1. INTRODUCTION

ENVIRONMENTAL ASSESSMENT (EA) #: OR-030-04-013

BUREAU OF LAND MANAGEMENT (BLM) OFFICE: Jordan Resource Area, Vale District, Oregon

PROPOSED ACTION: Rangeland management actions necessary to allow progress towards and the attainment of the Standards of Rangeland Health for Louse Canyon Geographic Management Area (LCGMA).

Location of the Proposed Action: Louse Canyon Geographic Management Area (Map 1, GMA's, Land Treatments, and Fire Impact Areas), which includes the following BLM grazing allotments:

Allotment Number	Allotment Name	Total Acres of Public Land Within GMA Boundary *
11306	Campbell	155,998
1102	Ambrose Maher	3,633
1307	Louse Canyon Community	128,458
1401	Anderson	39,319
1402	Star Valley Community	190,288
1403	Little Owyhee	7,016
1404	Quinn River	4,225
	Total Acres >>>>>>>>>	528,937

* Campbell Allotment acreage does not include 2,940 acres of land located outside the LCGMA boundary. Louse Canyon Community Allotment does not include 2,972 acres in Wilkinson Fence Pasture and 1,476 acres in Frenchman Creek Seeding, which are both outside the LCGMA boundary.

BACKGROUND

The alternatives for resource management considered in this EA, which influence nearly 529,000 acres of public land, were developed between June 2000 and June 2004. The alternatives were crafted based on consultation, cooperation, and coordination with livestock permittees and members of the interested public, and patterned after alternatives used for the Southeastern Oregon Resource Management Plan (SEORMP) Final Environmental Impact Statement (FEIS) April 2001.

For national Environmental Policy Act (NEPA) purposes, this document is tiered to and incorporates by reference the content of the SEORMP FEIS.

The Louse Canyon Geographic Management Area Standards of Rangeland Health Evaluation (Fall 2003), henceforth "the Evaluation", provides resource information and context (e.g. the

existing environment) for this EA. The content and supporting information presented in the Evaluation includes the following:

Chapter 1 – Background

- The origin and description of Oregon/Washington Standards BLM Standards and Guidelines for Rangeland Health (1997)
- Geographic Management Areas (GMA's) and their use as the land base for adaptive ecosystem management under the direction of the SEORMP
- Public scoping and issues identified, and information meetings
- Rangeland health evaluation criteria used by BLM

Chapter 2 – LCGMA Environment and Resources Description

- Existing environment and rangeland assessment results

Chapter 3 –LCGMA Rangeland Health Determinations

- Summary of resource conditions observed in specific pastures within grazing allotments; determinations show BLM conclusions on conformance of resource conditions to Oregon/Washington BLM Standards and Guidelines for Rangeland Health and criteria specified in the SEORMP

Chapter 4 – LCGMA Evaluation Recommendations

Chapter 5 – LCGMA Activity Plan Level Objectives

- Reasonable, attainable, and measurable resource management objectives

Chapter 6 – Proposed Management Alternatives for LCGMA

- Potential options for BLM resolution of resource conflicts

Supporting Information

- Appendices
- Tables
- Maps
- Graphs
- References

Information on compact disk (CD)

- Field data collection forms and digital images taken at each assessment area are organized by grazing allotment and pasture.

The complete Evaluation is available to the public at the following BLM web address:

http://www.or.blm.gov/Vale/Range/standards_and_guides_evaluations.htm

Errors in the final Evaluation document discovered by BLM subsequent to publication are shown in *Errata—Louse Canyon GMA (2003).*

NEED FOR PROPOSED ACTION

Under the direction of the SEORMP, GMA assessments are an administrative mechanism by which BLM will make adjustments to authorized land uses. Based on the LCGMA rangeland assessment findings of 2000, changes in livestock use are needed in LCGMA grazing allotments in order to resolve certain resource management conflicts. The purpose of this EA is to take a hard look at potential environmental impacts of seven different alternatives to livestock management for LCGMA.

