineral materials disposal in the decision area under each alternative.

Table 4-82
Mineral Materials by Alternative

Occurrence	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
Closed to disposal (acres)	10,707,600	18,589,300	21,174,000	13,211,100	10,707,600	18,589,300	15,529,000
Open to disposal (acres)	17,137,300	9,255,600	6,670,900	14,633,800	17,137,300	9,255,600	12,315,900

Source: BLM GIS 2015

A discussion of the impacts on mineral materials from management actions applicable to federal mineral material estate in the decision area under each alternative is below.

4.11.3 Alternative A

Impacts from Mineral Materials Management

Approximately 17,137,300 acres (62 percent) of federal mineral material estate within the decision area would remain open to mineral material disposal under Alternative A. Approximately 10,707,600 acres (38 percent) of federal mineral material estate within the decision area would remain closed to mineral material disposal. Impacts of these closures would be the same type as those described under **Section 4.10.2**.

Management under Alternative A would continue to require reclamation of mineral material pits in accordance with developers' pit development plans.

4.11.4 Alternative B

Impacts from Mineral Materials Management

Under Alternative B, approximately 18,589,300 acres (67 percent) of federal mineral material estate in the decision area (including all PHMA) would be closed to mineral material disposal. The types of impacts from these closures are the same as those discussed under **Section 4.10.2**. Because 74 percent more acres of federal mineral material estate would be closed under Alternative B compared with Alternative A, the magnitude of these impacts would increase.

Management of mineral materials on federal mineral estate outside of PHMA would be the same as that under Alternative A.

4.11.5 Alternative C

Impacts from Mineral Materials Management

Under Alternative C, approximately 21,174,000 acres (76 percent) of federal mineral material estate in the decision area, including all GRSG habitat, would be closed to mineral material disposal. The types of impacts from these closures are the same as those discussed under **Section 4.10.2**. Because twice as many acres of federal mineral material estate with mineral material occurrence would be closed under Alternative C compared with Alternative A, the magnitude of these impacts would increase.

4.11.6 Alternative D

Impacts from Mineral Materials Management

Under Alternative D, areas within 1.86 miles (3 km) of occupied leks would be closed to mineral materials disposal. These closures, in addition to existing closures, would result in approximately 13,211,100 acres (47 percent) of federal mineral material estate in the decision area, being closed to mineral material disposal. The types of impacts from these closures are the same as those discussed under **Section 4.10.2**. Because 23 percent more acres of federal mineral material estate with mineral material occurrence would be closed under Alternative C than under Alternative A, the magnitude of these impacts would increase.

All other federal mineral material estate in GRSG habitat would be subject to TLs, TLs would also apply to the 144 existing community pits within PHMA and IHMA (70 percent) of existing community pits in GRSG habitat. All of these TLs would impact mineral materials as described under **Section 4.10.2**. Because TLs would not be applied under Alternative A, impacts on mineral materials would increase under Alternative D.

4.11.7 Alternative E

Impacts from Mineral Materials Management

Under Alternative E, mineral materials management would differ between portions of the decision area in Idaho and Montana and portions in Utah.

Management of mineral materials within Idaho and Southwestern Montana would be the same as that under Alternative A with the same impacts.

Within Utah, mineral material operations within PHMA would be subject to TLs and other restrictions, which would limit mineral material development, as described under **Section 4.10.2**.

Allocations in the mineral material decision area would be the same as those under Alternative A. Impacts on mineral materials would increase compared to Alternative A in Utah due to the restrictions that would be placed on mineral material activities there.

4.11.8 Alternative F

Impacts from Mineral Materials Management

Mineral materials management under Alternative F would be the same as that under Alternative B with the same impacts.

4.11.9 Proposed Plan

Impacts from Mineral Materials Management

Under the Proposed Plan, 15,529,000 acres (56 percent) of federal mineral material estate in the decision area (including all PHMA) would be closed to mineral material disposal. The types of impacts from these closures are the same as those discussed under Nature and Types of Effects, **Section 4.10.2**. Impacts would be mitigated in the Montana portion of the decision area because new free use permits would still be allowed and existing pits would be able to expand. Because 45 percent more acres of federal mineral material estate would be closed under the Proposed Plan compared with Alternative A, the magnitude of these impacts would increase.

Approximately 3,079,100 acres (11 percent) of federal mineral material estate in the decision area (including all IHMA) would be open to mineral material disposal but only if the Anthropogenic Disturbance Development and Criteria (AD-4) were satisfied (including the requirement that the project would not exceed the 3 percent disturbance threshold). Mineral material activities in IHMA and GHMA would also be subject to RDFs, buffers, and seasonal timing restrictions. The types of impacts from these limitations are the same as those discussed under **Section 4.10.2**. Because these types of restrictions would not be applied under Alternative A, impacts on mineral material development from the restrictions would increase under the Proposed Plan.

Mineral material sales from the 47 existing community pits in GRSG habitat would be subject to timing restrictions. As described in **Section 4.10.2**, these timing restrictions could impact some operations and therefore reduce overall sales of federal materials in the planning area.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

Under the Proposed Plan, anthropogenic disturbance, including mineral material development, would be limited to 3 percent of nesting and wintering habitat within PHMA and IHMA within a Conservation Area (i.e., BSUs). In BSUs where the 3 percent cap is already exceeded, new development of federal mineral material resources would be prohibited until enough habitat was restored to maintain the area under the threshold. Development of federal mineral material resources that would result in exceedance of the 3 percent cap in a BSU would also be prohibited. This cap could potentially impact activities on 3,079,100 acres of federal mineral material estate in IHMA. The 15,529,000 acres that would be closed to mineral material disposal under Alternative G would not be impacted by the disturbance cap because no new mineral material development could occur in the closed areas.

4.12 Nonenergy Leasable Minerals

This section discusses impacts on nonenergy solid leasable minerals from proposed management actions for resources and resource uses. Specifically, this section describes impacts on phosphate, the notable nonenergy leasable mineral within the planning area. Existing conditions concerning phosphate are described in **Section 3.12**.

4.12.1 Methods and Assumptions

Analysis of impacts on nonenergy solid leasable minerals from this LUPA focuses on the impacts of proposed management actions to protect GRSG. These impacts may be direct or indirect. For example, a direct impact on nonenergy solid leasable minerals would result from closing an area to leasing. An indirect impact would result from removing a road, which would change the economic feasibility of developing a site. Additional actions or conditions that might cause direct or indirect impacts on nonenergy solid leasable minerals are described under *Indicators*, below.

Indicators

Indicators of impacts on nonenergy solid leasable minerals are as follows:

- Acres of unleased KPLAs proposed to be closed to nonenergy solid mineral leasing
- Acres over which RDFs would be applied when activities are proposed on existing unmined phosphate leases

Where information is available, consideration is given to the potential for nonenergy solid leasable minerals on lands closed to leasing. In the planning area, the only nonenergy solid leasable mineral commodity of any significance is phosphate. The USGS spent many years sampling and testing the phosphate resource to determine the mineral potential of federal lands in southeast Idaho. KPLAs were designated in high potential areas and were offered for lease competitively. Therefore, unmined phosphate leases have the highest potential for development, while unleased KPLAs have the next highest potential. Areas of southeast Idaho outside of KPLAs have the lowest potential. Unmined phosphate leases have valid

existing rights and cannot be closed to development. An indicator of an impact on nonenergy solid leasable minerals is if there were substantial closures to nonenergy solid mineral leasing in areas with high potential for nonenergy solid mineral development, such as unleased KPLAs.

Assumptions
The analysis includes the following assumptions:

- Management actions proposed in this LUPA would apply to nonenergy leasable mineral activity, where the BLM and Forest Service manage the surface over federal nonenergy leasable mineral estate as well as where federal nonenergy leasable mineral estate lies beneath private or state surface (split-estate).
- Unmined phosphate leases have the highest potential for nonenergy leasable mineral development in the decision area. Unleased KPLAs have a moderate potential for development, and lands outside KPLAs have a low potential for development. Most of the planning area has no potential for development because the rock formation that has high amounts of phosphate resource, designated the Phosphoria Formation, does not exist in those areas.
- Demand for phosphate resources in the Pocatello Field Office is expected to remain high, as it has for the past 60 to 100 years. As discussed in **Section 3.12**, Mineral Resources, significant phosphate resources exist in the Pocatello Field Office, within the planning area, with 86 active phosphate leases. There are no phosphate leases in PHMA and GHMA; there is one phosphate lease (65 acres) in IHMA. There are 10 leases surrounded by GHMA. No development is planned on these leases for the next 5 to 10 years.

4.12.2 Nature and Type of Effects

Closing an area to nonenergy solid mineral leasing would directly impact the nonenergy solid leasable mineral program by removing the opportunity afforded US citizens by the Mineral Leasing Act to lease and develop mineral resources in those areas. Mining companies seeking leases may be required to exploit private lands if those lands are available and if similar geologic resources exist, or the opportunity for discovery may be lost altogether if such conditions are unique to the federal lands. Closures would have the greatest impact on unleased areas in KPLAs because these areas have the greatest potential to be nominated for lease during the life of this LUPA. Closing lands to leasing in KPLAs may also result in a loss of royalties to the federal, state, and county governments from phosphate development. Closures of areas outside KPLAs would likely have less impact, as these areas have lower potential for discovery and development.

Application of RDFs, including such standards as noise restrictions, height limitations on structures, design requirements, water development standards, remote monitoring requirements, and reclamation standards, would place additional requirements on phosphate exploration and initial mine development. These requirements are not practical once mining begins; at that time, compensatory mitigation would be necessary. These restrictions may

increase the cost of phosphate mining in the decision area. However, the BLM would not apply restrictions so onerous that they would eliminate a reasonable opportunity to develop an existing lease.

Implementing management for the following resources would have negligible or no impact on nonenergy solid leasable minerals; therefore, they are not discussed in detail: GRSG, lands and realty, habitat restoration and vegetation, invasive species, wildland fire, locatable minerals, salable minerals, fluid minerals, recreation and visitor services, livestock grazing, and special designations.

Table 4-83 shows the number of acres open or closed to nonenergy leasable mineral prospecting and leasing as well as restrictions on unmined phosphate leases in the decision area under each alternative.

Table 4-83
Nonenergy Leasable Minerals by Alternative

Management	Alternative						
	A	B	C	D	E	F	Proposed Plan
Open to prospecting and leasing (acres)	15,925,600	8,557,600	6,095,300	8,556,500	15,925,600	8,557,600	11,454,500
Unleased KPLAs open	*14,500*	*14,000*	*13,500*	*14,000*	*14,500*	*14,000*	*14,500*
Closed to prospecting and leasing (acres)	11,799,500	19,167,400	21,629,700	19,168,500	11,799,500	19,167,400	16,270,500
Unleased KPLAs closed	*4,870*	*5,350*	*5,870*	*4,870*	*4,870*	*5,350*	*4,870*
Acres of unmined leases subject to GRSG RDFs (acres)	0	1,340	5,730	6,510	0	1,340	70

Source: BLM GIS 2015

Below, by alternative, is a discussion of the impacts on nonenergy leasable minerals from management actions applicable to federal nonenergy leasable mineral estate in the decision area.

4.12.3 Alternative A

Impacts from Nonenergy Solid Leasable Minerals Management

Under Alternative A, 15,925,600 acres or 57 percent of federal nonenergy solid leasable mineral estate in the nonenergy solid leasable mineral decision area, would remain open to leasing consideration, and 11,799,500 acres or 43 percent, would remain closed to prospecting and leasing. These closures would have the same types of impacts as described under **Section 4.11.2**.

Less than one percent of the acres closed to leasing would be unleased KPLAs (**Table 4-83**, Nonenergy Leasable Minerals by Alternative).

Under Alternative A, 4,870 acres (25 percent) of unleased federal mineral estate within KPLAs in the nonenergy solid leasable mineral decision area would remain closed to nonenergy leasable mineral prospecting and leasing. The impacts of these closures would be the same type as those described under **Section 4.11.2**. The remaining 15,320 acres (80 percent) of federal mineral estate within KPLAs in the nonenergy solid leasable mineral decision area would remain open to nonenergy leasable mineral prospecting and leasing. Impacts of these stipulations would be the same type as those described under **Section 4.11.2**.

Existing federal nonenergy leasable mineral leases in the decision area would continue to be subject to any stipulations or BMPs contained in those leases. Application of BMPs could alter how mineral resources are accessed and extracted and result in the use of different technology than would otherwise have been used.

4.12.4 Alternative B

Impacts from Nonenergy Solid Leasable Minerals Management

Under Alternative B, 19,167,400 acres, or 69 percent of the federal nonenergy solid leasable mineral estate decision area (including all federal nonenergy solid leasable mineral estate in PHMA), would be closed to prospecting and leasing. Management under this alternative would close 20 percent more federal nonenergy solid leasable mineral estate to nonenergy leasable mineral prospecting and leasing than management under Alternative A. New leases to expand existing mines for phosphate would not be permitted in areas managed as closed. Closing areas to nonenergy mineral prospecting would result in the same type of impacts as described under **Section 4.11.2**. Approximately 8,557,600 acres (31 percent) of federal nonenergy leasable mineral estate in the decision area would remain open subject to standard terms and conditions.

Less than one percent of the acres closed to leasing would be within KPLAs (**Table 4-83**, Nonenergy Leasable Minerals by Alternative).

Under Alternative B, 5,350 acres (28 percent) of unleased federal mineral estate within KPLAs in the nonenergy solid leasable mineral decision area would be closed to nonenergy leasable mineral prospecting and leasing —a 10-percent increase compared with Alternative A. The impacts of these closures would be the same type as those described under **Section 4.11.2**. The remaining 14,000 acres (72 percent) of unleased federal mineral estate within KPLAs in the nonenergy solid leasable mineral decision area would be open to nonenergy leasable mineral prospecting and leasing. Because the number of unleased acres within KPLAs that are closed would increase compared with Alternative A, impacts on nonenergy solid leasable minerals would increase.

Under Alternative B, a disturbance cap of 3 percent of PHMA would be applied to all human disturbances, including oil and gas development. In PHMA where the 3 percent cap is already exceeded, no new oil and gas leases would be issued until habitat were restored to a point that acreage of human disturbance were below the 3 percent cap. However, because

all federal mineral estate in PHMA would be closed to new fluid mineral leasing, new fluid mineral leases would not be impacted by the disturbance cap. Valid existing lease rights would be honored, but mitigation measures may be required for development in the areas that exceed the 3 percent disturbance cap.

Approximately 1,340 acres of existing unmined federal nonenergy leasable mineral leases in PHMA would be subject to RDFs. This would limit surface disturbance, vehicle use, siting, and design of mineral development operations, in addition to imposing reclamation requirements. Application of RDFs would have the types of impacts described under **Section 4.11.2**. Because these RDFs would not be applied under Alternative A, impacts would increase under Alternative B.

4.12.5 Alternative C

Impacts from Nonenergy Solid Leasable Minerals Management

Impacts under Alternative C are the same as those described under Alternative B, except that more acres would be affected by closures (21,629,700 acres, or 78 percent of the nonenergy leasables decision area). As a result, the magnitude of impacts under this alternative would increase.

Less than one percent of the acres closed to leasing would be within KPLAs (**Table 4-83**, Nonenergy Leasable Minerals by Alternative).

Under Alternative C, 5,870 acres (30 percent) of unleased federal mineral estate within KPLAs in the nonenergy solid leasable mineral decision area would be closed to nonenergy leasable mineral prospecting and leasing —a 20-percent increase compared with Alternative A. The impacts of these closures would be the same type as those described under **Section 4.11.2**. Because the number of unleased acres within KPLAs that are closed would increase compared with Alternative A, impacts on nonenergy solid leasable minerals would increase.

Approximately 5,730 acres of existing unmined federal nonenergy leasable mineral leases in PHMA and GHMA would be subject to RDFs. This would limit surface disturbance, vehicle use, siting, and design of mineral development operations, in addition to imposing reclamation requirements. Application of RDFs would have the types of impacts described under **Section 4.11.2**. Because these RDFs would not be applied under Alternative A, impacts would increase under Alternative C.

4.12.6 Alternative D

Impacts from Nonenergy Solid Leasable Minerals Management

Under Alternative D, 11,799,500 acres, or 42 percent of the federal nonenergy leasable mineral estate decision area (including all federal nonenergy leasable mineral estate in PHMA and IHMA), would be closed to prospecting and leasing — the same amount of acres closed as Alternative A. An additional 7,369,000 acres (26 percent) would be closed except fringe leases and modifications. Impacts of this limited closure would be similar to those described under **Section 4.11.2** except that impacts would increase compared with Alternative A.

Closing areas to nonenergy mineral prospecting and leasing would result in the same type of impacts as described under **Section 4.11.2**; however, because more acres would be closed under Alternative D, impacts would increase compared with Alternative A. Impacts would be mitigated because fringe acreage leases and lease modifications would be allowed. Approximately 8,556,600 acres (31 percent) of federal nonenergy leasable mineral estate in the decision area would remain open subject to standard terms and conditions.

Less than one percent of the acres closed to leasing would be within KPLAs (**Table 4-83**, Nonenergy Leasable Minerals by Alternative).