CONFORMANCE WITH LAND USE PLAN

The proposed action is in conformance with the SEORMP. Environmental impacts associated with the proposed action for LCGMA are consistent with the impacts that have already been disclosed and analyzed in the Proposed Alternative of the SEORMP FEIS (April 2001), and therefore LCGMA proposed actions also conform to the SEORMP Record of Decision (ROD) (September 2002).

Proposed management actions and impacts to LCGMA were not identified as specific line items in the SEORMP FEIS and ROD. However, management outcomes of the proposed action will clearly allow BLM to attain land use plan objectives described in the ROD (pages 28-111).

The SEORMP was crafted as an adaptive, outcome-based land use plan. This means that proposed actions are considered to be consistent with the ROD when they conform to the Desired Range of Future Conditions (DRFC's), meet stated land use plan objectives, and result in environmental impacts that do not exceed those that were analyzed in the FEIS. The proposed action meets these outcome-based management criteria for the following program areas included in the ROD:

1. Rangeland Vegetation (ROD, page 38)
2. Special Status Plant Species (ROD, page 43)
3. Water Resources and Riparian/Wetlands (ROD, page 44)
4. Fish and Aquatic Habitat (ROD, page 49)
5. Wildlife and Wildlife Habitat (ROD, page 50)
6. Special Status Animal Species (ROD, page 51)
7. Rangeland/Grazing Use Management (ROD, page 56)
8. Areas of Critical Environmental Concern (ROD, page 68)
9. Wild and Scenic Rivers (ROD, page 102)
10. Wilderness Study Areas (ROD, page 104)
11. Cultural Resources (ROD, page 106)

ROD objectives for program areas are stated at the beginning of each program analysis in this EA.

2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

In the Evaluation, BLM presented a variety of options to remedy resource management conflicts, including one submitted by the Committee for Idaho's High Desert (CIHD), a member of the interested public, and also alternatives considered but eliminated from further analysis. Evaluation alternatives were used as a way for BLM to draft a final list of suggestions from the public prior to writing this EA. See Table 1 for a summary of projects for each alternative by allotment. See Table 2 (Livestock Stocking Level Calculations for Alternative I) for information on current and proposed grazing use and stocking rates.

Alternatives introduced in the Evaluation are repeated in this EA and appear as Alternatives I, II, III, IV, V, and VI. After review by BLM personnel and livestock permittees, some aspects of the alternatives as they originally appeared in the Evaluation were changed. Some rangeland improvement projects proposed in the Evaluation have been modified to facilitate construction or maintenance and to reduce the overall amount of new fencing. Although these projects have been modified they would function in the same manner as described in the Evaluation and produce the same benefits. These changes are explained in the descriptions below.

Alternative I – *Enhance Commodity Production*
This alternative emphasizes livestock production in ways similar to Alternative A of the SEORMP FEIS. Under this option, constraints on commodity production for the protection of sensitive resources would be the least restrictive possible within the limits defined by law, regulation, and BLM policy. Riparian resource management would mainly be accomplished by way of exclusion fencing on approximately 54 miles of stream corridor. Total average Animal Unit Months (AUM's) harvested by livestock would increase by an amount up to the maximum 40% or 50% utilization levels on native range under existing management. Land treatments would emphasize grass communities favorable to livestock production.

In Campbell Allotment, the proposed Sacramento Hill Pasture Division Fence and Pipeline Extension were modified to reduce the amount of new fencing and pipeline construction. Instead of following the shape of the Wilderness Study Area (WSA) boundary (which is "V" shaped), the fence is now proposed to go directly east-west across the pasture. The fence would follow an existing road for its western half, thereby reducing the amount of new disturbances. The pipeline extension in this pasture would take a more direct route and would be shortened from 9 miles (5 troughs) to 6.25 miles (5 troughs).

See Table 2 (Livestock Stocking Level Calculations for Alternative I) for information on current and proposed grazing use and stocking rates.

Alternative II – *No Action*
This alternative would continue current management and is the same as FEIS Alternative B. This No Action alternative is required by National Environmental Policy Act (NEPA) regulations.