Under Alternative D, 4,870 acres (25 percent) of unleased federal mineral estate within KPLAs in the nonenergy solid leasable mineral decision area would be closed to nonenergy leasable mineral prospecting and leasing under Alternative D. An additional 490 acres (3 percent) would be closed except for fringe leases and modifications. The impacts of these closures would be the same type as those described under **Section 4.11.2**. The remaining 14,000 acres (72 percent) of unleased federal mineral estate within KPLAs in the nonenergy solid leasable mineral decision area would be open to nonenergy leasable mineral prospecting and leasing. Because the number of unleased acres within KPLAs that are closed would slightly increase compared with Alternative A, impacts on nonenergy solid leasable minerals would increase.

Approximately 6,510 acres of existing unmined federal nonenergy leasable mineral leases in PHMA and GHMA would be subject to RDFs. Applying BMPs as COAs on any new mine plan and requiring restoration of habitat or off-site mitigation in areas where on-site restoration is not feasible could alter how mineral resources are accessed and extracted. It also could result in the use of different technology than would otherwise have been used. Because these RDFs would not be applied under Alternative A, impacts would increase under Alternative D.

4.12.7 Alternative E

Impacts from Nonenergy Solid Leasable Minerals Management

Impacts from nonenergy solid mineral leasing allocations under Alternative E would be the same as those impacts described under Alternative A (Error! Reference source not found.**Table 4-83**). Closing areas to nonenergy mineral prospecting and leasing would result in the same type of impacts as described under **Section 4.11.2**. Lands open to leasing would be subject to several stipulations, which include prohibiting permanent structures within occupied leks, prohibiting tall structures within one mile (1.6 km) of leks, and restrictions on noise disturbances. Stipulations would restrict the ability of mineral resources to be developed or extracted and would increase impacts on nonenergy solid leasable minerals compared with Alternative A .

4.12.8 Alternative F

Impacts from Nonenergy Solid Leasable Minerals Management

Management under Alternative F would be similar to that under Alternative B except that the BLM would close an additional 30,200 acres in PHMA under Alternative F. However, because none of these additional acres would be within KPLAs, impacts of closures under Alternative F would be the same as those described under Alternative B.

As under Alternative B, a disturbance cap of 3 percent of PHMA would be applied under Alternative F to all human disturbances, including oil and gas development. Impacts would be similar to those under Alternative B except that, because fire would be included in the disturbance cap, the cap (and subsequent restrictions on existing leases) is more likely to be exceeded. Therefore, overall impacts on nonenergy solid leasable minerals would increase under Alternative F.

4.12.9 Proposed Plan

Impacts from Nonenergy Solid Leasable Minerals Management

Under the Proposed Plan, 16,270,500 acres, or 59 percent of the federal nonenergy leasable mineral estate decision area (including all federal nonenergy leasable mineral estate in PHMA outside KPLAs) would be closed to prospecting and leasing—38 percent more acres closed compared with Alternative A. Fringe leases and modifications to existing leases would be allowed in PHMA to satisfy valid existing rights. Impacts of this closure would be similar to those described under **Section 4.11.2** except that impacts would increase compared with Alternative A. Approximately 2,899,800 acres, or 10 percent of federal nonenergy solid leasable mineral estate in the decision area (including all federal nonenergy leasable mineral estate in IHMA outside KPLAs), would be open to leasing consideration but only if the Anthropogenic Disturbance Development and Criteria (AD-4) were satisfied (including the requirement that the project would not exceed the 3 percent disturbance threshold). Development on these acres would also be subject to RDFs, BMPs, and buffers for exploration and initial mine development, and compensatory mitigation once mining commences. Because development of nonenergy leasable minerals in these areas would be more restricted than under Alternative A, impacts described under **Section 4.11.2** would increase under the Proposed Plan.

Development on 2,729,500 acres of federal nonenergy leasable minerals within GHMA would also be subject to RDFs, BMPs, and buffers on exploration and initial mine development. These limitations could increase costs of federal nonenergy leasable mineral development in the planning area as described under **Section 4.11.2**.

Because KPLAs would remain open to nonenergy solid mineral leasing, impacts on federal nonenergy solid leasable mineral development would be mitigated. The areas considered to have moderate potential in the decision area would not be constrained.

RDFs would be applied to the 1 federal phosphate lease on 70 acres in IHMA with impacts similar to those described under Alternative D. These restrictions may increase the cost of phosphate mining in the decision area. However, the BLM would not apply restrictions so onerous that they would eliminate reasonable opportunity to develop an existing lease.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

Under the Proposed Plan, anthropogenic disturbance, including nonenergy leasable mineral development, would be limited to 3 percent of nesting and wintering habitat on new leases and prospecting permits within IHMA within a Conservation Area (i.e., BSUs). In BSUs where the 3 percent cap is already exceeded, new parcels would not be offered for lease until enough habitat was restored to maintain the area under the threshold. New leases of federal nonenergy leasable mineral resources that would result in exceedance of the 3 percent cap in a BSU would also be prohibited. Valid existing rights would be honored, but compensatory mitigation requirements could be applied. This cap could potentially impact activities on 2,900,100 acres of unleased federal nonenergy leasable mineral estate in IHMA, including 400 unleased acres within KPLAs. Impacts would be greatest where these caps limited development in unleased portions of KPLAs because these areas have the highest potential for nonenergy leasable mineral development. The 16,270,500 acres that would be closed to nonenergy solid mineral leasing under the Proposed Plan would not be impacted by the disturbance cap because no new nonenergy leasable mineral development could occur in the closed areas.

4.13 Special Designations

4.13.1 ACECs and Zoological Areas

This section discusses impacts on ACECs and Zoological Areas from proposed management actions of other resources and resource uses. Existing conditions concerning ACECs are described in **Section 3.13**, Special Designations. See **Appendix S**, BLM Areas of Critical Environmental Concern Evaluation and Forest Service Zoological Areas, for the evaluation of relevant and important values for proposed ACECs. There are no existing Forest Service Zoological Areas in the sub-region. As stated previously, it is anticipated that GRSG management would have beneficial or negligible effects on other special designations areas (e.g., National Historic Trails, Wild and Scenic Rivers, Wilderness Areas, Wilderness Study Areas, National Monuments, and National Conservation Areas). The BLM manual for each NLCS unit type will be adhered to during any site-specific analysis, and the BLM would manage them to safeguard the reasons for which they were designated. Due to this, the analysis of impacts on special designations focuses on ACECs and Zoological Areas.

4.13.2 Methods and Assumptions

Direct impacts on ACECs are considered to be those that either impair or enhance the relevant and important values for which the ACEC was proposed for designation. As such, this analysis focuses on relevance and importance criteria for each potential ACEC. There are no relevance and importance criteria for Forest Service Zoological Areas. It also focuses

on impacts on these values from either the special management derived from ACEC or Zoological Areas designation or, under alternatives where an ACEC or Zoological Areas is not proposed for designation, the management actions for other resources. All impacts discussed are direct, though some may not occur immediately after implementation of management actions.

Indicators

Impacts on ACECs would occur from management actions that protect or impair relevant and important ACEC values, including "important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes" (BLM Manual 1613 – Areas of Critical Environmental Concern). As such, indicators of impacts are allocations for surface-disturbing activities within existing or potential ACECs that could affect the relevant and important values for which the ACEC was designated.

Assumptions

The analysis includes the following assumptions:

- Management of existing ACECs was determined in the applicable LUPs to be adequate to support the relevant and important values at the time of their designation. Impacts on these ACECs are not further discussed because the BLM would continue to manage these ACECs to protect their relevant and important values. Management to protect GRSG under the various alternatives could provide additional protections for existing ACECs and, at a minimum, would provide complementary management.
- Although management actions for most resources and resource uses have application throughout the decision area, ACEC and Zoological Areas management prescriptions apply only to those lands within each specific ACEC or Zoological Areas.
- Permitted activities would not be allowed to impair the relevant and important values for which the ACECs are designated. The exception is locatable minerals; until withdrawn from mineral entry, a mining claim can be filed, and subsequent mining activities could have an impact. However, measures would have to be identified in a mine plan to mitigate unnecessary or undue degradation.
- ACEC designation provides protection and focused management of relevant values beyond that provided through general management of the relevant and important values elsewhere in the decision area.
- Any designated ACEC that falls within a WSA would be managed according to BLM Manual 6330, Management of Wilderness Study Areas, unless the ACEC management is more restrictive. Because activities within WSAs must meet the nonimpairment criterion, which generally restricts new surface disturbance, a WSA would generally protect relevant and important values. Also, it would have a beneficial effect on overlapping designated and undesignated ACECs. If Congress were to release a WSA from further consideration, the special

management in designated ACECs would be designed to protect and enhance the relevant and important values.

4.13.3 Nature and Type of Effects

In general, management actions that protect resources—such as surface-disturbance restrictions, management for desired habitats, travel restrictions and closures, and recreation restrictions—would help maintain and improve the important and relevant values within ACECs. Management actions that create the potential for resource degradation—such as mineral development, livestock grazing, and infrastructure development—could impact the relevant and important values for which an ACEC is designated. Recreation and travel within ACECs could also impact their values. Limiting OHV travel to existing routes and trails would reduce surface disturbance and potentially reduce disturbing the values for which the ACECs were designated.

Implementing management for mineral split-estate would have negligible or no impact on GRSG, so it is not discussed in detail.

Wildland Fire

Depending on their extent, location, and severity, wildfires could cause short- and long-term damage to ACEC values. Emergency stabilization and restoration would be applied to minimize impacts where special values are at risk. If these techniques are successful, wildfires could also cause long-term improvement in ACEC values by maintaining natural vegetation ecosystem cycles.

Lands and Realty

Managing ACECs as ROW exclusion or avoidance areas would protect relevant and important values by reducing (for avoidance areas) or eliminating (for exclusion areas) impacts from development. These impacts would require a ROW permit, including utilities, access roads, and renewable energy projects. Impacts from ROW development on ACECs are compaction and erosion.

Mineral Resources

Energy and mineral development could impact ACEC values by increasing soil erosion potential and removing or disrupting unique vegetation. Where GRSG habitat exists, energy and mineral development could degrade and fragment habitat. Construction, operation, and maintenance could disturb GRSG populations. Closing ACECs to fluid minerals leasing would help protect relevant and important values by eliminating the surface disturbance associated with such development.

Livestock Grazing

Livestock grazing could impact ACEC values by increasing soil erosion potential and reducing understory plant species, such as forbs and grasses. Closing ACECs to livestock grazing would help protect relevant and important values by eliminating soil and vegetation disturbance associated with grazing, but it could also increase the risk of fire due to increased fuel loads.

Special Designations

Special status species management would prevent degradation of, and could improve, relevant and important values where an ACEC is designated to protect such values. New ACECs designated under Alternatives C and F would protect GRSG. Refer to **Section 4.2**, Special Status Species—Greater Sage-Grouse, for a discussion of impacts from these ACECs on GRSG habitat. None of the existing ACECs in the planning area are designated to protect GRSG but would experience indirect protections from management actions in other resource programs aimed at GRSG conservation.

Impacts Common to All Alternatives

Impacts on the relevant and important values of ACECs would mainly be from surface-disturbing activities that cause direct damage to the values, introduce modifications to the landscape that affect the area's scenic quality or historical or cultural context, or that result in erosion, sedimentation, or increased runoff. All of the action alternatives would generally result in greater restrictions, compared to the continuation of existing management under Alternative A. Adopting more restrictive management of surface-disturbing activities under the action alternatives would be complementary to the protection of the relevant and important values of the existing ACECs. Therefore, in general, the action alternatives would enhance the relevant and important values of the existing ACECs to a greater extent than Alternative A.

Table 4-84, Comparison of ACEC-Affecting Management Actions by Alternative provides a quantitative overview of how the ACEC-affecting management actions under an applicable resource program would vary across alternatives.

Table 4-85 displays the acres of the proposed ACECs within each habitat type under the different alternatives. Different management would apply to the different areas, as described in **Chapter 2**, impacts of which are discussed in **Section 4.2**, Special Status Species—Greater Sage-Grouse, and **Section 4.3**, Vegetation (Including Noxious Weeds; Riparian and Wetlands).

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Table 4-84
Comparison of ACEC-Affecting Management Actions by Alternative

Management Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F1	Alternative F2	Proposed Plan
ACEC Acres Overlain with Management Actions								
ROW Exclusion	**294,300**	**417,800**	**3,145,400**	**294,300**	**295,600**	**8,270,200**	**2,009,400**	**304,500**
BLM	294,300	417,800	3,106,700	294,300	295,600	7,308,200	1,785,700	304,500
Forest Service	*N/A*	*N/A*	38,700	*N/A*	*N/A*	962,100	223,700	N/A
ROW Avoidance	**67,300**	**45,800**	**0**	**174,800**	**133,500**	**45,900**	**45,900**	**141,200**
BLM	67,300	45,800	0	174,800	133,500	45,900	45,900	141,200
Forest Service	*N/A*	*N/A*	0	*N/A*	*N/A*	0	*N/A*	*N/A*
Open to Livestock ing	**394,700**	**389,200**	**0**	**394,700**	**395,700**	**8,154,900**	**1,949,800**	**394,100**
BLM	394,700	389,200	0	394,700	395,700	7,226,500	1,735,400	394,100
Forest Service	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	928,400	214,400	*N/A*
Closed to Livestock Grazing	**74,500**	**74,500**	**3,157,500**	**74,500**	**74,500**	**203,800**	**120,100**	**75,100**
BLM	74,500	74,500	3,118,700	74,500	74,500	170,300	110,800	75,100
Forest Service	*N/A*	*N/A*	38,700	*N/A*	*N/A*	33,500	9,300	*N/A*
Closed to Oil and Gas Leasing	**253,900**	**401,900**	**3,301,900**	**403,100**	**253,200**	**9,167,700**	**2,076,000**	**257,400**
BLM	253,900	401,900	3,301,900	403,100	253,200	9,167,700	2,076,000	257,400
Forest Service	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
NSO	**116,200**	**25,900**	**0**	**27,700**	**183,700**	**26,100**	**70,100**	**174,400**
BLM	116,200	25,900	0	27,700	183,700	26,100	70,100	174,400
Forest Service	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
CSU	**1,940**	**1,580**	**0**	**1,680**	**1,940**	**1,580**	**1,580**	**26,600**
BLM	1,940	1,580	0	1,680	1,940	1,580	1,580	26,600
Forest Service	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
TL	**52,600**	**13,600**	**0**	**26,200**	**10,200**	**13,600**	**13,600**	**0**
BLM	52,600	13,600	0	26,200	10,200	13,600	13,600	0
Forest Service	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*

Table 4-84
Comparison of ACEC-Affecting Management Actions by Alternative

Management Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F1	Alternative F2	Proposed Plan
Recommended for Withdrawal from Locatable/Leasable Mineral Entry	**0**	**141,800**	**2,198,800**	**0**	**0**	**6,787,000**	**1,313,300**	**78,100**
BLM	0	141,800	2,198,800	0	0	5,918,800	1,313,300	78,100
Forest Service	N/A	N/A	N/A	N/A	N/A	868,200	N/A	N/A

Source: BLM GIS 2015

Table 4-85
Acres of Proposed ACECs within the Planning Area by Habitat Type and Alternative

Habitat	Alternative C	Alternative F1	Alternative F2
PHMA (acres)	2,655,000	6,929,600	1,379,100
GHMA (acres)[1]	N/A	0	0
RHMA (acres)[1]	N/A	0	0

Source: BLM GIS 2015
[1]There is no GHMA or RHMA that would be designated under Alternative C.

4.13.4 Alternative A

Under Alternative A, the BLM would continue managing the 59 existing Idaho and Montana ACECs containing 469,200 acres of occupied GRSG habitat to protect the identified relevant and important values. Current management would continue protecting those values. Sagebrush habitat is not identified as a relevant and important value in any of the existing ACECs.

4.13.5 Alternative B

No new ACECs would be designated. However, management protecting the 469,200 acres of occupied GRSG habitat within existing ACECs may provide indirect protection to the relevant and important values for which these ACECs were designated. Management actions that could impact ACECs include the management of areas as ROW avoidance and ROW exclusion, fire management, mineral development, travel management, and the management of areas as open or closed to livestock grazing. The ways in which these management actions could impact ACECs is described in **Nature and Types of Effects**.

4.13.6 Alternative C

Under Alternative C, 39 new BLM ACECs encompassing approximately 2.7 million acres of occupied GRSG habitat would be designated as sagebrush reserves for the relevant and important value of GRSG. Refer to **Section 4.2**, Special Status Species – Greater Sage-Grouse, for a discussion of impacts on GRSG habitat.

4.13.7 Alternative D

No new ACECs would be designated. Impacts are the same as those described under Alternative B.

4.13.8 Alternative E

No new ACECs would be designated. Impacts are the same as those described under Alternative B.

4.13.9 Alternative F

Under Alternative F, 17 or 18 new BLM ACECs and 12 new Forest Service GRSG Zoological Areas encompassing up to 6.9 million acres of occupied GRSG habitat would be designated as sagebrush reserves for the relevant and important value of GRSG. Refer to **Section 4.2**, Special Status Species – Greater Sage-Grouse, for a discussion of impacts on GRSG habitat.

4.13.10 Proposed Plan

Impacts on the relevant and important values of ACECs would mainly be from surface-disturbing activities that cause direct damage to the values, introduce modifications to the landscape that affect the area's scenic quality or historical or cultural context, or that result in erosion, sedimentation, or increased runoff. The Proposed Plan would generally result in greater restrictions compared to the continuation of existing management under Alternative A. Adopting more restrictive management of surface-disturbing activities under the Proposed Plan would be complementary to the protection of the relevant and important values of the existing ACECs. Therefore, in general, the Proposed Plan would enhance the relevant and important values of the existing ACECs to a greater extent than would Alternative A.

Impacts from Lands and Realty Management

Under the Proposed Plan, management actions that could impact ACECs include management of areas as ROW avoidance and ROW exclusion. As discussed in **Nature and Types of Effects**, managing areas as ROW avoidance and ROW exclusion would provide complementary management to adjacent and near-by ACECs. **Table 4-84** displays the difference in the amount of acres managed as ROW avoidance and exclusion by alternative. Under the Proposed Plan, 10,200 more acres are managed as ROW exclusion and 73,900 more acres are managed as ROW avoidance than under Alternative A. A greater number of acres managed as ROW avoidance and exclusion would likely result in a greater amount of incidental protection to ACECs.

Impacts from Habitat Restoration and Vegetation Management

Vegetation management to protect, enhance, and restore GRSG habitat would be prioritized under the Proposed Plan, and ACECs encompassing or adjacent to GRSG habitat could receive additional protection through this management. Vegetation management could create temporary disturbance to ACECs through surface-disturbing activities, but the BLM would manage all ACECs and special designations to safeguard the reasons for which they were designated. Therefore, vegetation management and habitat restoration could result in temporary disturbance to special designations but would not cause long-term damage,

Refer to **Section 4.2**, Special Status Species- Greater Sage-Grouse, for a discussion of impacts from special designation management on GRSG habitat.

Impacts from Wildland Fire Management

Wildland fire management could result in impacts on ACECs as described in **Nature and Types of Effects**. ACECs that encompass GRSG habitat could experience additional

protections under the Proposed Plan through fuels management and fire suppression management actions that prioritize the protection of GRSG and GRSG habitat.

Impacts from Leasable Fluid Minerals Management

More restrictions would be placed on mineral development under the Proposed Plan than would be under Alternative A. **Table 4-84** displays the differences in the amount of acres and types of restrictions on mineral development that would occur by alternative. Under the Proposed Plan, NSOs and CSUs are applied to more acres (174,400 and 26,600, respectively) than under Alternative A. Additionally, 3,500 more acres are closed to oil and gas leasing than under Alternative A. Under the Proposed Plan TLs are not applied to any acres, unlike under Alternative A where TLs are applied to 52,600 acres. The greater the number of acres experiencing restrictions on mineral development would likely result in a greater amount of incidental protection to ACECs.

Impacts from Travel and Transportation Management

Under the Proposed Plan OHV travel would be limited to existing roads, primitive roads, and trails. Additionally, areas adversely affected by OHVs would be closed to use until adverse effects are eliminated. These actions could result in indirect protections to ACECs that would not be present under Alternative A. Restrictions on travel would result in impacts described in **Nature and Types of Effects** and could result in additional protect to ACECs, particularly to ACECs that encompass or are adjacent to GRSG habitat.

Impacts from Livestock Grazing Management

More restrictions would be placed on livestock grazing under the Proposed Plan than would be under Alternative A. **Table 4-84** displays the number of acres that would be open and closed to livestock grazing by alternative. Under the Proposed Plan, 400 fewer acres would be closed to livestock grazing than would be under Alternative A. Closing acres of land to livestock grazing could result in the types of impacts described in *Nature and Type of Effects*. The Proposed Plan is likely to result in more indirect protections to ACECs than Alternative A, even though the Proposed Plan would have the same amount of active AUMs as Alternative A. This is because under the Proposed Plan additional provisions would be made to ensure livestock grazing is compatible with GRSG. Some of these provisions could result in additional protections to ACECs where ACECs overlap with or are adjacent to GRSG habitat.

Impacts from Special Designations Management

There are no decisions regarding special designations under the Proposed Plan. Current management of special designations under Alternative A would continue to protect the values for which existing ACECs were designated. Under the Proposed Plan, ACECs could receive additional protection through restrictions on resource uses, activities, and surface-disturbance put in place to protect GRSG and GRSG habitat. The ways in which these management actions could provide incidental protection to ACECs is described in **Nature and Types of Effects**.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

Under the Proposed Plan, adaptive management would use hard and soft population and habitat triggers to determine when to apply additional restrictions to various habitat areas. In the event a trigger is reached in a habitat area that is either in or adjacent to an ACEC, the ACEC could receive additional indirect protections from the increased restrictions on uses in the GRSG habitat.

Similarly, anthropogenic disturbance management would involve a strict increase in restrictions in the event the 3 percent human disturbance cap is reached within PHMA or IHMA. In the event a disturbance cap is reached for a habitat area in or adjacent to an ACEC, the ACEC could experience indirect protections from the restrictions on uses and surface-disturbing activities enacted by the anthropogenic disturbance management.

4.14 Lands with Wilderness Characteristics and Roadless Areas

This section discusses impacts on lands with wilderness characteristics from proposed management actions of other resources and resource uses. Existing conditions are described in **Section 3.20**, Lands with Wilderness Characteristics. Wilderness characteristics considered in this analysis are Roadless Areas of sufficient size, naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation and supplemental values. In the planning area, 390,800 acres on BLM-administered lands have been found to have wilderness characteristics. None of the 390,800 acres with wilderness characteristics specifically managed to protect those characteristics; however, management addressing other programs such as visual and cultural resources or recreation management may limit impacts on those characteristics. There are approximately 1,152,400 acres of Roadless Areas on National Forest System lands. All Roadless Areas experience some level of protection. Restrictions on activities such as road construction, tree cutting, and mineral development are applied to Roadless Areas in various degrees based on the management classification of the Roadless Area (36 CFR 294).

4.14.1 Methods and Assumptions

Indicators

Indicators of impacts on lands with wilderness characteristics are the management actions and allowable uses that would either protect or degrade the inventoried characteristics to a level at which the value of one or more wilderness characteristic would no longer be present within the specific area. The inventoried wilderness characteristics are Roadless Areas of sufficient size, naturalness, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and supplemental values, as described in **Section 3.20**, Wilderness Characteristics. Roadless Areas already experience some protections from Forest Service management, however, management actions that restrict uses in order to protect the GRSG would provide additional protections to Roadless Areas.

Assumptions

The analysis includes the following assumption:

- Some inventoried lands with wilderness characteristics have not yet been assessed in a LUP revision; therefore, no decisions have been made about whether to protect their wilderness characteristics. In this analysis, these lands with wilderness characteristics are treated like their wilderness characteristics are not protected to the same degree that congressionally designated wilderness areas would be protected and are discussed in this analysis. Lands with wilderness characteristics that are not managed only to exclusively protect those characteristics will simply be referred to as lands with wilderness characteristics throughout the remainder of the analysis in this section.

4.14.2 Nature and Type of Effects

Wilderness characteristics are primarily influenced by actions that impact the undeveloped nature of the area or activities that increase the sights and sounds of other visitors. Generally, actions that create surface disturbance degrade the natural characteristics of lands with wilderness characteristics, as well as the setting for experiences of solitude and primitive recreation. In addition, restrictions on dispersed recreation (e.g., prohibited campfires and camping permitted only in designated sites) diminish the opportunities for unconfined recreation.

Management actions that could impact an area's natural appearance are the presence or absence of roads and trails, use of OHVs along those roads and trails, fences and other improvements, nature and extent of landscape modifications, or other actions that result in or preclude surface-disturbing activities. All of these activities affect the presence or absence of human activity and, therefore, could affect an area's natural appearance. Prohibiting surface-disturbing activities and new developments within lands with wilderness characteristics would protect naturalness.

There could be indirect impacts from management of other resources that would enhance wilderness characteristics. Stipulations associated with special status species could indirectly improve the naturalness of lands with wilderness characteristics and help protect those characteristics. Management actions that protect resources would impact lands with wilderness characteristics by preserving or enhancing naturalness, as well as opportunities for solitude and primitive recreation. Roadless areas would also be impacted by surface-disturbing activities and allowable uses that decrease wilderness attributes on them. The nature and types of impacts on Roadless Areas would be similar to those on lands with wilderness characteristics; however, Roadless Areas would be less susceptible to such impacts due to the protections placed on them, based on their management classification. In particular, Roadless Areas would be less prone to impacts from road construction and reconstruction, timber removal, and mineral development. This is because they are protected specifically from these activities (36 CFR, Part 294).

Implementing management for mineral split-estate would have negligible or no impact on wilderness characteristics and Roadless Areas; therefore, it is not discussed in detail.

Vegetation Management and Habitat Protection

While vegetation treatments are implemented, both naturalness and solitude experienced by

recreationists could be reduced in the short term. After the treatment is over, solitude would be restored. Over the long term, naturalness would likely be enhanced by restoring natural vegetation structures and patterns.

Wildland Fire

Managing for wildfire could impact lands with wilderness characteristics. In areas where suppression is a priority, there is the potential for vegetation modification to prevent the spread of fires, potentially reducing the naturalness of appearance. Fire suppression, prescribed burns, and firebreaks could all have short-term impacts on wilderness characteristics by disturbing naturalness.

Lands and Realty

Permitted activities, such as constructing utility ROWs, involve the presence of equipment and personnel that could impact wilderness characteristics. Construction would reduce opportunities for solitude in the short term and could result in long-term impacts as well. ROW exclusions would prohibit all development of ROWs, which would likely protect wilderness characteristics.

Mineral Resources

Allowing any type of energy or mineral development, such as that for fluid, coal, nonenergy solid, locatable, and salable minerals, as well as renewable energy, would result in surface disturbance that would diminish the area's natural characteristic. Any new roads authorized for access to the development area could eliminate wilderness characteristics of the entire unit if the road were to bisect the unit so that it would no longer be considered a Roadless Area of adequate size. In addition, regular access to the lease area or mine site by developers would reduce the opportunities for solitude.

Recreation

Two other wilderness characteristics—outstanding opportunities for solitude and primitive unconfined types of recreation—are related to the human experience in an area. Visitors can have outstanding opportunities for solitude or for primitive unconfined recreation when the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone, or secluded from others; where the area is accessed by nonmotorized nonmechanized means; and where there are no or only minimally developed recreation facilities. High concentrations of recreation users (large group sizes or frequent group encounters) would decrease outstanding opportunities for solitude. Limiting visitor use only as necessary to prevent substantial degradation to wilderness characteristics (i.e., naturalness and opportunities for solitude) would protect opportunities for unconfined recreation.

Travel and Transportation

A significant increase in motorized and mechanized travel on designated routes would impact wilderness characteristics. By increasing sights and sounds of other people, opportunities for solitude would be reduced. Motorized and mechanized access would also reduce opportunities for primitive recreation. The existence of motorized and mechanized trails could reduce the natural appearance in the vicinity of the trails. Effects would be localized and might not be experienced in the unit as a whole.

Prohibiting motorized and mechanized use on lands with wilderness characteristics would protect wilderness characteristics by restricting activities that could impact natural appearance and opportunities for solitude and primitive and unconfined recreation. Exceptions to exclusions on motorized and mechanized vehicles could result in a short-term detraction from the natural character of the areas. These impacts would be uncommon and of short duration if they were to occur. On a more regular basis, motorized and mechanized use by established livestock grazing permittees would impact opportunities for solitude and naturalness of appearance.

Livestock Grazing

Impacts on lands with wilderness characteristics are possible from livestock grazing, particularly from new developments in these areas (e.g., water developments and fences), which could lessen the naturalness of appearance or limit unconfined recreation. Existing range improvements used for grazing, such as fences, stock trails, springs, and stock ponds, would continue to be maintained. Structures could diminish the naturalness characteristic of lands with wilderness characteristics. Maintenance of range improvements could result in short-term impacts on solitude and naturalness.

Special Designations

Where lands with wilderness characteristics overlap or are next to eligible or suitable Wild and Scenic River segments or ACECs, management of these other areas could also indirectly protect wilderness characteristics due to the measures proposed for the other areas. These protective measures would include complementary management objectives and could offer some indirect protection of wilderness characteristics for units managed primarily for other resource considerations.

4.14.3 Impacts on lands with Wilderness Characteristics Common to All Alternatives

The nature and type of impacts described below are common to all alternatives, but the context and intensity may vary by alternative.

Impacts from Travel and Transportation Management

Under all alternatives, approximately 4,310 acres of lands with wilderness characteristics would be closed to OHV travel (**Table 4-86**, Acres of Allocations Potentially Affecting Lands with Wilderness Characteristics and Roadless Areas). Under all alternatives other than Alternative A and Alternative D, which both would close 4,460 acres to OHV travel, no Roadless Areas would be closed to OHV travel. Because the difference between these numbers are small, differences in impacts would likely be negligible. Where OHV travel is closed or limited to existing roads, there would be indirect protection of wilderness characteristics. Restricting OHV travel would reduce the noise of human visitors and the disturbance caused by OHVs, which would enhance experiences of solitude and naturalness. Impacts from closing areas on OHV travel are the same under all alternatives.

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Table 4-86
Acres of Allocations Potentially Affecting Lands with Wilderness Characteristics and Roadless Areas

Management Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
Total Acres of All Types of Habitat, Excluding Nonhabitat							
ROW Exclusion	**190,700**	**901,700**	**1,429,500**	**190,700**	**152,900**	**901,700**	**156,300**
BLM	12,100	326,100	379,300	12,100	12,100	326,100	28,900
Forest Service	178,600	575,600	1,050,200	178,600	140,800	575,600	127,400
ROW Avoidance	**550,000**	**527,800**	**0**	**1,343,200**	**989,300**	**527,900**	**1,050,700**
BLM	35,700	53,100	0	369,500	274,000	53,300	344,800
Forest Service	514,300	474,700	0	973,800	715,400	474,700	705,900
Closed to Oil and Gas Leasing	**1,137,300**	**1,352,600**	**1,430,600**	**1,439,300**	**1,041,500**	**1,352,600**	**378,300**
BLM	8,130	325,200	385,200	310,200	8,140	325,200	3,640
Forest Service	1,129,200	1,027,400	1,045,300	1,129,100	1,033,400	1,027,400	374,700
NSO	**56,300**	**29,700**	**0**	**34,400**	**306,500**	**29,700**	**816,500**
BLM	38,300	11,800	0	16,500	288,500	11,800	342,800
Forest Service	17,900	17,900	0	17,900	18,000	17,900	473,700
CSU (Oil and Gas)	**0**	**0**	**0**	**10,900**	**0**	**0**	**71,800**
BLM	0	0	0	10,900	0	0	71,800
Forest Service	0	0	0	0	0	0	30
TL	**38,600**	**10,100**	**0**	**50,000**	**36,900**	**10,100**	**0**
BLM	38,600	10,100	0	50,000	36,900	10,100	0
Forest Service	0	0	0	30	0	0	0
Recreation Sites	**670**	**670**	**670**	**670**	**670**	**670**	**570**
BLM	670	670	670	670	670	670	570
Forest Service	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	
Closed to Livestock Grazing	**69,600**	**62,100**	**1,435,800**	**69,600**	**62,100**	**62,100**	**48,500**
BLM	560	560	385,600	560	560	560	580
Forest Service	69,000	61,500	1,050,200	69,000	61,500	61,500	47,900
Closed to OHV Travel	**8,770**	**4,310**	**4,310**	**8,770**	**4,310**	**4,310**	**4,470**
BLM	4,310	4,310	4,310	4,310	4,310	4,310	4,470
Forest Service	4,460	0	0	4,460	0	0	0
ACECs/Zoological Areas	**19,400**	**19,100**	**292,800**	**19,400**	**19,100**	**F1: 830,200** **F2: 197,300**	**18,900**

Table 4-86
Acres of Allocations Potentially Affecting Lands with Wilderness Characteristics and Roadless Areas

Management Action	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
BLM	19,400	19,100	260,000	19,400	19,100	F1: 334,100 F2: 120,500	18,900
Forest Service	N/A	N/A	32,767	N/A	N/A	F1: 496,100 F2: 76,900	N/A

Source: BLM GIS 2015

4.14.4 Alternative A

Management actions to protect other resources and special designation areas offer some protection of wilderness characteristics and Roadless Areas. Alternative A includes the fewest GRSG protections and is least restrictive of surface-disturbing activities that could alter the natural setting, as well as reduce opportunities for solitude or primitive recreation, of lands with wilderness characteristics. Therefore, wilderness characteristics are likely to be degraded under this alternative. Roadless Areas are also least likely to experience additional protections under this alternative.

Impacts from Lands and Realty Management

Under Alternative A, 12,100 acres of lands with wilderness characteristics are managed as ROW exclusion (**Table 4-86**) and 178,600 acres of Roadless Areas are managed as ROW exclusion. This provides indirect protection to wilderness characteristics (preserving naturalness and opportunities for solitude and primitive recreation) and Roadless Areas by prohibiting disturbance from transmission lines, roads, and other utility developments. Additionally, 35,700 acres of lands with wilderness characteristics and 514,300 acres of Roadless Areas are managed as ROW avoidance areas, which would have similar effects on lands with wilderness characteristics and Roadless Areas as ROW exclusion.