Alternative III - *Proposed Action*
This alternative was developed as a reasonable, multiple-use option by the Jordan Resource Area interdisciplinary team and is similar to the SEORMP FEIS Proposed Alternative. Under this option, management actions would result in a high level of natural resource protection and improvement in ecological conditions while providing commodity production. Riparian resources would be improved as a result of new pasture boundary fences and grazing season-of-use adjustments. Land treatments would provide a certain acreage of grassland community beneficial to livestock production, but a level much lower than in Alternative I.

In Louse Canyon Community and Star Valley Community allotments, common grazing use among all pastures is permitted even though livestock operators have specific pastures and grazing systems identified for use. To balance AUM's when unforeseen conditions arise, operators may trade use or take advantage of additional forage even though it may be outside of their scheduled use areas in these allotments.

In native pastures with rest/rotation grazing systems, maximum allowable utilization levels would be increased from "light" (21%-40%) utilization, as originally proposed in the Evaluation for all native pastures, to 50%. A maximum level of 50% is the same as currently authorized. Native pastures grazed annually would retain the "light" utilization levels proposed in the Evaluation. Pastures with riparian concerns would have utilization targets of 30%, which fall within the maximum allowable "light" utilization category (21%-40%), regardless of grazing systems.

Some rangeland improvement projects proposed in the Evaluation have been modified to facilitate construction or maintenance and to reduce the overall amount of new fencing. Although these projects have been modified they would function in the same manner as described in the Evaluation and produce the same benefits.

In Louse Canyon Community Allotment, the west end of the Louse Canyon Division Fence would be realigned to take advantage of existing fencing around private property and rim rock canyons, resulting in less new fencing than was proposed in the Evaluation. The pasture boundary would be moved south, thereby placing slightly more acreage in Lower Louse Canyon Pasture and slightly less acreage in Middle Louse Canyon Pasture (Map 2, Alternative III).

In Campbell Allotment, the proposed Sacramento Hill Pasture Division Fence and Pipeline Extension were also modified to reduce the amount of new fencing and pipeline construction. Instead of following the shape of the Wilderness Study Area (WSA) boundary (which is "V" shaped), the fence is now proposed to go directly east-west across the pasture. The fence would follow an existing road for its western half, thereby reducing the amount of new disturbances. The pipeline extension in this pasture would take a more direct route and would be shortened from 7 miles (3 troughs) to 4.25 miles (3 troughs).

One additional fencing project not originally proposed in the Evaluation would be a livestock drift fence (1.5 miles) in Starvation Seeding Pasture of Campbell Allotment. This drift fence would create a lane to constrain livestock trailing to a small portion of Campbell Allotment

during pasture moves. The fence would be approximately 150 feet from, and run parallel to, the existing fence that separates Starvation Seeding Pasture from Peacock Pasture.

Alternative IV – *Enhance Natural Values*
This alternative would enhance natural values by substantially limiting project development and providing yearlong grazing rest within important riparian areas. It is similar to FEIS Alternative D. Commodity production would be substantially constrained for the purpose of protecting sensitive resources and accelerating improvement in their condition. Riparian resource management would include some exclusion fencing but would mainly rely upon livestock grazing season-of-use adjustments. Land treatments would provide for a certain acreage of grass community beneficial to livestock production, but at a level much lower than Alternative I.

Alternative IV-a—*Protect Natural Values*
This alternative closely resembles the interim grazing system that has been in effect in LCGMA since the 2002 grazing season subsequent to rangeland health determinations by the authorized officer. Alternative IV-a was added to address the possibility that the BLM and livestock permittees may not be able to fully fund all projects identified in Alternative III, the Proposed Action. If this financial shortfall were to occur, a less expensive fall-back option for management that still meets management objectives would become necessary. Alternative IV-a is similar to Alternative IV in that no new fencing in South Tent Creek, Horse Hill, and the Louse Canyon pastures would be allowed. However, Alternative IV-a differs from IV in that no rest from grazing would occur in the above pastures. Instead of grazing rest, a livestock utilization cap necessary to protect riparian and upland resources would be applied.