Impacts from Leased Fluid Minerals Management

Under Alternative A, 8,130 acres of lands with wilderness characteristics and 1,129,200 acres of Roadless Areas are closed to oil and gas leasing. Closing acres to fluid minerals leasing could protect wilderness characteristics by prohibiting development and infrastructure related to those actions, subject to valid existing rights However, interest in oil and gas leasing in Idaho is sporadic. There is some interest in leasing oil and gas resources in occupied habitat in the Bear Lake area, but no drilling permits have been applied for or issued in Idaho, and this trend is expected to continue. As such, impacts from oil and gas leasing are likely to be minimal under all alternatives due to the anticipated lack of development.

Impacts from Recreation and Visitor Services Management

Under Alternative A, 670 acres of recreation sites overlap with lands with wilderness characteristics. These would continue to be managed under current guidance, which would result in no additional protections or degradation of wilderness characteristics.

Impacts from Livestock Grazing Management

Under Alternative A, 560 acres of lands with wilderness characteristics and 69,000 acres of Roadless Areas are closed to livestock grazing. Livestock grazing can impact opportunities for solitude and naturalness of appearance. New developments, such as fences, related to livestock grazing could also lessen naturalness of appearance or limit unconfined recreation, although additional development would be limited Those areas with wilderness characteristics that are not closed to grazing would continue to be affected in a limited way by grazing activities and grazing-related development.

Impacts from Special Designations Management

Under Alternative A, the existing 59 ACECs in the planning area would to be maintained. The 19,400 acres of ACECs that overlap lands with wilderness characteristics would continue to provide indirect protections to those characteristics. Under this alternative, no additional ACECs would be designated, so no additional protection to wilderness characteristics would result. Additionally, no Zoological Areas would overlap with Roadless Areas and, therefore, Roadless Areas would not receive additional protection from Zoological Areas under this alternative.

4.14.5 Alternative B

Impacts from Lands and Realty Management

Under Alternative B, 326,100 acres of lands with wilderness characteristics (314,000 more acres than under Alternative A) and 575,600 acres of Roadless Areas (397,000 more acres than under Alternative A) would be managed as ROW exclusion areas. Additionally, 53,100 acres of lands with wilderness characteristics and 474,700 acres of Roadless Areas would be managed as ROW avoidance areas. Types of impacts are described under Alternative A.

Impacts from Leased Fluid Minerals Management

Under Alternative B, 325,200 acres of lands with wilderness characteristics would be closed to oil and gas leasing, 317,070 more acres than under Alternative A, thereby potentially offering more protection of lands with wilderness characteristics. Under this alternative 1,027,400 acres of Roadless Areas would be closed to oil and gas leasing, which is a 101,800 fewer acres than under Alternative A. This could result in fewer additional protections to Roadless Areas as compared with Alternative A. However, as discussed under Alternative A, oil and gas development interests in Idaho are minimal, so impacts on wilderness characteristics from oil and gas development are likely to be minimal across all alternatives.

Impacts from Recreation and Visitor Services Management

Under Alternative B, 670 acres of recreation sites would overlap lands with wilderness characteristics. In PHMA, the only recreation allowed would be neutral or beneficial to GRSG. Some types of restrictions, such as those that would limit visitor use and surface disturbance, would likely enhance experiences of solitude and provide protections to wilderness characteristics. However, other types of restrictions, such as limits on dispersed recreation, could degrade wilderness characteristics by limiting opportunities for primitive and unconfined recreation.

Impacts from Livestock Grazing Management

Impacts would be approximately the same as those described under Alternative A, as only 7,500 more acres with wilderness characteristics on BLM-administered and National Forest System land would be closed under Alternative B as under Alternative A.

Impacts from Special Designations Management
Under Alternative B, 19,100 acres of lands with wilderness characteristics would overlap with ACECs and would experience indirect protections. Impacts on Roadless Areas would be the same as those described under Alternative A.

4.14.6 Alternative C

Impacts from Lands and Realty Management
Under Alternative C, 379,300 acres of lands with wilderness characteristics (367,200 more acres than under Alternative A) and 1,050,200 acres of Roadless Areas (871,600 more acres than under Alternative A) would be managed as ROW exclusion areas. No lands with wilderness characteristics or Roadless Areas would be designated as ROW avoidance areas under Alternative C.. Alternative C would offer more indirect protections to lands with wilderness characteristics and Roadless Areas through ROW exclusion and avoidance than would Alternative A.

Impacts from Leased Fluid Minerals Management
Under Alternative C, 385,200 acres of lands with wilderness characteristics and 1,045,300 acres of Roadless Areas would be closed to oil and gas leasing. Impacts would be similar to those described under Alternative A.

Impacts from Recreation and Visitor Services Management
Impacts are the same as those described under Alternative B.

Impacts from Livestock Grazing Management
Under Alternative C, 385,600 acres of lands with wilderness characteristics would be closed to livestock grazing, 385,040 more acres than under Alternative A. Consequently, Alternative C would provide more protection of wilderness characteristics than Alternative A

Impacts from Special Designations Management
Under Alternative C, 39 new ACECs would be designated, which would indirectly protect 260,000 acres of land with wilderness characteristics and 32,767 acres of Roadless Areas that overlap the new ACECs.

4.14.7 Alternative D

Impacts from Lands and Realty Management
Under Alternative D, impacts from ROW exclusion areas on lands with wilderness characteristics would be the same as those under Alternative A. Additional protection would result from the 369,500 acres of lands with wilderness characteristics which would be managed as ROW avoidance areas, and 973,800 acres which would be managed as ROW avoidance with limited exclusion. Managing lands with wilderness characteristics as ROW avoidance areas would result in more protection under this alternative than under Alternative A. More acres of Roadless Areas would be managed as ROW exclusion (178,600 acres) and ROW avoidance (973,800) under this alternative than under any of the other alternatives.

Roadless Areas would experience more additional protection from restrictions on ROWs under this alternative than under any of the other alternatives.

Impacts from Leased Fluid Minerals Management

Under Alternative D, 310,200 acres of lands with wilderness characteristics would be closed to oil and gas leasing (302,070 more acres than under Alternative A) and 1,129,100 acres of Roadless Areas would be closed to oil and gas leasing (100 acres less than under Alternative A). Impacts would be similar to those under Alternative A.

Impacts from Recreation and Visitor Services Management

Impacts are similar to those described under Alternative B, except that Alternative D would also try to minimize adverse recreation effects on GRSG.

Impacts from Livestock Grazing Management

Impacts are the same as those described under Alternative A.

Impacts from Special Designations Management

Impacts on lands with wilderness characteristics are the same as those described under Alternative A.

4.14.8 Alternative E

Impacts from Lands and Realty Management

Under Alternative E, 12,100 acres of lands with wilderness characteristics and 140,800 acres of Roadless Areas would be managed as ROW exclusion. This is the fewest acres out of all the alternatives and would result in fewer acres of Roadless Areas and lands with wilderness characteristics receiving protections from ROW exclusions. Additionally, 274,000 acres of lands with wilderness characteristics would be managed as ROW avoidance areas. As such, this alternative would offer more protection to lands with wilderness characteristics than under Alternative A. Roadless Areas would also experience more protection under Alternative E than under Alternative A, with 715,400 acres managed as ROW avoidance.

Impacts from Leased Fluid Minerals Management

Under this alternative, 8,140 acres of lands with wilderness characteristics would be closed to oil and gas leasing, offering negligibly more protection than Alternative A. Additionally 1,033,400 acres of Roadless Areas would be closed to oil and gas leasing, which would result in less additional protection to Roadless Areas than would occur under Alternative A. Impacts would be similar to those under Alternative A due to minimal oil and gas development interest.

Impacts from Recreation and Visitor Services Management

Impacts would be similar to those described under Alternative B, except that Alternative E would also apply seasonal, timing, and travel restrictions in order to reduce impacts on GRSG.

Impacts from Livestock Grazing Management
Impacts are the same as those described under Alternative B.

Impacts from Special Designations Management
Impacts on lands with wilderness characteristics are the same as those described under Alternative B.

4.14.9 Alternative F

Impacts from Lands and Realty Management
Impacts of ROW exclusion areas under Alternative F are the same as under Alternative B. Under Alternative F, 53,300 acres of lands with wilderness characteristics and 474,700 acres of Roadless Areas would be managed as ROW avoidance areas. Types of impacts are would be similar to those described under Alternative B.

Impacts from Leased Fluid Minerals Management
Impacts are the same as those described under Alternative B.

Impacts from Recreation and Visitor Services Management
Impacts are the same as those described under Alternative B.

Impacts from Livestock Grazing Management
Impacts are the same as those described under Alternative A.

Impacts from Special Designations Management
Under Alternative F, 17 or 18 new BLM ACECs would be designated, which would indirectly protect either 334,100 acres or 120,500 acres of land with wilderness characteristics and either 496,100 acres or 76,900 acres of Roadless Areas that overlap the new ACECs.

4.14.10 Proposed Plan

Impacts from Lands and Realty Management
Managing areas as ROW avoidance and ROW exclusion could impact lands with wilderness characteristics and Roadless Areas. Under the Proposed Plan, 34,400 fewer acres would be managed as ROW exclusion than would be under Alternative A. Additionally, under the Proposed Plan 500,700 more acres would be managed as ROW avoidance than under Alternative A, and this would likely result in indirect protections to lands with wilderness characteristics (preserving naturalness and opportunities for solitude and primitive recreation) and Roadless Areas by prohibiting disturbance from transmission lines, roads, and other utility developments, as discussed in **Nature and Types of Effects.**

Table 4-86, Acres of Allocations Potentially Affecting BLM Lands with Wilderness Characteristics and Forest Service Roadless Areas, displays the difference in the amount of acres managed as ROW avoidance and exclusion between Alternative A and the Proposed Plan. A greater number of acres managed as ROW avoidance and exclusion would likely

result in a greater amount of incidental protection to lands with wilderness characteristics and Roadless Areas.

Impacts from Habitat Restoration and Vegetation Management

Vegetation management to protect, enhance, and restore GRSG habitat would be prioritized under the Proposed Plan, and lands with wilderness characteristics encompassing or adjacent to GRSG habitat could be impacted by this management. Vegetation management and habitat restoration could result in temporary disturbance to lands with wilderness characteristics, as discussed in **Nature and Types of Effects**, but would not likely result in any long-term damage.

Impacts from Wildland Fire Management

Wildland fire management could result in impacts on lands with wilderness characteristics and Roadless Areas as described in **Nature and Types of Effects**. Lands with wilderness characteristics and Roadless Areas that encompass or are adjacent to GRSG habitat are most likely to experience these impacts from the prioritizing of fire suppression under the Proposed Plan.

Impacts from Leased Fluid Minerals Management

Closing acres to fluid minerals leasing, as well as placing restrictions such as timing limitations (TL), no-surface occupancy (NSO), and CSU (controlled surface use), on fluid mineral leasing would protect wilderness characteristics by prohibiting or restricting development and infrastructure related to those actions, subject to valid existing rights. Under Alternative A 759,000 more acres are closed to oil and gas leasing than under the Proposed Plan. More acres closed to oil and gas leasing on BLM-administered lands could result in more protection to lands with wilderness characteristics. However, the Proposed Plan would apply NSO stipulations to 816,500 acres, which is more acres than would be applied under any of the other alternatives. This would effectively make up in protection the difference in acres closed to fluid mineral leasing.

Under the Proposed Plan 760,200 more acres would be managed as NSO than under Alternative A, 71,800 more acres would be managed as CSU under the Proposed Plan than under Alternative A, and 38,600 fewer acres would be managed as TL under the Proposed Plan than under Alternative A.

Oil and gas development interest in IHMA, PHMA, and GHMA in Idaho is sporadic and minimal. There is some interest in leasing oil and gas resources within occupied habitat in the Bear Lake area, but no drilling permits have been applied for or issued in Idaho, and this trend is expected to continue. As such, impacts from oil and gas leasing are likely to be minimal due to anticipated lack of development.

Table 4-86, Acres of Allocations Potentially Affecting BLM Lands with Wilderness Characteristics and Forest Service Roadless Areas, displays the differences in restrictions on mineral development between alternatives. In general a greater number of acres experiencing restrictions in mineral development would result in more indirect protections to lands with wilderness characteristics and Roadless Areas.

Impacts from Recreation and Visitor Services Management

Restrictions on recreation could impact lands with wilderness characteristics and Roadless Areas as discussed under **Nature and Types of Effects**. Under the Proposed Plan, new recreation facilities would not be constructed within PHMA and IHMA unless the development would have a net conservation gain to GRSG habitat. Some types of restrictions, such as those that would limit visitor use and surface disturbance, would likely enhance experiences of solitude and provide protections to wilderness characteristics that overlap or are adjacent PHMA, IHMA, and GHMA. However, other types of restrictions, such as limits on dispersed recreation, could degrade wilderness characteristics by limiting opportunities for primitive and unconfined recreation.

Table 4-86, Acres of Allocations Potentially Affecting BLM Lands with Wilderness Characteristics and Forest Service Roadless Areas, shows the acres of recreation sites in Lands with Wilderness Characteristics and Roadless Areas by alternative.

Impacts from Travel and Transportation Management

Under the Proposed Plan OHV travel would be limited to existing roads, primitive roads, and trails. Additionally, areas adversely affected by OHVs would be closed to use until adverse effects are eliminated. These actions could result in indirect protections to lands with wilderness characteristics and Roadless Areas. Restrictions on travel would result in impacts as described in **Nature and Types of Effects** and could especially result in protections to lands with wilderness characteristics and Roadless Areas that encompass or are adjacent to GRSG habitat.

Under the Proposed Plan, fewer acres would be closed to OHV travel than under Alternative A, as shown in **Table 4-86**, Acres of Allocations Potentially Affecting BLM Lands with Wilderness Characteristics and Forest Service Roadless Areas. Closing fewer acres to OHV travel could result in lands with wilderness characteristics and Roadless Areas experiencing fewer indirect protections under the Proposed Plan than under Alternative A.

Impacts from Livestock Grazing Management

More restrictions would be placed on livestock grazing under Alternative A than would be under the Proposed Plan. **Table 4-86**, Acres of Allocations Potentially Affecting BLM Lands with Wilderness Characteristics and Forest Service Roadless Areas, displays the number of acres that would be closed to livestock grazing by alternative. Closing acres of land to livestock grazing could result in the types of impacts described in **Nature and Type of Effects**. The Proposed Plan could result in less indirect protection to ACECs than Alternative A because 21,200 fewer acres would be closed to livestock grazing under the Proposed Plan than under Alternative A. However, the Proposed Plan would have the same amount of active AUMs as Alternative A, and under the Proposed Plan additional provisions would be made to ensure livestock grazing is compatible with GRSG. Some of these provisions could result in additional protections to lands with wilderness characteristics and Roadless areas where these areas overlap with or are adjacent to GRSG habitat.

Impacts from Special Designations Management

No decisions regarding special designations or lands with wilderness characteristics or Roadless Areas were made under the Proposed Plan. Due to this, the amount of lands with wilderness characteristics and Roadless Areas that overlap with ACECs and other special designations vary slightly due to differences in habitat delineations, but impacts would be the same under Alternatives A and the Proposed Plan.

Impacts from Anthropogenic Disturbance Management, Adaptive Management, and Coordination

Under the Proposed Plan, adaptive management would use hard and soft population and habitat triggers to determine when to apply additional restrictions to various habitat areas. In the event a trigger is reached in a habitat area that is either in or adjacent to lands with wilderness characteristics or Roadless Areas, the lands with wilderness characteristics or Roadless Areas could receive additional indirect protections from the increased restrictions on uses in the GRSG habitat.

Similarly, anthropogenic disturbance management would involve a strict increase in restrictions in the event the 3 percent anthropogenic disturbance cap is reached within PHMA or IHMA. In the event a disturbance cap is reached for a habitat area in or adjacent to lands with wilderness characteristics or Roadless Areas, the lands with wilderness characteristics or Roadless Areas could experience indirect protections from the restrictions on uses and surface-disturbing activities enacted by the anthropogenic disturbance management.

4.15 Social and Economic Conditions (Including Environmental Justice)

This section discusses social and economic impacts from proposed GRSG management actions related to other resources and resource uses. Existing social and economic conditions are described in **Section 3.22**, Social and Economic Conditions (Including Environmental Justice). This section also addresses environmental justice impacts and the differences among alternatives for the social and economic impacts identified.

This section is organized slightly differently than the sections for other resource areas. Rather than grouping the analysis of impacts by alternative, the analysis of economic impacts is grouped by affected resource, followed by an overall discussion of social impacts. This grouping assists with the reader's understanding of the analytical approach and assumptions used to analyze economic and social impacts associated with each resource use and facilitates interpretation of results. Impacts are grouped by alternative in **Table 4-88** and **Table 4-89** of the Summary of Social and Economic Impacts and in **Table 4-90**, Environmental Justice Impacts.

4.15.1 Methods and Assumptions

Indicators

Conservation measures related to GRSG habitat could have impacts on resource uses on BLM-administered and Forest Service System lands; impacts on social and economic

conditions could result from these changes in resource uses. Many of the indicators used to characterize social and economic conditions are quantitative, including population, demographics (e.g., age and gender breakouts), local industry (e.g., recreation and mineral development), employment, personal income, and presence of minority and low-income populations. Other indicators, especially for social conditions, are qualitative.

For the analysis of economic impacts, quantitative estimates are provided where sufficient data or estimates are available on the potential changes in authorized uses of federal lands under each alternative. When quantitative estimates of economic impacts were not possible, a qualitative discussion of the potential economic impacts of management actions associated with specific authorized uses is presented. Therefore, the overall economic impacts are a combination of quantitative estimates and qualitative discussion.