This alternative would protect and gradually improve natural values with some new rangeland projects, but it would not include grazing rest periods within important riparian areas as is the case in Alternative IV. Riparian resource management includes some exclusion fencing but would mainly rely upon livestock grazing season-of-use adjustments. Land treatments would provide for a certain acreage of grass community beneficial to livestock production, but a level much lower than Alternative I.

Alternative V—*Enhance Natural Values*
This alternative would remove livestock production from about 387,200 acres of LCGMA and limit other public uses as a way to promote function of natural systems. Grazing reductions are patterned after FEIS Alternative D2 (SEORMP FEIS, Appendix T, page 395). BLM combined the number of public land acres in Little Owyhee and Quinn River allotments with the number of acres shown for LCGMA in Appendix T to arrive at a final 387,200 acres that would be withdrawn from grazing in this alternative. Compared to Alternative IV or IV-a, Alternative V would authorize very little livestock commodity production. Riparian resource management would be accomplished by completely removing all livestock use from most riparian pastures. Land treatments would restore all crested wheatgrass seedings to native rangeland.

Alternative VI—*Proposal from Committee for Idaho's High Desert (CIHD)*
Riparian and upland resource protection would rely upon a combination of actions including a five-year grazing rest period in most riparian areas, avoidance of new range improvement projects, removal of existing livestock water pipelines, livestock season-of-use adjustments, and

certain upland and riparian utilization standards. This alternative presents options similar to those within FEIS alternatives D and D2 in that livestock commodity production would be reduced substantially as a means of protecting natural values.

Alternatives Considered but Eliminated from Further Analysis:

(1) No Grazing
Livestock grazing would not be allowed and all range improvements would be removed.

The "No Grazing" alternative was eliminated from further study because it is not consistent with federal law (Taylor Grazing Act, Federal Land Policy and Management Act, Public Rangelands Improvement Act), or the SEORMP ROD. See the SEORMP FEIS, Alternative E, for analyses of the "No Grazing" alternative.

(2) Short duration/low intensity grazing
Livestock would be herded rapidly through the allotments with stops at various watering areas for short periods of 5 – 10 days. Most fences and pipeline systems would be removed. Most springs and reservoirs would be retained to provide water sources.

This alternative was eliminated from further study because livestock permittees considered the intense herding effort to be impractical. This level of herd management would be cost prohibitive.

3. LCGMA MANAGEMENT ASSUMPTIONS

RANGELAND VEGETATION

Assumptions Common to All Alternatives:

Desired Range of Future Conditions (DRFC'S)
Based on public and internal comment to the Draft SEORMP EIS, the DRFC's for sagebrush were redefined by Appendix F (FEIS, page 132). This means that land management options under the SEORMP are substantially influenced by wildlife habitat requirements supported within Wyoming, basin, and mountain big sagebrush habitats.

Grazing Use
Grazing impacts to vegetation resources are a result of the utilization level, the season-of-use, and the duration of use. For the purpose of analysis, "slight" utilization is generally defined as up to 20 percent, "light" utilization is defined as 21 to 40 percent, "moderate" utilization is defined as from 41 to 60 percent, and "heavy" utilization is 61 percent and greater. Although stocking rates are usually established to limit utilization to light or moderate levels, factors affecting livestock distribution will create some areas where animals tend to concentrate, and that will be utilized to a heavy degree, while other areas may remain unused or only slightly used. For a full

discussion of grazing intensity, the season-of-use, and the duration of use, see SEORMP FEIS, Appendix R.

Physical and Physiological Impacts of Livestock to Upland Vegetation

Livestock impacts to upland and riparian vegetation are dependent on the season-of-use as it relates to timing of grazing during the growth cycles of plants. The SEORMP ROD (Appendix R, Table R-1) lists the "Approximate Growth Stage Dates for Key Species" by elevation, averaged over the entire SEORMP area (4.6 million acres). These growth stage dates (phenological stages) are approximations that vary with elevation and climatic conditions, and need to be extrapolated for site-specific areas such as LCGMA.