When sufficient information was available to quantify the potential economic impact of alternatives, the IMPLAN model, which captures the indirect and induced economic effects of management alternatives in the socioeconomic study area, was used to estimate impacts on outcomes, employment, and earnings in the study area. This was the case of the analysis of impacts through livestock grazing.

The analysis using IMPLAN includes those impacts derived from the multiplier effect, which captures the impact of several rounds of expenditures that follow an initial direct expenditure in the socioeconomic study area. These additional expenditures are due to income received by suppliers and employees directly benefiting from the initial expenditure and who go on to spend a share of their income locally. This allows for a more complete picture of the economic impacts of the management alternatives in the planning area.

However, the IMPLAN model is a static model, and it does not capture changes in the industrial composition of a region over time; nor does it capture dynamic effects that may be associated with processes of growth or decline, such as changes in technology or labor productivity or the feasibility of economic operations that require scale. There is, therefore, a degree of uncertainty in the estimates of impacts obtained through the IMPLAN model.

Assumptions

- The analysis of economic impacts of management alternatives on grazing made use of billed AUMs as a baseline, estimated as a multi-year average share of active AUMs. Active AUMs measure the amount of forage from land available for grazing. The Forest Service terms this measure permitted AUMs. Billed AUMs measure the amount of forage for which the BLM and Forest Service bill annually. The Forest Service uses the term authorized AUMs for the same concept.
- Implementing management for the resources not analyzed in detail in this section was considered to have negligible or no impact on socioeconomics and environmental justice indicators across alternatives. For recreation, BLM and Forest Service recreational specialists determined that the overall number of visits to BLM-administered lands and National Forests would be unchanged; this

is because potentially affected recreation is unlikely to occur when GRSG are using leks, and any displaced recreation would be likely to move to another nearby location. To the extent that there are circumstances in which individual permits for special activities or events are affected in terms of timing or location for GRSG protection, the overall socioeconomic impacts associated with these effects are expected to be negligible.

- Implementing conservation measures in all resource or program areas would contribute to conservation of GRSG habitat and GRSG benefits, as qualitatively discussed in this section and detailed elsewhere in **Chapter 4**.

4.15.2 Nature and Types of Effects

The main economic impacts derived from changes in resource management are reflected in changes in local employment and earnings, costs incurred by the private sector, fiscal revenues and regional growth prospects.

For the analysis of social impacts, two types of impacts capture the main social impacts that can be expected from changes in resource management. The first is derived from migration induced by management actions. These impacts are induced by economic opportunities that drive population into or out of specific areas; they affect population growth as well as the demand for housing and public services. The second is associated with specific interest groups, community livelihoods, or minority and low-income populations—effects described in the section on environmental justice.

- To the extent that there is a degree of uncertainty regarding the changes in authorized uses of federal lands under each management alternative, this uncertainty is carried forward to the socioeconomic impacts of management alternatives.

The Proposed Plan includes a 3 percent disturbance cap on PHMA, independent of surface ownership and an adaptive management plan. If the disturbance cap is reached, economic activity on BLM-administered and National Forest System lands could be curtailed further than what is described in this section. This disturbance cap would be the same as under Alternative B, would be more restrictive than the disturbance cap under Alternatives D and E, but would be less so than the disturbance cap under Alternatives C and F.

Under the adaptive management plan, additional measures could be taken to protect GRSG habitat based on triggers linked to indicators monitored by the BLM and the Forest Service. If triggered, these additional measures could also impose additional restrictions on economic activity. However, because the 3 percent disturbance cap and adaptive management soft and hard triggers apply only to PHMA, they would generate additional socioeconomic impacts only through economic activities that are not already restricted in PHMA.

The Proposed Plan designates SFA, representing recognized strongholds for GRSG that have the strongest levels of protection.

As a landscape level planning effort, none of the alternatives prescribe project-level or site-specific activities on BLM-administered or National Forest System lands. Furthermore, the agencies' selection of an alternative does not authorize funding to any specific project or activity, nor does it directly tie into the agencies' budgets, as appropriated annually through the federal budget process. As a consequence, the agencies' costs and differences in program costs across alternatives have not been quantified. Information has been presented in several resource impact sections on the types of costs that might be associated with various GRSG conservation measures.

4.15.3 Economic Impacts

Impacts from Management Actions Affecting Grazing Allotments

Economic impacts for grazing are quantified for Alternatives C and F, where grazing would not be allowed in any or portions of GRSG habitat. Impacts for all alternatives are qualitatively discussed for other types of restrictions or design feature requirements that are contingent on proximity to lek areas and/or, meeting desired range conditions, disturbance caps, or other protocol for specifying when and where conservation measures are adopted.

Overall Employment, Earnings, and Output per Job Impacted by Management Alternatives

The potential impacts of management alternatives affecting grazing on output and employment were estimated quantitatively using the IMPLAN economic model; detailed assumptions are described in **Appendix AA**. Alternatives A, B, D, and E and the Proposed Plan are estimated to have similar economic effects; this is because no unconditional grazing closures or losses of AUMs occur under those alternatives, although all alternatives, except A, and the Proposed Plan could carry increased restrictions on lessees' ability to construct or maintain range improvements. Alternatives B, D, and the Proposed Plan could restrict the lessees' ability to conduct treatments (e.g., vegetation treatments). These restrictions, as well as compliance with adaptive management, habitat objectives, and disturbance caps, may have implications for operator costs, as discussed below.

Although grazing on federal lands not containing GRSG habitat would not be directly affected by the choice of alternatives, it could be affected indirectly, to the extent that loss of access to federal lands for grazing affects the feasibility of the grazing operations.

The IMPLAN model used 2011 and 2013 data for active AUMs. The model used an average of 2000 to 2011 data for billed AUMs on lands permitted by the BLM, because billed AUMs fluctuate from year to year (BLM 2012d, 2013b, 2013c). On National Forest System lands, the analysis assumed a billed-to-active ratio of 100 percent.

For the analysis, the BLM and Forest Service calculated economic impacts for each alternative based on an estimated reduction in the number of billed AUMs. By multiplying the number of AUMs lost under each alternative relative to Alternative A by the estimated output, employment, and earnings per AUM (Tables R-4 and R-5 of **Appendix AA**),

changes in output, employment, and earnings lost by alternative, relative to Alternative A, are estimated.

Table 4-87 shows the resulting estimates. As explained in **Appendix AA**, the low impact scenario reflects the loss of all billed AUMs in GRSG habitat under Alternative C and the loss of 25 percent of billed AUMs in GRSG habitat under Alternative F. Actual economic impacts could be less than these estimates. For example, where the number of billed AUMs is less than the number of active AUMs, ranchers could shift grazing from lands closed to grazing to lands that remain open for grazing. In other words, ranchers could use non-billed active AUMs as a buffer to absorb reductions in AUMs imposed by management alternatives, resulting in reduced economic impact.

Table 4-87
Annual Impact of Management Actions Affecting Livestock AUMs on Output, Employment, and Earnings Compared to Alternative A

	Alternatives B, D, and E and Proposed Plan[1]	Alternative C		Alternative F	
		Low Impact Scenario	High Impact Scenario	Low Impact Scenario	High Impact Scenario
	Primary Study Area				
Output ($ millions)	See notes	-$100.6	-$190.1	-$26.1	-$36.9
Employment	See notes	-997	-1,842	-259	-361
Earnings ($ millions)	See notes	-$34.5	-$65.6	-$8.9	-$12.7
	Primary and Secondary Study Area				
Output ($ millions)	See notes	-$100.9	-$190.6	-$26.2	-$37.0
Employment	See notes	-997	-1,842	-259	-361
Earnings ($ millions)	See notes	-$34.6	-$65.8	-$9.0	-$12.7

Source: Calculated using the IMPLAN model, applied to active and billed AUMs for each alternative (BLM 2012d, 2013b, 2013c; Forest Service 2013c), as explained in **Appendix AA**.
Note: Output and earnings are in millions of 2010 dollars.
[1]Based on available AUMs, there would be no change in economic activity from grazing under Alternatives B, D, or E or the Proposed Plan. However, as described in the text, management actions under Alternatives B, D, and E and the Proposed Plan would restrict range improvements, which may increase ranch operators' costs or lead to other adverse economic impacts.

The high impact scenario represents the case where the loss of AUMs on public lands leads to the loss of additional AUMs due to seasonal limitations of grazing areas. This would be the case if livestock operations were to have no reasonable alternative to seasonal grazing, implying broader impacts on livestock grazing.

The BLM estimated the additional loss of AUMs due to seasonal limitations on livestock grazing based on Torell et al. (2014). Further details are provided in **Appendix AA**. Note that the employment estimates include the labor of proprietors and employees but not

unpaid or paid-in-kind family labor, which is typically not accounted for in labor force statistics. If family labor were included, then labor use differences among alternatives would be larger.

Beyond economic impacts linked to closing federal lands to livestock grazing under Alternatives C and F, management alternatives could impose other costs on livestock operators, as follows:

- Under Alternatives C and F, closure of federal lands to grazing could mean additional costs to livestock operators with respect to constructing new infrastructure on private lands, such as water developments, if previously used infrastructure is no longer accessible.
- Under Alternatives B, C, D, and F and the Proposed Plan, restrictions on OHV travel could affect livestock operators' access to allotments, with associated time and financial costs.
- Under Alternatives B, D, and F and the Proposed Plan, post-fire management actions to restore habitat could impose limitations on grazing during the restoration period.
- Under Alternatives B, D, and F and the Proposed Plan, vegetation treatments prioritizing GRSG habitat could require changes in livestock, management with potentially associated costs.
- Disturbance caps under Alternatives B, C, D, and F and the Proposed Plan could reduce the capacity of livestock operators to build improvements or could limit infrastructure, such as roads, with potential increased costs to operators.
- For Alternatives B, D, and E and the Proposed Plan, in habitat and active lek areas (e.g., nesting or breeding seasons where desired conditions for GRSG are not being met) seasonal modifications to grazing management strategies may be needed, such as changes in pasture rotation or fencing. These modifications could increase costs or limit grazing duration, intensity, or location for some allotments. Habitat conditions for GRSG are less explicit under Alternative E, which may afford greater flexibility for modifying management strategies. The potential for impacts from seasonal management modifications is therefore relatively greater for Alternatives B and D and the Proposed Plan and relatively lower for Alternative E. Additional Forest Service guidelines for habitat, such as 7-inch stubble height for nesting habitat, may increase the potential for impacts for some permittees, depending on specific conditions on allotments.
- For Alternatives B, D, E, and F and the Proposed Plan, design features, such as fence tags, or best management practices may be required to protect active lek areas, implying the potential for increased costs for livestock operators; the potential is relatively greater under Alternatives B, D, and F and the Proposed Plan, compared to Alternative E. Additional guidelines under the Proposed Plan, such as trailing, fencing, and range improvements, may affect some allotments.

Alternative A—Under Alternative A, grazing on federal lands would not be affected. The alternative would not change the extent of land open for grazing (BLM 2013b; Forest Service 2013c). Thus, there would be no change in annual output, jobs, or earnings relative to current trends. Based on the current location of federal grazing lands, the economic contribution of grazing would be similar to the pattern under current management, with particular concentrations in Cassia, Gooding, Jerome, Lincoln, and Owyhee Counties, Idaho. These are the counties in which 20 percent or more of earnings are attributable to livestock, according to **Section 3.22**, Social and Economic Conditions, Including Environmental Justice.

Alternative B—Under Alternative B, economic activity attributable to AUMs on federal lands with GRSG habitat is likely to be similar to that under Alternative A. This is because there would be no changes in the extent of GRSG habitat unconditionally open for grazing. In the long term, livestock grazing in PHMA may be reduced under this alternative, compared to Alternative A, to conform to GRSG habitat objectives, although impacts would be site-specific and likely would occur gradually over time.

Some decisions on range improvements and vegetation treatments would be subject to the conservation, enhancement, or restoration of GRSG habitat, potentially reducing forage available. This is because permittees would be required to move livestock off-range if it were necessary to protect habitat. Seasonal restrictions could also be imposed, requiring that permittees move their livestock elsewhere, adding costs to their operations.

The extent to which these additional constraints would reduce grazing on federal lands is not clear; however, Alternative B would likely result in some additional operating costs and reductions in economic activity compared to Alternative A.

Alternative C—Under Alternative C, economic activity attributable to grazing on federal lands would be reduced. Livestock grazing on federal lands would be restricted to those with no GRSG habitat (BLM 2013b; Forest Service 2013c). Adverse impacts on output, employment, and earnings would be greater under Alternative C than any other alternative, with an estimated reduction in employment of between 997 and 1,842 annual jobs, relative to Alternative A. The economic impact of Alternative C may also be greater if the change in management actions, such as the removal of GRSG habitat from livestock grazing, were to impair the economic viability of some grazing operations, especially if the private ranch land is then left unused. Management actions that prevent the viability of grazing operations could reduce the value of private land as a function of livestock productivity (land values as a function of other uses may increase or decrease).

Alternative D—Economic activity associated with AUMs on federal lands with GRSG habitat would likely be similar to Alternatives A and B because there would be no changes in the extent of GRSG habitat unconditionally open for grazing (BLM 2013b; Forest Service 2013c). Some restrictions on range improvements or seasonal restrictions that require permittees to move livestock off-range could affect the availability of forage. In addition, structural range improvements and measures to limit impacts on leks by trailing livestock could result in additional costs. The extent to which these additional constraints would affect

economic activity from grazing on federal lands is not clear. However, Alternative D would likely result in some reductions in economic activity, compared to Alternative A, but less so than under Alternatives B or E.

Alternative E—Economic activity associated with AUMs on federal lands with GRSG habitat is likely to be similar to Alternatives A, B, and D. This is because there would be no change in the extent of GRSG habitat unconditionally open for grazing (BLM 2013b; Forest Service 2013c). Some limitations would apply to structural range improvements, which could increase costs for construction and maintenance of improvements or impact the ability to distribute livestock. Similar to Alternative B, Alternative E could also impose seasonal restrictions that may increase costs for operators. These restrictions would more likely be imposed on lands designated as core or PHMA, rather than GHMA (BLM 2013b). The extent to which these additional constraints would affect economic activity from grazing is not clear. However, Alternative E may result in some reductions in economic activity, compared to Alternative A. Changes in grazing management would be tailored to address site-specific habitat needs.

Alternative F—Under Alternative F, economic activity due to grazing on federal lands would be reduced. This is because of the closure of some GRSG habitat to livestock grazing, as well as actions to prohibit grazing after fire and prohibit new range improvements, which would result in increased costs for ranchers. Under Alternative F there would be an estimated reduction in employment of between 259 and 361 annual jobs relative to Alternative A. The impact of Alternative F may be greater than shown if the reduction in federal AUMs were to impair the economic viability of some grazing operations. The impact would also be greater if the private ranch land were then left unused. Management actions that prevent the viability of grazing operations could reduce the value of private land as a function of livestock productivity. Economic impacts under Alternative F would be less than under Alternative C; however, it still would be substantially more than under Alternatives A, B, D, and E and the Proposed Plan.

Proposed Plan—Under the Proposed Plan, there would be no change in the extent of GRSG habitat unconditionally open for livestock grazing, relative to Alternative A. The BLM would use the assessment and monitoring data related to the objectives to evaluate whether rangeland health standards are being met, starting with allotments in SFA. The Forest Service would use seasonal habitat desired conditions for GRSG and grazing guidelines for GRSG seasonal habitat.

If rangeland health standards were not being met, livestock grazing would be adjusted at the allotment level. This could include a variety of management approaches, such as changing rotation systems, season or timing or use, distribution of livestock use, intensity of use, type of livestock, class of livestock (e.g., yearlings vs. cow-calf pairs), duration of grazing use, and rest period or stocking rates.

The extent to which permittees may need to change livestock management and what economic costs those changes might entail is unknown. In general, there may be some

increased costs to implement management when it is identified that livestock management is conflicting with meeting GRSG habitat objectives.

Because the BLM takes a collaborative, site-specific approach to modifying livestock grazing, permittees are afforded the opportunity to work with the BLM to develop management approaches that minimize impacts on their operations, while addressing identified habitat issues. When given more than one viable alternative to meet rangeland health standards and GRSG habitat objectives, some permittees may prefer to reduce grazing overall; others may prefer to increase management inputs (e.g., herding or maintaining let-down fences) to prevent a reduction in their authorized use.

The Proposed Plan allows for design and implementation of allotment-specific management that would meet GRSG habitat objectives appropriate for each area, while providing the flexibility to minimize economic impacts on operators. The alternative is to implement a blanket reduction in grazing. This could provide benefits in some areas, while unnecessarily inflicting economic impacts in areas where ongoing management is resulting in satisfactory on-the-ground habitat conditions for GRSG.