LCGMA is relatively high in elevation and cold. It sits in the rain shadow of the Trout Creek and Oregon Canyon Mountains to the west, and so is somewhat dry. Vegetative growth in grasses and early forbs (spring green up) typically initiates in April but is subdued by cold soil temperatures and night time freezing until after May 1 to May 15. The formation of floral structures (early boot stage in key forage grasses) normally begins sometime between May 15 and June 1 depending on local elevation and temperatures, and somewhat earlier for forbs. Peak of flowering (anthesis) in key forage grasses typically occurs between June 15 and July 7. Peak flowering in forbs occurs earlier, between May 15 and June 1. Seed ripe (when hard seed is produced) and the beginning of dormancy normally occurs between July 15 and the first week of August for key forage grasses.

A key species is a plant that serves as a reliable indicator of range health and as a barometer for determining trends in community composition (i.e., toward or away from ecological site potential) (USDI-BLM 1996; Stoddart *et al.* 1955). Key forage species are palatable plants that are preferred and actively sought after by grazing livestock. Therefore, they are grazed frequently and to greater intensities than other less palatable or less abundant plants. Because of its relative abundance and palatability, blue bunch wheatgrass is the dominant key forage species in the uplands of LCGMA and supports the majority of grazing. Blue bunch wheatgrass dominates the herbaceous understory of Wyoming big sagebrush and upland basin big sagebrush communities and often is co-dominant with Idaho fescue, another key forage species, in low sagebrush and mountain big sagebrush communities. Although other plant species are present which may be used as key species and indicators of rangeland health, they are typically sub-dominant and tend to be more site-specific, less abundant and/or less palatable. These species are not as useful as indicators of trend, and include Thurber's needlegrass, bottlebrush squirrel tail, and various palatable forbs like taper-tip hawk's beard, clover, and other seasonally available plants. Crested wheatgrass, a non-native perennial bunchgrass and relative of native blue bunch wheatgrass, is a key forage species where it was planted to increase forage production (e.g., Steer Canyon Seeding, Pole Creek Seeding and Starvation Seeding).

In analyzing grazing impacts under each alternative, the physical and physiological effects on vegetation are considered in the context of the grazing season, grazing intensity, and the duration of grazing (which also bears on frequency of impacts). For all alternatives, the analysis of grazing impacts focuses on controlling the grazing intensity, duration of grazing, and/or the frequency of grazing, by season, in order to mitigate grazing impacts and sustain healthy, productive plant communities. A assortment of rangeland studies and texts were consulted

during this analysis and include Blaisdell *et al.* 1949; Wilson *et al*. 1966; Donart 1969; Cook and Child 1970; Heady 1975; Stoddart *et al.* 1975; Mueggler 1967, 1970, and 1975; and Clark *et al*. 1998.

The most common physical impacts of grazing on forage plants are defoliation, plucking (uprooting young plants), and trampling. Rangeland plants have evolved with periodic and varying degrees of defoliation by animals and insects, and have developed different strategies for protecting growth points (meristematic tissue), from which re-growth occurs. Control of grazing intensity, duration, and season-of-use with consideration given to plant morphology and development can be used to effectively mitigate grazing impacts.

If grazing occurs when soils are wet and unfrozen, young, poorly rooted grass seedlings, and shallow rooted species (like Idaho fescue and needle grasses) are subject to increased plucking. The greatest risk of plucking in LCGMA is in early spring, as soils thaw and new growth begins. Typically, livestock and wild ungulates seek out this new growth. When there is standing litter from the previous year, animals will grasp and pull the standing litter, which is tougher and more resistant than the intertwined new growth. In the process, some young seedlings and shallow-rooted species may be uprooted, particularly if soils are wet. Removal of standing litter may also affect soil moisture. Plant litter aids in capturing and retaining snow moisture, and also shades the soil, reducing evaporation and rain drop impact erosion.

The physical impacts of trampling are also greatest when soils are wet. Hooves easily penetrate wet soils and shearing of roots may occur. Fibrous-rooted species like grasses are more readily impacted by root shearing than tap-rooted forbs and shrubs. Roots typically contain a high concentration of meristematic tissue capable of re-growth, so root shearing is not life threatening to the plant unless it is continuous and concentrated enough to actually disrupt the physiological growth cycle of the plant.

The health of plants also depends on their ability to complete critical physiological processes during the growing season. A wide body of literature indicates that forage species must complete their annual carbohydrate storage cycle on a regular basis in order to ensure sustained plant vigor, reproductive success, and survivability. In the analysis of grazing impacts under each alternative, the period of critical plant growth and carbohydrate storage is considered relative to expected grazing effects. Forage species are most susceptible to grazing damage from the time they begin developing floral structures (early boot) to the time they flower (anthesis). Grazing grasses in early spring while they are in the vegetative stage of growth is generally not harmful to the plant, providing that it is able to complete its carbohydrate storage cycle thereafter. Grazing after flowering, when the carbohydrate storage cycle is essentially complete, is also generally not harmful to the plant. However, if grazing intensity after flowering and before seed shatter is too heavy, the seed crop may be reduced and recruitment of new individuals from seed can be diminished. Several variables affect seed production in addition to, and independent from, grazing. These variables include the timing and quantity of precipitation, growing season temperature regimes, and insects.

Because perennial grasses reproduce by tillering (asexual reproduction from the crown or root) as well as by seed, individual plants are not typically threatened by grazing after flowering.

However, moderate to heavy grazing of fall re-growth can be harmful to grasses, particularly if the plants are already in poor vigor or have not been allowed to sufficiently complete carbohydrate storage during the spring growing season. Grazing in spring during the formation of flowering parts followed by fall grazing harms forage grasses because the double harvest limits carbohydrate storage.

Palatable forbs, in contrast to grasses, typically initiate growth and flower quickly in the spring, completing their physiological cycle through flowering by the end of May or the first week of June. Once flowering is complete, forbs typically dry quickly and go dormant. Given the high relative abundance of palatable forbs and their short physiological cycle, an individual plant is not exposed to a high probability of being clipped, even though livestock and wildlife actively seek out palatable forbs and grasses while they are available. The greatest threat to forbs from spring grazing would occur if livestock were heavily and locally concentrated. However, pastures in LCGMA are quite large and the stocking rates (number of animals per acre) are relatively low under each alternative. Because animals during the spring period would generally be widely distributed over large pastures and not heavily concentrated, the resultant light to moderate grazing impacts would not substantially affect forb health or reproduction. Alternative I would have the highest stocking rate as a result of more pasture division fencing, and would potentially have the most impacts on forbs of all alternatives.

Control of grazing intensity, duration, season-of-use, and frequency of use with consideration given to their combined effects on plant morphology, physiology, and phenological development, can be used to effectively mitigate grazing impacts on forbs and grasses. The same is true for shrubs, although palatable shrubs, such as antelope bitter brush, are not prevalent in LCGMA and are therefore not an issue. Sagebrush species are not particularly palatable or sought after by livestock and would not be noticeably affected by grazing.

Rangeland Project Design and Construction Elements

If BLM chooses to apply chemicals to reduce sagebrush dominance, a Pesticide Use Proposal (PUP) would be written before the project(s) would be completed. The PUP document would fully analyze the potential array of chemical products to be used as well as their expected impacts to the environment. This EA will only analyze the relative merits and risks of chemical control compared to prescribed fire and mechanical methods. Because of ongoing litigation, BLM may only apply chemicals to rangelands where there are noxious weed problems; chemicals cannot be used for the purpose of sagebrush control.

Rangeland projects and improvements are proposed and completed as part of adaptive management implementation to help reduce resource management conflicts and to achieve multiple use management objectives. Design elements have been standardized over time to mitigate impacts encountered during project installation. The standards and design elements from the SEORMP FEIS, Appendix S and BLM Manual Handbook H-1741-1, will be used in constructing rangeland projects within the planning area. For all interior pasture division fencing a 3-strand fence design would be used, while riparian exclosures would consist of a 4-strand fence design. Both types of fences would be constructed so as to not restrict wildlife movements. By having a smooth bottom wire not lower than 16 inches and a top wire not

exceeding 38 inches in height, antelope could go under the fence while mule deer could jump over it.