In summary, economic impacts from closures in GRSG habitat to livestock grazing and potential increases in costs to operators are greatest under Alternative C, followed by Alternative F. Although no unconditional closures of grazing occur under Alternatives B, D, and E and the Proposed Plan, restrictions on OHV travel, vegetation treatments, and structural improvements could increase costs to operators. Potential reductions in AUMs and operating costs under Alternatives B, D, and E and the Proposed Plan are conditional under certain scenarios: meeting habitat objectives, satisfying disturbance caps, and allowing operator discretion about how to modify grazing strategies and management to meet objectives and design feature requirements. The likelihood of AUM reductions or increases in costs under Alternatives B, D, and E and the Proposed Plan are therefore substantially lower than under Alternatives C and F. The potential for costs under the Proposed Plan may be somewhat greater than under Alternative D and lowest under Alternative E. However, estimating the potential cost impacts on livestock grazing operators associated with management alternatives is not possible. This is due to the landscape level of this planning effort and uncertainty about how individual operators could be affected and how they may operationally respond.

Table 3-67 shows that, although livestock grazing has some importance to all counties in the study area, it constitutes a larger share of earnings in Cassia, Gooding, Jerome, Lincoln, and Owyhee Counties. **Figures 2-1 through 2-12** show that GRSG habitat intersects with all these counties, particularly Gooding, Lincoln, and Owyhee. This suggests economic impacts of management alternatives on livestock grazing may be of particular importance to these three counties. Within these counties, communities may be impacted differently, contingent on each communities' dependency on livestock grazing where it overlaps with GRSG habitat.

Output, employment, and earnings losses reported above, although stemming from direct impacts on livestock grazing, would not all occur in the livestock ranching industry. It also would not occur in industries that provide inputs and services to these activities and in industries where labor earnings from livestock ranching are spent. An additional discussion of the potential impacts on communities is in **Section 4.15.4**, Social Impacts.

Other Values Associated with Livestock Grazing

As described in **Chapter 3**, BLM-administered and National Forest System land managed for livestock grazing provides both market values and non-market values; the latter include open space and western ranch scenery, which provide value to some residents and outside visitors. Ranches may also provide some value to the non-using public (e.g., the cultural icon of the American cowboy). Some residents and visitors also perceive non-market opportunity costs associated with livestock grazing; in addition, some of the lifestyle value of ranching is likely to be captured in markets (e.g., property values of ranches next to BLM-administered and National Forest System lands). In contrast, other residents or visitors may perceive non-market opportunity costs (i.e., damages) associated with livestock grazing and therefore prefer alternative land uses.

The other values discussion in **Section 3.22**, Socioeconomics and Environmental Justice, and **Appendix BB**, Non-Market Valuation Methods, provide additional discussion of these values. Overall, the process for incorporating potential non-market values associated with the management of BLM-administered and National Forest System land for livestock grazing into analyses of net public benefits remains difficult. This is because it implies the need to consider non-market values and uses associated with landscape characteristics and opportunities that would exist in the absence of grazing and ranch activity.

This analysis does not attempt to quantify these values for the present study. This is because the scientific and economic literature on the topic does not provide adequate data or a consensus theoretical framework from which to analyze these values further,

To the degree that there are net benefits associated with non-market values attached to livestock grazing and ranching, these would be greatest under Alternatives A, B, D, and E. This is because these alternatives are likely to result in similar levels of livestock grazing in the study area (albeit with some restrictions for Alternatives B, D, and E). If the net non-market value associated with livestock grazing and ranching is positive, then the likelihood of preserving the value would be greatest under Alternative A, slightly lower under Alternatives B, D, and E, lower still under Alternative F, and lowest of all under Alternative C. This is in line with the expected impacts on market values discussed above. Non-market benefits linked to alternative landscapes and land uses may help offset potential losses in non-market benefits associated with grazing and ranches.

Impacts from Management of Oil and Gas Leases

The potential economic impacts of management alternatives affecting oil and gas drilling, completion, and production were not analyzed using IMPLAN, given the relatively small number of wells that would be affected and that no oil has been commercially produced in the study area to date. Based on the restrictions identified for the management alternatives,

BLM oil and gas specialists projected that the number of wells and production capacity would be the same for Alternatives A and D. Under Alternatives B, C, F, and the Proposed Plan, management actions would restrict exploration and development and would result in approximately half of the production capacity (BLM 2015). The reduction in production capacity relative to Alternative A would not be as pronounced under Alternative E.

Alternative A—Alternative A would continue current trends in economic activity associated with oil and gas leases. The BLM predicts that, under Alternative A and over 20 years, up to 37 wells would be drilled, including 25 wildcat wells and 12 step-out wells (BLM 2015). Of the 37 wells, 16 are predicted to be drilled in GRSG habitat (those in the Four Rivers Field Office, Caribou National Forest, and half of the wells in the Dillon Field Office are not in GRSG habitat). For analysis purposes, the BLM predicts that 16 wells would be productive (8 of those in GRSG habitat), with 28 billion cubic feet of production capacity. There would be no change in trends in annual output, annual jobs, or annual earnings compared to current management. Based on cost and direct employment estimates recently developed for neighboring Utah (BLM 2013g), 16 wells at a drilling and completion cost of $3.25 million each, could generate an average of 11 annual direct jobs during the period and approximately $700,000 in direct annual earnings, if approximately 75 percent of expenditures were done locally. Additional jobs and earnings could be generated indirectly. Production of 28 billion cubic feet over 20 years could add two additional annual direct jobs and $200,000 in direct annual earnings. Additional jobs and earnings would be generated indirectly.

Alternative B—Alternative B would close PHMA to fluid mineral leasing but would have the same restrictions as Alternative A in GHMA. Drilling and production would drop, compared to Alternative A, with approximately 19 wells drilled—13 wildcat wells and 6 step-out wells; 8 wells would be productive. All of these wells would be outside GRSG habitat (BLM 2015) and in total would have 20.5 billion cubic feet of production capacity.

On existing leases, RDFs would be imposed as appropriate to the proposed activity. Alternative B would also impose costs related to required full site-specific reclamation bonds to cover costs to restore the lands to pre-disturbance condition. As a result of implementing Alternative B, economic activity and associated output, employment, and earnings related to oil and gas production would decrease by approximately 30 to 50 percent, compared to Alternative A, to something between six and nine annual direct jobs, $450,000 to $630,000 in annual earnings, and additional indirect jobs and earnings. The impacts of reduced oil and gas development would likely be mostly felt in Bear Lake County, Idaho, Beaverhead County, Montana, and surrounding areas.

Alternative C—Economic impacts under Alternative C would be similar to those under Alternative B. Alternative C would further reduce economic activity by closing 80 percent of the planning area to oil and gas leasing. As in the case of Alternative B, 19 wells are predicted under Alternative C, including 13 wildcat wells and 6 step-out wells. Eight wells would be productive (none in GRSG habitat), with 20.5 billion cubic feet of production (BLM 2015).

Alternative D—Implementing Alternative D would result 35 new wells—23 wildcat wells and 12 step-out wells; 16 wells are assumed to be productive. The reduction of two wells with respect to Alternative A would be expected for the Rogerson/Jarbidge area (Twin Falls County). Production capacity is predicted to be the same as Alternative A. The 16 productive wells would have the same economic impact as those under Alternative A (BLM 2015).

Alternative E—Under Alternative E, CHZ and IHZ in Idaho would be open to oil and gas leasing, subject to an NSO stipulation. Implementing Alternative E would have economic impacts most similar to Alternative B in Idaho, although with some increased off-limits acreage in IHZ. Implementing Alternative E would have economic impacts similar to Alternative A in Montana. Under Alternative E, wells could be drilled in the Dillon Field Office, consistent with the Dillon RMP. Under Alternative E, a predicted 19 wildcat wells and 10 step-out wells would be drilled, for a total of 29 wells (BLM 2015). The overall economic impact would be slightly less than under Alternative B, with an expected 11 wells producing (six in the Dillon Field Office area, MT, three of those in GRSG habitat, and five in Idaho, none in GRSG habitat).

As a result of implementing Alternative E, economic activity and associated output, employment, and earnings related to oil and gas production would be slightly more than under Alternatives B and C. Impacts of reduced oil and gas development would likely be mostly felt in Bear Lakes County, Idaho, and surrounding areas. Alternative E involves some restrictions to surface development to minimize impacts on GRSG habitat on existing leases, which would have minor economic impacts.

Alternative F—Economic impacts under Alternative F would be similar to the impacts under Alternatives B and C.

Proposed Plan—Under the Proposed Plan, as under Alternative E, PHMA and IHMA would be open to oil and gas leasing, subject to a No Surface Occupancy stipulation. Implementation of the Proposed Plan would have economic impacts most similar to Alternative E in Idaho; however, the impacts would be greater than Alternative E in Montana, due to the NSO stipulation under the Proposed Plan. Under the Proposed Plan, 15 wildcat and 6 step-out wells would be drilled, for a total of 21 wells (BLM 2015). The overall economic impact would be similar to Alternatives B and C, with eight wells producing. As a result of implementing the Proposed Plan, estimates of economic activity and associated output, employment, and earnings related to oil and gas production would be similar to Alternative B and C, with between six and nine annual direct jobs, $450,000 to $630,000 in annual earnings, and additional indirect jobs and earnings. Impacts of reduced oil and gas development would likely be felt more in Bear Lakes County, Idaho, Beaverhead County, Montana, and surrounding areas.

Impacts from Management of Phosphate and Locatable and Salable Minerals

As described in **Chapter 3**, the study area produces phosphate and the salable and locatable minerals Oakley stone, silver, sand, gravel, and some industrial minerals, such as

molybdenum. Areas with phosphate and Oakley stone production potentially overlap with GRSG habitat, which could have implications for mining in the long-term.

As discussed in **Chapter 3**, the three active phosphate operations in Idaho, at least a portion of which is mined from leases of federal minerals, are not in GRSG habitat. As shown in **Figure 3-13**, most of the about 48,500 unleased KPLA acres are in Caribou and Bear Lake Counties. Only three of these acres intersect with GHMA.

The Paris-Bloomington KPLA area, consisting of approximately 1,640 acres and located in Bear Lake County, is entirely in IHMA and PHMA. Of these 1,640 acres, federal minerals underlay 460 acres, 65 of which are leased (the only phosphate lease in GRSG habitat out of 86 federal phosphate leases in Idaho); 240 acres are under a prospecting lease, and, according to the BLM, a phosphate lease application for 35 acres will be submitted in the near future. All of this activity is associated with potential Paris Hills Phosphate project (BLM 2013h, 2014).

An estimated 40,000 tons of Oakley stone are mined annually from unpatented mining claims in southern Idaho and northern Utah, providing full-time employment for approximately 60 people and seasonal employment for an additional 100 to 200 laborers (BLM 2013h).

Many community pits of sand and gravel also fall within GRSG habitat. Economic activity associated with stone quarries and mineral materials disposal and sales could decrease under several of the GRSG habitat management alternatives (BLM 2013h).

Potential impacts from management actions in each alternative are detailed below.

Under Alternatives A and E, KPLAs would be open to phosphate mining. No additional lands would be withdrawn from locatable mineral entry (see **Section 4.10**, Locatable Minerals). No additional lands would be closed to mineral material disposal.

Alternatives B, C, and F would close PHMA to phosphate mining. Of the KPLAs, the only one affected would be in the Paris-Bloomington area. In December 2012, Stonegate Agricom announced positive results of its feasibility study for the development of an underground phosphate mine (known as the Paris Hills Phosphate project). The project has been estimated to have a life of 19 years, producing 16.7 million tonnes of phosphate rock ore (Agapito Associates, Inc. 2013). The proportion of these production projections that could be attributable to federal minerals is not known. However, to the extent that federal minerals account of a portion of estimated reserves, the closing of PHMA to leasing could remove up to 395 acres of federal mineral estate from being accessed (BLM 2015).

Valid rights associated with the current lease of 65 acres would prevent this area from closure, but any development would be subject to RDFs. As discussed in **Section 4.12** Nonenergy Leasable Minerals, this would limit surface disturbance, vehicle use, siting, and design of mineral development operations, in addition to imposing reclamation requirements. If implementing RDFs is not feasible once mining operations begin on this

existing lease, off-site mitigation may be required. Together these management actions could reduce phosphate recovered and increased costs of the project.[1] Impacts under Alternative D may be relatively less; while Alternative D closes PHMA and IHMA to future leasing and prospecting of phosphate, it allows for exceptions for lease modifications and fringe leases where valid existing rights may be affected.

With the exception of the Paris-Bloomington KPLA discussed above, no economic impacts on future phosphate development in other KPLA areas are expected, due to the minimal GRSG habitat in these areas.

The potential for phosphate production from federal lands outside of KPLAs is generally low. However, if this were to occur, prospecting or mining would be affected in areas outside of KPLAs that overlap with PHMA under Alternatives B, C, D, and F. This is because PHMA would be closed to phosphate development. Furthermore, under Alternative D, management actions in GHMA would restrict the exploration and development of nonenergy leasable minerals, including timing restrictions, specific stipulations, and possible off-site mitigation. These management actions could affect the cost of exploration and development of phosphate in GHMA. However, overall, potential economic impacts associated with phosphate-related activities under Alternatives B, C, D and F outside of KPLAs would be minimal, given the limited PHMA in areas of southeast Idaho where phosphate occurs.

Under the Proposed Plan, KPLAs would remain open to phosphate mining, as under Alternatives A and E. PHMA outside of KPLAs would be closed to leasing, subject to valid existing rights. As explained above, these actions would have minor economic impacts outside of KPLAs that overlap PHMA. RDFs would apply to existing leases during exploration and mine development and could have costs to operators to the extent that they differ from current practices.

Alternatives A, D, and E do not recommend any new withdrawals from locatable mineral development. Alternatives B, C, and F recommend withdrawing PHMA from locatable mineral development. These would be the most under Alternative C. The Proposed Plan recommends withdrawing SFA from locatable mineral development, resulting in more withdrawals or recommended withdrawals than Alternatives A and D, but less than B, C, and F. Under Alternatives B, C, and F and the Proposed Plan, withdrawals could have adverse economic impacts on specific communities to the extent that they reduce mineral development in the future. The extent of these economic impacts is not possible to estimate, given the information available. Withdrawal recommendations for areas over 5,000 acres are subject to congressional control, and a number of statutory requirements would need to be satisfied.

Alternatives A and E would keep GRSG habitat open to mineral materials disposal. Under Alternatives B, C, and F mineral material disposal would be closed in PHMA. Restoration of

[1]As of January 26, 2015, Stonegate Agricom has temporarily suspended permitting activities on this project due to financial constraints (Stonegate Agricom 2015).

salable mineral pits no longer in use would be required to meet GRSG conservation objectives (see **Section 4.11**, Mineral Materials). Alternative D closes fewer acres to mineral material disposal but does include restrictions across all GRSG habitat. Specifically, no new mineral material pits would be authorized within 2 miles of an occupied lek, and mineral disposal in GRSG habitat would be subject to timing restrictions. Alternative D would also require restoration of salable mineral pits no longer in use and would require reclamation bonds for new (commercial or nonprofit) authorizations in PHMA.

The Proposed Plan would close all PHMA to salable minerals, and its economic impacts would be most similar to Alternative B. Restrictions in accessing mineral materials increase their cost to local users, particularly local governments, because mineral materials would have to be transported over greater distances. Transportation costs are a major component of the total price of mineral materials.

Economic activity associated with management of phosphate, locatable minerals, and salable mineral materials would be the same for Alternatives A and E, slightly lower under Alternative D (due to reduced exploration activity), lower still under Alternatives B and F, and lowest under Alternative C. The Proposed Plan would have impacts similar to Alternatives A and E for phosphate development, to Alternatives B and F for locatable mineral development, and Alternative to B for salable mineral development. Any adverse impacts on mining under Alternatives B, C, and F and the Proposed Plan would most likely be felt in counties such as Caribou, where the mining industry is an important economic contributor, and Cassia, where mineral activity overlaps GRSG habitat.

Impacts from Management Actions Affecting Geothermal Exploration and Development

Economic impacts from geothermal exploration and development are a function of construction and operation expenditures for geothermal electricity development, including drilling wells, constructing power plants, and operating facilities. As of 2013, there were 25 federal geothermal leases, covering approximately 60,000 acres in Idaho, primarily near Raft River, Crane Creek, and Parma; 17 were in GRSG habitat (BLM 2013i).

Over the next 20 years, the BLM expects geothermal exploration to occur in six parts of the planning area. Two power plants would be possible, in the Raft River and Crane Creek areas.

Alternative A—Under Alternative A, the BLM predicts geothermal exploration and development would include 21 new exploratory (temperature gradient) wells, with 18 production wells and 12 injection wells. The Burley Field Office has received applications to drill up to 18 wells on federal leases in the Raft River area. Of these wells, 10 would be production wells and 8 would be used for injection. Twelve wells would be drilled at Crane Creek, in Washington County (seven production and five injection wells); however, no activity has occurred on those leases since around 2010. Both these areas are within GHMA and have stipulations to protect GRSG habitat. No other areas are forecasted for geothermal development. Mitigation on existing leases can include the RDFs identified under Alternative D without affecting valid existing rights. Alternative A would not impact economic activity associated with geothermal leases, relative to current management trends.

Alternative B—Under Alternative B, lands in PHMA would be closed to geothermal leasing, exploration, and development. Existing leases at Raft River and Crane Creek are in PHMA. The lands north and west of the Raft River leases and the federal lands surrounding the Crane Creek leases would be closed to future leasing outside the existing leases. For Alternative B, the RFDS forecasts that 18 temperature-gradient wells would be drilled and fewer seismic operations would be allowed than under Alternative A. Implementing Alternative B would result in the same number of production and injection wells as Alternative A because there are valid rights on the existing leases. The economic impact would be slightly reduced relative to Alternative A due to the reduced local expenditures associated with drilling exploratory wells.

Alternative C—Under Alternative C, lands in all GRSG habitat would be closed to leasing; existing leases would be relinquished if doing so would mitigate the impact of a proposed development, or if relinquishment would mitigate the unanticipated impacts of an approved development (see MLS-9). Terminating leases would directly impact valid existing rights. No wells would be drilled at Raft River or Crane Creek. The reduced drilling and production would have an adverse economic impact in the form of reduced local employment and earnings in the counties of Cassia and Washington and surrounding areas. The federal government would not realize any production royalties.

Alternative D—Under Alternative D, the number of wells would be the same as under Alternative A, because no lands with moderate to high geothermal potential would be closed and no leases would be terminated. Applying RDFs imposed under Alternative D to post-lease actions would not result in additional economic impacts, compared to Alternative A.

Alternative E and Proposed Plan—Under Alternative E and the Proposed Plan, CHZ/PHMA and IHZ/IHMA would be open to geothermal leasing, subject to an NSO stipulation. Existing leases at Raft River and Crane Creek lie within GHZ/GHMA under these alternatives and, therefore, would not be affected. There is some IHZ/IHMA immediately north of leases at Raft River and there would be increased off-limits acreage in IHZ/IHMA at Crane Creek. Implementing Alternative E and the Proposed Plan would have economic impacts slightly greater than those of Alternative B due to a slightly greater reduction in expected exploratory wells. Alternative E and the Proposed Plan also have some restrictions on surface development on existing leases to minimize impacts on GRSG habitat. This would have minor potential costs to operators. However, the BLM can impose these same RDFs to proposed actions on existing leases under Alternative A.

Alternative F—Economic impacts under Alternative F would be similar to the impacts under Alternative B.

The greatest impact on economic activity associated with geothermal development would be expected under Alternative C, where drilling and production in GRSG habitat would be substantially reduced, impacting local employment and earnings in the counties of Cassia and Washington and surrounding areas. Under Alternatives A and D, current trends in geothermal development would be maintained. There would be a slight reduction in economic activity associated with geothermal exploratory drilling under Alternatives B and F

relative to Alternative A, and slightly greater reductions under Alternative E and the Proposed Plan. However, existing leases would not be affected.

Impacts from Management Actions Affecting Wind Energy Development

The amount of future wind development in the study area is uncertain. China Mountain, in Twin Falls, Idaho, for wind energy development in the study area was recently removed. Current wind energy development in the study area is only one project, Bell Rapids, near Hagerman, Idaho, with a proposed capacity of 40 MW. Using estimates of the economic impact of the China Mountain project as a reference (BLM 2011b), scaled proportionally to the size of the project that would be built on BLM-administered lands (i.e., about one-tenth the size of the figures reported in the China Mountain Wind Project Draft EIS), then the Bell Rapids project would generate about 75 jobs for a two-year construction duration and about five long-term annual full-time jobs during operations. These estimates include direct, indirect, and induced positions. The jobs in the Bell Rapids project would most likely be in Elmore and Gooding Counties, based on the location of that project.

Based on the RFDS for wind energy, under Alternatives A and F, this level of development would be maintained. The BLM anticipates that Alternatives B, C, and D and the Proposed Plan may prevent wind energy development entirely. In this case, the planning area would see a loss of jobs equal to what is described above. Alternative E could limit future wind energy development, with some development possible, depending on fulfillment of criteria established by the alternative. Thus, Alternatives B, C, and D and the Proposed Plan would lower annual output, employment, and earnings related to wind energy development compared to Alternatives A and F. This may also be the case under Alternative E.

Impacts from Management Actions Affecting Land and Realty and Travel Management

Management actions that affect development of infrastructure could have important hindering effects on employment and earnings in the area. Limitations on new ROWs for power lines, pipelines, and access routes or restrictions to route construction and to travel on existing roads could increase the cost of new economic investments or make them no longer economically viable. (Additional information about changes in cost effectiveness and efficiency associated with restrictions on ROWs, corridors, and treatments are discussed in **Section 4.7**, Lands and Realty, and **Section 4.3**, Vegetation.) A qualitative discussion of the potential for economic impacts from restrictions on land use and transportation is provided below for each alternative.

Alternative A—Alternative A would place the fewest restrictions on ROW development and route construction and would maintain the most area open to travel, among the alternatives. According to RFDS developed by BLM specialists, of the proposed 516 miles of new 500-kV transmission lines, approximately 100 miles could be built under Alternative A.

Alternative B—Alternative B could result in adverse impacts on economic activity related to lands and realty and travel management by closing areas to ROW authorizations, limiting OHV travel on existing roads, and limiting new road construction in areas with primary GRSG habitat. In addition to restricted economic activity associated with road use and

development restrictions, economic impacts would include increased costs associated with mandatory mitigation for surface disturbance that exceeds 3 percent for the area. Based on the RFDS, the BLM projects no new transmission lines under Alternative B. Alternative B would impose greater limitations and added costs to future economic investments in the study area, compared with Alternative A.

Alternative C—Under Alternative C, economic impacts on lands and realty and travel management would be the same as under Alternative B, although a larger area would be excluded for development.

Alternative D—Alternative D would result in economic impacts slightly less than those under Alternatives B and C. Alternative D would apply similar restrictions on OHV travel, except the restrictions would apply to GHMA as well as PHMA. However, unlike Alternatives B and C, Alternative D would not impose costs related to mandatory mitigation for surface disturbance. Costs resulting from restricting infrastructure development under Alternative D would be greater than under Alternative A but less than under Alternatives B and C.

Alternative E—Management under Alternative E would have similar impacts than under Alternative A and fewer impacts than under Alternatives B, C, and D. However, Alternative E considerably increases the land area subject to avoidance, when compared to Alternative A. The BLM estimates that Alternative E could result in some new transmission lines, depending on whether the proposed projects meet established criteria. New linear developments could, however, face increased costs due to the avoidance stipulations that may impose alternative alignments or mitigation measures.

Alternative F—Economic impacts from Alternative F would be similar to those under Alternatives B and C, except that Alternative F would limit OHV travel in restoration areas, as well as primary habitat, and would prohibit new road construction within a 4-mile buffer from leks. However, the BLM does expect that development of transmission lines would be similar to that under Alternative A, with 100 miles of new transmission lines in the foreseeable future.

Proposed Plan—Under the Proposed Plan, development of major ROWs in PHMA would be avoided, rather than excluded as they would be under Alternative D. This could result in fewer adverse impacts on ROWs, as more acres would be available for major ROW development under the Proposed Plan versus Alternative D. The Proposed Plan would have impacts similar to Alternatives E and fewer impacts than under Alternatives B, C, D, and F. As under Alternative E, the BLM estimates that some new transmission lines could be built, depending on whether the proposed projects meet established criteria. However, new developments could face increased costs due to the avoidance stipulations that may impose alternative alignments or mitigation measures.

Under Alternatives B, C, E, and F and the Proposed Plan, agencies would aim to remove, bury, or modify existing power lines in PHMA. Under Alternative D, new power and communication lines (50 kV or less) outside of existing ROWs would be buried, where

physically feasible. During the reauthorization of existing distribution lines, the physical feasibility of burying lines would also be considered. These Alternative D management actions would apply to PHMA, IHMA, and GHMA.

All the action alternatives include restrictions in habitat that might require all new ROW or SUA routes to be modified or to undergo mitigation. Some public comments on the Draft LUPA/EIS were concerned with the costs of these measures and potential impacts on rate payers. Unit cost information for constructing transmission lines provides context for potential impacts of relocating or rerouting a transmission line. A 2012 WECC study provides information on transmission line costs per mile, ranging from $927,000 to $2,967,000, depending on voltage and whether lines are single or double circuit lines. The same study provides cost multipliers for difficult terrains, reaching up to 2.25 in the case of forested lands (WECC 2012). New construction of underground transmission lines can be between 4 and 14 times higher (PSC 2011), depending on terrain, although burying existing lines would be a fraction of the cost of new lines. Burying distribution lines would be considerably less, averaging under $500 per mile in rural areas (EIA 2012).

According to the Energy Information Administration, on average in the United States, transmission costs account for approximately 11 percent of the cost of energy bills, and distribution costs account for 31 percent, with the remaining being power generation costs (EIA 2013). Because utility providers pass on costs to their ratepayers, per-customer rate impacts would be greater where the ratepayer base is smaller, all else being equal (i.e., given an identical fixed cost associated with burial of transmission lines). Areas with smaller, local utility providers with fewer ratepayers would be required to absorb a greater proportion of the costs of relocation or rerouting compared to areas serviced by larger, multistate providers.

In summary, the most restrictions on economic activity relative to Alternative A, associated with land and realty development and travel management, would be expected to occur under Alternatives B, C, and F, with slightly less restrictions under Alternative D, and less still under Alternative E and the Proposed Plan.

Impacts from Management Actions Affecting Special Status Species Other Values Associated with Populations of GRSG

As described in **Chapter 3**, economists and policymakers have long recognized that rare, threatened, and endangered species have economic values beyond those associated with viewing and hunting. **Chapter 3** and **Appendix BB** document current methods to estimate these "non-use" values, including a description of the literature review that the BLM and Forest Service conducted to determine if there were existing non-use value studies for GRSG. Although there are no existing studies on valuation specific to the GRSG, several studies published in peer-reviewed scientific journals for bird species with similar characteristics find average stated willingness-to-pay between $15 and $58 per household per year in order to restore a self-sustaining GRSG population or to prevent regional extinction (see **Appendix BB** for details). These values represent a mix of use and non-use values, but the non-use components of value are likely to be the majority share since the studies primarily address species that are not hunted.

Because GRSG protection is a public good available to all households throughout the Intermountain West, if similar per-household values apply and if even a small portion of the per-household value represents a non-use value, then the aggregate regional non-use value could be substantial. However, the BLM and Forest Service did not quantify the aggregate value. This was because of the uncertainty of comparing existing studies to the GRSG context and the documented difference between stated and actual willingness-to-pay.

From a qualitative perspective, however, the non-use values associated with populations of GRSG would correspond to the degree of habitat protection associated with each alternative. Current management, Alternative A, provides the least protection for GRSG in the planning area and consequently could result in the most adverse impacts on GRSG. As a result, to the degree that there are non-use values associated with populations of GRSG, management under Alternative A would have the greatest adverse impacts on those values.

As discussed in **Section 4.2**, Sage-Grouse and Sage-Grouse Habitat, most of the management actions under the alternatives would be beneficial for GRSG. It is therefore estimated that, compared to Alternative A, each alternative would have a positive impact on non-use values associated with GRSG. However, because vegetation and soils management, livestock grazing management, fire and fuels management, recreation management, renewable energy development impact the protectiveness of each alternative, it is difficult to anticipate the comparative protection, and therefore non-use values, provided by Alternatives B through F.

Impacts on Tax Revenues and Payments to States and Counties

Reductions in economic activity could reduce tax revenues for local, state, and federal governments. At the state level, this could take the form of reductions in mineral severance taxes, mining taxes, sales and use taxes, or personal and corporate income taxes. At the local level, revenues could be reduced if property or sales taxes were to decrease.

As described in **Section 3.22**, Social and Economic Conditions (Including Environmental Justice), most Idaho state revenues come from sales and use taxes, income taxes, and property taxes. Most of Montana's state revenues come from individual income taxes and severance taxes, including oil and gas production taxes, although most of the mineral production in Montana is outside the planning area. Idaho's overall economic output, which provides a measure of its sales tax base, was almost $53 billion in 2010 dollars. Montana had a 2010 gross state product of almost $35 billion in 2010 dollars (BEA 2013).

Based on the information available, it is not possible to quantify potential impacts of management alternatives on tax revenues as a share of state overall tax bases or tax collections. However, local government tax revenues could be affected in areas that would experience considerable changes in economic activity. As described in **Section 3.22**, Idaho counties receive most of their revenue from property taxes, charges for local services, and redistribution of state and federal resources; in Montana, local government tax collections come almost entirely from property taxes. In both Idaho and Montana, counties receive a portion of royalties from mining on federal land, as well as fees for grazing, recreation, and rents of ROW and oil and gas tax.

Although specific impacts on local government tax revenues could not be quantified, the anticipated changes (both positive and negative) in economic activity as a result of the various alternatives suggest that local tax revenues could be affected more in certain counties than in others, particularly Cassia, Gooding, Jerome, Lincoln and Owyhee Counties, in Idaho, because of impacts on grazing.

4.15.4 Social Impacts

Impacts from Management Actions Affecting Migration Population

The decrease in employment opportunities in the study area that would occur under Alternative C from the adverse impacts on farming, corresponds to less than 0.45 percent of the current employment in the study area (**Table 4-88**). The BLM and Forest Service do not expect this change in employment to be sufficiently large to induce perceptible changes in population in any particular county, or to impact the capacity of counties in the study area to attract and retain its labor force, with implications for population growth. It is possible that, within counties, specific communities highly dependent on livestock operations could lose sufficient employment opportunities under Alternative C to affect their capacity to attract and retain labor, affecting in turn their population growth trends.

Housing and Public Services

Housing demand would not be affected in a substantial way by any of the alternatives. No alternative would sufficiently increase employment opportunities to generate an inflow of new population to any specific county, affecting housing demand in the communities' capacities to provide the demand for housing or associated public services. However, the abilities of counties to supply public services could be reduced, particularly under Alternative C, in accordance with potential reductions in local tax revenues. State tax revenues would not be affected substantially, as documented in the section on fiscal conditions.

Impacts from Management Actions Affecting Specific Groups and Communities

Consistency with County Land Use Plans

The decision under consideration may amend BLM and Forest Service LUPs throughout the study area. BLM GRSG habitat mapping does not necessarily coincide with mapping made by counties (e.g., Custer County) due to differences in mapping methods. Also, the Custer County GRSG plan does not recognize livestock grazing as a threat to GRSG habitat. Under FLPMA, the BLM and Forest Service management plans and LUPs must be consistent with state and local LUPs, to the extent possible and within the context of other mandates of the BLM and Forest Service. Any potential amendments would aim to maintain consistency to the degree possible. This would be the case under all alternatives.

Interest Groups and Communities of Place

As described in **Chapter 3**, there is a range of groups in the study area with overlapping and divergent interests. Groups centered on recreation, livestock grazing, mining, land development, infrastructure development, business development, and conservation of natural resources would be impacted differently by the management alternatives. The interest

groups most likely to be affected by the choice of alternative are those associated with livestock grazing and wildlife conservation.

Specific communities would be impacted in different ways by the management alternatives. Communities with more diversified economies, and particularly those less dependent on livestock grazing, would likely be less impacted.

The BLM and Forest Service reviewed the scoping report and the notes from the regional economic strategies workshop to identify any comments related to specific communities that may be particularly affected by various management alternatives. Multiple commenters discussed concerns specific to the Magic Valley in Idaho and Twin Falls County, in particular. The commenters identified the importance of grazing for the local economy (BLM and Forest Service 2012). With respect to grazing management actions in other communities, comments included requesting that that BLM consider maintaining livestock operations in the Jarbidge Planning Area and that it preserve customary agricultural use in Custer County (BLM and Forest Service 2012).

A few commenters expressed concern with potential impacts of management alternatives on recreation, including that in Owyhee County and Blaine County. As previously discussed, the BLM and Forest Service do not expect overall levels of visitation to recreation areas on BLM-administered and National Forest System lands to differ among management alternatives. One commenter identified Clark County, Idaho, as a vulnerable area, explaining that 75 percent of it is publicly owned. The commenter expressed concern that restrictions on use of BLM-administered and National Forest System lands could have negative consequences for Clark County residents (BLM and Forest Service 2012).

The BLM and Forest Service also reviewed public comments made on the Draft LUPA/EIS for specific concerns about impacts on individual counties and towns or specific interest groups. Several commenters expressed concern with impacts of management alternatives on livestock operations and mining and their effects on local communities. For example, Custer County was highlighted as having an economy based on mining and agriculture/ranching, with any GRSG management plans on grazing having potentially serious impacts on the viability of individual farms or the history and culture of the community.

Several commenters focused on the importance of phosphate to southeastern Idaho. Others expressed in general terms that the analysis of impacts should be done at a level of specific counties or communities. Additional analysis will be done during implementation of resource management plans and land use plans to properly assess the geographically localized impacts of management actions that many commenters are concern with.

Alternatives C and F would have the most adverse impacts on livestock grazing operators throughout the study area. Economic impacts would be most felt in those counties where livestock operations are a greater share of employment and earnings; nevertheless, individuals and interest groups associated with livestock grazing could be affected in all counties where GRSG habitat intersects with areas commonly used for grazing. In some communities (e.g., Caribou and Custer Counties, Idaho), Alternatives C and F could have

adverse impacts through their effects on mining. Conservation interests could benefit under these management alternatives. Communities would likely be impacted differently by each alternative, depending on the balance of economic activities and social values in each community.

Summary of Social and Economic Impacts

Alternative actions evaluated in this EIS consist of different packages of conservation measures that include land use restrictions, management practices or design features, habitat priorities or desired conditions, and monitoring protocols. These conservation measures, in aggregate, are intended to address threats to and provide protection of GRSG (see **Chapter 2**).