Alternative I and VI land treatment proposals would occur in continuous blocks for the purpose of gaining either maximum grassland production or maximum native seed restoration. Alternative III, IV, and IV-a land treatments would be conducted in such a way that sagebrush shrub cover leave areas would remain within the perimeter of proposed treatment areas. Temporary fencing around all vegetation treatment projects will be required within pastures open to grazing, unless the affected permittee agrees to the necessary rest of treated pasture(s).

RANGELAND/GRAZING USE

Assumptions Common to All Alternatives:

Potential Adjustments in Grazing Use Levels

This analysis compares the effects of various alternatives on grazing operations and systems by allotment and pasture. It displays potential changes in the levels of grazing use, under various alternatives, compared to the existing average actual grazing use (reflected in Alternative II). The average actual use is compiled from certified actual use reports filed annually by individual permittees, and is shown by pasture in Table 2.

This analysis does not compare the effects of potential changes in levels of grazing use relative to permitted levels of use (also known as Permitted Use or Grazing Preference), unless, of course, the permitted use is the same as the current average actual use. Within allotments of the LCGMA, there are certain permittees who have not made continuous and complete use of their permitted use. In these cases, a comparison of projected use to permitted use, which would be higher than the average actual use, would be a paper exercise and not informative as to the direct and real impacts on a grazing operation. Under the alternative finally selected, grazing operations where permitted use substantially exceeds average actual use will be addressed in accordance with administrative procedures contained in 43 CFR parts 4100, as part of the grazing decisions which will implement the selected alternative.

Under each proposed alternative, any potential change from the existing average actual use reflects the direct loss or gain of available AUM's. The broader, indirect impact (or ripple effect) of a change in available AUM's on a grazing operation (or ranch) is much harder to quantify, particularly if the change is a substantial loss of available AUM's. The relative impact on a given operation depends on the severity of the reduction (number of AUM's reduced), and on how the reduction is taken. Reductions and increases in grazing allocations are typically made by either changing the number of animals to be grazed or the time available for grazing.

If the number of animals is reduced, the impact of the loss would be spread over the entire grazing season. The impact felt by the grazing operation would then be proportional to the severity of the reduction. However, if the reduction is made by cutting the time available to graze during a given year, then the relative impact on the operation would depend on the operation's ability to fill the time gap left in the grazing season. The cost of filling the gap

would be proportional to: the cost of alternative forage (such as hay or leased pasture); the cost of transporting livestock to and from alternate sources of forage; and the costs associated with care and feeding under those specific circumstances. For example, under the interim grazing measures voluntarily implemented in LCGMA in 2002, the grazing season was shortened in the summer. Livestock were removed in time to allow for re-growth to occur in riparian areas, and the animals were taken home and fed hay or taken to leased pasture, at a much higher cost. Several of the permittees involved say that they could not sustain the cost of the interim grazing measures over the long term.

Grazing Utilization

Grazing impacts to vegetation resources are a result of the utilization level, the season-of-use, and the duration of use. For the purpose of analysis, "slight" utilization is generally defined as up to 20 percent, "light" utilization is defined as 21 to 40 percent, "moderate" utilization is defined as from 41 to 60 percent, and "heavy" utilization is 61 percent and greater. Although stocking rates are usually established to limit utilization to light or moderate levels, factors affecting livestock distribution will create some areas where animals tend to concentrate, and that will be utilized to a heavy degree, while other areas may remain unused or only slightly used. For a full discussion of grazing intensity, the season-of-use, and the duration of use, see SEORMP FEIS, Appendix R.

SOIL, WATER RESOURCES AND RIPARIAN/WETLAND AREAS

Assumptions Common to Alternatives I–VI:

Attainment, protection, or maintenance of water quality standards, Proper Functioning Condition, and Riparian Management Objectives (RMO's) would be required in all Riparian Conservation Areas (RCA's).

Based on current information for the LCGMA, approximately 200 miles of streams have RCA's. Surface area of RCA's average between 5 to 10 acres per stream mile, which results in about 1000-2000 acres of RCA's on public land in LCGMA.