This section has evaluated the social and economic impacts of conservation that addresses threats from specific land and resource uses (e.g., grazing and minerals) that are linked to social and economic conditions (e.g., employment). There are other conservation measures included in the alternatives (to varying degrees) that address other threats. Examples of these threats are fire, invasive plants, and vegetation (e.g., pinyon-juniper) encroachment on GRSG habitat, which would have direct impacts on local economies and on broader GRSG conservation benefits. However, the extent of these impacts is not known due to uncertainty, such as the occurrence of fire. Therefore, while the regional economic impacts of these conservation measures were not evaluated in this section, they would not only play a critical and complementary role in helping meet the goal of effectively protecting GRSG from a full spectrum of threats, but also would support local economic activity.

The discussion and tables below summarize the range of potential social and economic impacts that may occur as a result of the subset of conservation measures that affect land or resource uses linked to readily identifiable social or economic conditions.

Table 4-88 provides a summary of potential economic effects of management alternatives in the study area. Alternative A represents impacts associated with current management.

Table 4-88
Economic Impacts Relative to Alternative A

	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
Grazing	Potential operational costs or reduced efficiencies	-1,420 jobs (0.54% of 2010 baseline) and -$50.1 million in earnings (0.29% of 2010 baseline)	Potential operational costs or reduced efficiencies	Potential operational costs and/or reduced efficiencies	-310 jobs (0.12% of 2010 baseline) and -$10.8 million in earnings (0.06% of 2010 baseline)	Potential operational costs and/or reduced efficiencies
Oil and Gas	50% reduction in employment and earnings from production of federal minerals in GRSG habitat	50% reduction in employment and earnings from production of federal minerals in GRSG habitat	No reduction in employment and earnings relative to Alternative A	Reduction in employment and earnings relative to Alternative A less than under Alternatives B, C, F or Proposed Plan	50% reduction in employment and earnings from production of federal minerals in GRSG habitat	50% reduction in employment and earnings from production of federal minerals in GRSG habitat
Phosphate	Reduced employment and earnings from phosphate mining in the Paris Hills KPLA	Reduced employment and earnings from phosphate mining in the Paris Hills KPLA	No impact on KPLAs	No impact on KPLAs	Reduced employment and earnings from phosphate mining in the Paris Hills KPLA	No impact on KPLAs
Locatable Minerals	Withdrawal recommendation in PHMA could limit future potential employment and earnings	Withdrawal recommendation in PHMA would have the greatest potential impact on employment and earnings	No impact relative to Alternative A	No impact relative to Alternative A	Same as Alternative B	Withdrawal recommendation in SFA would have less potential impacts than Alternatives B, C and F, more than A, D and E
Mineral Materials	Increased costs to local users with closure of PHMA to mineral material disposal	Same as Alternative B	Potential increase in costs to local users due to restrictions across GSRG habitat, but less than Alternative B	No impact relative to Alternative A	Same as Alternative B	Same as Alternative B

Table 4-88
Economic Impacts Relative to Alternative A

	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Proposed Plan
Geothermal	Reduction employment and earnings from geothermal development in GRSG habitat on BLM and FS managed lands	Most reduction in employment and earnings from geothermal development in GRSG habitat on BLM and FS managed lands	No reduction	Less reduction in employment and earnings from geothermal development when compared to Alternatives B and F	Reduction in employment and earnings from geothermal development in GRSG habitat on BLM and FS managed lands	Less reduction in employment and earnings from geothermal development when compared to Alternatives B and F
Wind	May prevent employment and earnings from wind energy development in GRSG habitat on BLM and FS managed lands	May prevent employment and earnings from wind energy development in GRSG habitat on BLM and FS managed lands	May prevent employment and earnings from wind energy development in GRSG habitat on BLM and FS managed lands	Potential reduction in employment and earnings from wind energy development relative to Alternative A	No impact relative to Alternative A	May prevent employment and earnings from wind energy development in GRSG habitat on BLM and FS managed lands
Lands and Realty and Travel Management	Most potential for reduced employment and earnings from ROW investments and increased costs from travel management restrictions on GRSG habitat on BLM and Forest Service managed lands	Most potential for reduced employment and earnings from ROW investments and increased costs from travel management restrictions on GRSG habitat on BLM and Forest Service managed lands	Less potential for reduced employment and earnings from ROW investments and increased costs from travel management restrictions on GRSG habitat on BLM and Forest Service managed lands	Least potential for reduced employment and earnings from ROW investments and increased costs from travel management restrictions on GRSG habitat on BLM and Forest Service managed lands	Most potential for reduced employment and earnings from ROW investments and increased costs from travel management restrictions on GRSG habitat on BLM and Forest Service managed lands	Least potential for reduced employment and earnings from ROW investments and increased costs from travel management restrictions on GRSG habitat on BLM and Forest Service managed lands

Source: Impacts for grazing calculated using the IMPLAN model, as explained in the text and in **Appendix AA**, Economic Impact Analysis Methodology. Grazing values are the mid-point between the low and high impact scenarios. Percent of 2010 baseline is calculated from value of impacts and baseline information provided in **Section 3.22**, Social and Economic Conditions (Including Environmental Justice). Earnings values are in millions of year 2010 dollars.

Impacts associated with grazing would occur throughout the study area, with concentrations in Cassia, Gooding, Jerome, Lincoln, and Owyhee Counties in Idaho. Impacts associated with reduced oil and gas development would likely be mostly felt in Bear Lake County, Idaho, Beaverhead County, Montana, and surrounding areas. Impacts associated with phosphate would be felt mostly in Bear Lake County. Impacts associated with geothermal development would most likely be felt Cassia and Washington Counties and surrounding areas. Employment associated with the Bell Rapids wind project would most likely be in Elmore and Gooding Counties, based on the location of that project. Impacts associated with lands and realty and travel management would likely be dispersed throughout the study area.

Other impacts not discussed in **Table 4-88** are potential impacts on salable minerals (dispersed throughout the study area), locatable minerals (potentially around counties such as Caribou and Cassia), and state and local tax revenues (largely tied to economic output and earnings, affected as described above).

The BLM and Forest Service do not expect changes in employment in the study area under any of the alternatives to be sufficiently large to induce perceptible changes in population in any particular county. Similarly, no increased demand for housing or public services is expected that could not be accommodated by current trends.

Communities with strong interest groups revolving around conservation and primitive recreation could experience benefits from Alternatives B, C, D, E, and F and the Proposed Plan. Communities with strong interest groups focused on livestock grazing would likely experience the most adverse impacts from Alternatives C and F.

Table 4-89 summarizes the social impacts of the management alternatives.

Table 4-89
Social Impacts Relative to Alternative A

	Alternative B	**Alternative C**	**Alternative D**	**Alternative E**	**Alternative F**	**Proposed Plan**
Population growth; demand for housing and public services	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
Consistency with county LUPs	No impact	No impact	No impact	No impact	No impact	No impact
Impacts on interest groups and communities of place	Between E and F	Most benefits to conservation groups; adverse impacts on grazing interests	Similar to B	Most benefits to grazing interests after Alternative A, similar to the Proposed Plan	Some benefits to conservation groups; adverse impacts on grazing interests	Similar to B

Non-market benefits from the management alternatives would be derived from the ability of the full spectrum of conservation measures to conserve, enhance, or restore GRSG habitat by reducing, eliminating, or minimizing threats. Furthermore, as discussed, alternatives also specify different types and levels of mechanisms to guide when and where conservation measures, design features, and treatments are implemented. Examples of these mechanisms are disturbance caps, adaptive management protocols, and desired conditions or objectives, and they will have an important influence on the overall effectiveness and efficiency of the alternatives.

The magnitude of benefits associated with stabilizing or improving GRSG populations or habitat has not been monetized or quantified. This is due to the absence of specific data on the values of non-market benefits of GRSG and uncertainty about quantifying projected responses of GRSG habitat and populations to conservation measures.

A qualitative evaluation of the benefits from potential changes in GRSG populations and habitat resulting from the subset of conservation measures addressing land and resource uses and extraction, as evaluated in this section, indicates alternatives have the following capability to protect or improve benefits from GRSG:

- Alternative A has the lowest capability
- Alternative B has greater capability than A, but lower capability than Alternative F
- Alternative C has the greatest capability
- Alternative D has greater capability than Alternatives A, B, or E but less than Alternatives C and F
- Alternative E has the second lowest capability after Alternative A
- Alternative F has second greatest capability after Alternative C
- The Proposed Plan has greater capability than Alternatives A, B, D, and E but less than Alternatives F and C

In addition to the conservation measures directly associated with social or economic impacts considered in this section, there are other conservation measures that address other threats (e.g., fire, nonnative plants, and encroachment). These also contribute to GRSG and GRSG habitat protection and corresponding benefits that are not addressed here. (For a complete description of potential improvements in GRSG habitat protection resulting from the full spectrum of conservation measures under each alternative, see the effects summary tables in **Chapter 2**.) Social and economic impacts cannot be considered in isolation or exclusive of other impact indicators discussed in this EIS.

4.15.5 Environmental Justice Impacts

The BLM and Forest Service considered information on the presence of minority and low-income populations (from **Chapter 3**), along with additional information, described in this

section, to assess the potential for disproportionately high and adverse impacts on minority or low-income populations. Although conservation measures would be implemented consistently across all identified habitat, with no discrimination over particular populations, environmental justice guidance requires agencies to consider also whether their actions could unintentionally result in disproportionately high and adverse effects.

To help guide the analysis of potential environmental justice impacts, the BLM and Forest Service considered the information gathered in the economic strategies workshop that was conducted in June 2012. That workshop was convened to identify public concerns related to potential social, economic, and environmental justice impacts that could result from the management alternatives. The BLM and Forest Service also reviewed the scoping report for the present EIS to identify any comments related to environmental justice issues. None of the public comments received during that workshop or presented in the scoping report called out a specific concern related to minority populations (BLM and Forest Service 2012; BLM 2013d).

Potential Impacts on Minority Populations

As discussed in **Chapter 3**, CEQ guidance identifies a community or a specific population group as a minority population when either minorities in the affected area exceed 50 percent of the total population or the percentage of minorities in the affected area is meaningfully greater than the percentage in the general population or appropriate unit of geographical analysis. Based on the description of minority presence in the study area in **Chapter 3**, several counties have minority presence considerably above that of the state as a whole. Examples are Clark County, Idaho, whose minority population is 42.9 percent of its total population; Minidoka County, Idaho (34.6 percent); and Power County, Idaho (34 percent).

In total, 14 counties of the study area in Idaho (and neither of the counties in Montana) have a higher percentage of minority presence than the state as a whole. For the purposes of this LUPA/EIS, all 14 counties were considered minority populations: Bingham, Blaine, Cassia, Clark, Elmore, Gooding, Jerome, Lincoln, Minidoka, Owyhee, Payette, Power, Twin Falls, and Washington.

The extent to which existing minority populations are disproportionately impacted by high and adverse human health or environmental effects depends on two factors: the existence of high and adverse human health or environmental effects on any of the resources analyzed, and whether minority populations are particularly vulnerable to these impacts or are more likely to be exposed to such impacts.

Adverse impacts of alternatives were identified under the various resources analyzed and are described in their respective sections of **Chapter 4**. None of the alternatives could be considered to have a high and adverse impact on the study area as a whole.

The BLM and Forest Service considered the possibility that adverse impacts could be concentrated in few counties in the study area and could then constitute a high and adverse impact in those counties. As previously noted, losses of employment and earnings related to grazing would be particularly important for Cassia, Gooding, Jerome, Lincoln, and Owyhee

Counties, where over 20 percent of earnings are attributable to livestock farming. For the purposes of this LUPA/EIS, each of these counties is considered a minority population. If grazing impacts, particularly under Alternative C, were high and adverse in these counties, Alternative C would disproportionately impact minority populations. Employment impacted through grazing under Alternative C was estimated in 1,420 jobs. This represents about 3.6 percent of the total employment in these five counties. However, based on the intersection of GRSG habitat and the study area, grazing impacts would not likely be concentrated in these five counties alone; thus no disproportionately high and adverse impacts on these minority populations would occur.

One issue of potential concern relates to interests of Native American tribes. The planning area is within the traditional or historical use area of several tribes (see **Section 3.18**, Tribal Interests). Members of these tribes hunt on federal lands outside of the boundaries of their reservations. Although hunting would be impacted in certain areas under some management alternatives, the proposed management actions would not affect the overall tribes' ability to hunt in the study area, so no disproportionately high and adverse impact would be expected.

Based on available information about the nature and geographic incidence of impacts, neither specific minority populations nor tribal populations would be exposed to disproportionately high and adverse impacts under any of the management alternatives considered.

Potential Impacts on Low-Income Populations

Fifteen of 29 of the counties in the study area have a concentration of low-income populations that exceeds the state average, as discussed in **Chapter 3**: Bear Lake, Bingham, Butte, Camas, Cassia, Custer, Gem, Gooding, Jerome, Lemhi, Lincoln, Madison, Owyhee and Payette counties in Idaho and Beaverhead in Montana. For the purpose of this LUPA/EIS, all these counties were considered low-income populations. It is also possible that there are smaller communities in the remaining counties that constitute low-income populations, given the large geographic spread of each county.

The extent to which low-income populations are disproportionately impacted by high and adverse human health or environmental effects depends on two factors: the existence of high and adverse human health or environmental effects from management alternatives on any of the resources analyzed, and whether low-income populations are specifically vulnerable to these impacts or more likely to be exposed to such impacts.

Similar to the analysis for minority populations, the BLM and Forest Service reviewed the impacts of alternatives described in the respective sections of **Chapter 4**. None of the alternatives could be considered to have a high and adverse impact on the study area as a whole. As previously explained, the BLM and Forest Service found no evidence that impacts would be sufficiently concentrated in a few counties to constitute high and adverse impacts. Based on available evidence, there would be no disproportionately high and adverse impacts on low-income populations in the study area.

Table 4-90 provides a summary of the findings of this analysis with respect to disproportionately high and adverse effects of the alternatives.

Table 4-90
Environmental Justice Impacts

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Disproportionately high and adverse impacts on minority populations	No impact	No impact	No impact	No impact	No impact	No impact
Disproportionately high and adverse impacts on low-income populations	No impact	No impact	No impact	No impact	No impact	No impact

4.16 The Relationship Between Short-Term Uses of the Human Environment and Maintenance and Enhancement of Long-Term Productivity

This section compares the potential temporary effects of the alternatives analyzed in this LUPA/EIS on the environment with the potential effects on its long-term productivity. The BLM and Forest Service must consider the degree to which the action alternatives would sacrifice a resource value that might benefit the environment in the long term for some temporary value to the proponent or the public.

Implementation of the action alternatives would restrict the use of the environment for mineral extraction, energy projects, livestock grazing, recreation, and lands and realty authorizations. These restrictions would protect soils, vegetation, water quality and supplies, air quality, and visual resources. These measures would also maintain the storage of any such mineral or energy resources for potential future use beyond the time frame of the restrictions outlined in the action alternatives.

For as long as the LUPA is valid, regional economies could experience decreased economic activity from these restrictions. This is because there would be decreases in income-generating livestock grazing and fewer employment opportunities related to construction and energy extraction. However, such economic activity could be restored to these lands through future changes in their management, with a subsequent NEPA analysis.

Implementation of the Alternative A would require fewer resource protections and would allow for greater productivity of the lands.

4.17 Irreversible and Irretrievable Commitment of Resources

NEPA Section 102(2)(C) and Section 1502.16 of the CEQ NEPA implementing regulations require that the discussion of environmental consequences include a description of "…any irreversible or irretrievable commitment of resources which would be involved in the proposal should it be implemented."

An irreversible commitment of a resource is one that cannot be reversed or cannot be renewed within a reasonable time frame. Extinction of a species or disturbance to cultural resources would constitute irreversible impacts, as would extraction of sand, gravel, or oil or gas because these minerals cannot be renewed in the ground within a reasonable time frame.

An irretrievable commitment of a resource occurs when the resource or its use is lost for a period. For example, a decision not to treat juniper encroachment into adjacent sagebrush habitat results in the irretrievable loss of forage production from the grassland community. This action is not irreversible because a treatment applied to the encroaching juniper could restore the forage production of the sagebrush habitat.

The decision to select one of the seven alternatives described in this Proposed LUPA/FEIS does not constitute an irreversible or irretrievable commitment of resources because the decision does not authorize implementation-level activities. Instead, decisions made under the selected alternative serve to guide future actions and subsequent site-specific decisions. Following the signing of the ROD for the LUPA, the BLM and Forest Service will develop and implement implementation plans (activity- or project-specific). Implementation decisions require appropriate project-specific planning and NEPA analysis and constitute BLM and Forest Service final approval authorizing on-the-ground activities to proceed. Overall, the action alternatives analyzed in this EIS are protective of resources over existing conditions and would not subject any of them to irreversible or irretrievable commitments.

4.18 Unavoidable Adverse Impacts

NEPA Section 102(C) also mandates disclosure of "any adverse environmental effects which cannot be avoided should the proposal be implemented." These are impacts for which there are no mitigation measures or impacts that remain even after the implementation of mitigation measures.

Implementation of the LUPA along the theme of the action alternatives would not result in unavoidable adverse impacts on any resources. Conversely, proposed restrictions on some activities, such as OHV use, energy development, and livestock grazing intended to protect sensitive resources and resource values, would result in unavoidable adverse impacts on some users, operators, and permittees by limiting their ability to use BLM-administered and National Forest System lands and potentially increasing their operating costs.