Because saleable mineral development is not authorized within RCA's (SEORMP ROD, page 37), adverse impacts to water resources and riparian/wetland areas would not occur.

Assumption Common to Alternatives I, III, IV, IV-a, V, and VI:

Grazing schedules and actions associated with authorizing livestock use would be developed or revised through the adaptive management process where determined not to be consistent with accepted riparian and water quality standards and practices.

New road construction is limited to only necessary access roads for project maintenance once projects are implemented.

Recovery rates (attainment of objectives) necessary for water quality, PFC, and RMO's in riparian/wetland areas in Alternatives I, III—VI would depend on the management emphasis of that alternative. Any management option (e.g. grazing systems, exclosure fencing) would be

available for use, as long as it is consistent with the management emphasis of that alternative. However, those management options that best address the theme of that alternative may be utilized more often than others. For example, an option that emphasizes commodity production, such as stream corridor fencing, may be utilized more in Alternative I than III, and more in Alternative III than in IV-VI.

In Alternative I, management options for any use or activity would allow for positive, measurable progress toward the attainment of water quality, PFC, and RMO's. Although recovery within streams and RCA's would be in a positive direction, attainment of objectives would occur at a slower rate when compared to the near natural recovery rate expected if no commodity use or impacting activity occurred. However, a slower rate of riparian recovery at a landscape scale does not necessarily translate to a slower rate of recovery at a specific site within a given stream or RCA. Site-specific variables, which include management priorities, current resource conditions, landform, and microclimate, could influence management actions implemented at that site. For instance, to manage a particular wetland, exclosure fencing may be used in addition to modifying the grazing system. As a result, with implementation of Alternative I, water quality, PFC, and RMO's at specific sites may be attained at a rate equal to a near natural rate of recovery, while across the landscape rates of recovery may be slower.

In Alternative III, management options would be the same as Alternative I except the attainment of objectives at a landscape scale would likely occur at a slower rate of recovery. At specific sites, however, attainment of water quality, PFC, and RMO's may proceed at either a more rapid or more gradual pace.

In Alternatives IV and V, management options would be the same as Alternative I except the overall attainment of objectives within streams and RCA's would more likely be near or greater than the natural rate of recovery expected if no commodity use or impacting activity occurred. As a result, site-specific attainment of water quality, PFC, and RMO's may occur at a rate equal to or greater than a natural rate of recovery within most streams and RCA's, while in the remaining few, an acceptable rate of recovery may proceed at a more gradual pace.

Potential Impacts to Biological Crusts Common to All Alternatives:
Because of the public interest and concerns regarding biological crusts that have arisen since the publication of LCGMA Evaluation, a more comprehensive discussion of crusts, their vulnerability to disturbance, and their occurrence in LCGMA are presented here.

Biological Crust, Vegetation Cover Types, Pastures, and Soils
Major vegetation cover types in LCGMA associated with biological crust development include salt desert shrub, low sagebrush, and big sagebrush. Occurrence of crusts in these cover types is directly related to elevation, precipitation, soil depth, soil texture, and interspaces between vascular plant cover.

Optimum abundance and growth conditions for biological crust is usually found in areas of low vascular plant cover, low elevations, and in shallow soils with fine textures that contain low quantities of loose surface rock or large quantities of embedded rocks (Figure 2-4, USDI, 2001). During the 2000 field season, the Jordan Field Office interdisciplinary team assessed LCGMA

for upland rangeland health condition. Biological crust occurrence was recorded at forty-three assessment sites as percentage of total vegetative cover (living plant material only) and percentage of total ground cover (including bare ground and litter). Crust ranged from 1-5 percent to 31-50 percent of total vegetative cover and from 1-5 percent to 16-30 percent of ground cover throughout the GMA. Biological crust cover percentages for individual pastures are presented in the LCGMA Evaluation (Chapter 3, Rangeland Health Determinations).

Soil texture heavily influences the species composition of biological crust communities. The more stable, fine-textured soils (such as gypsum and silt loams) support greater crust cover and more varied populations of cyanobacteria, lichens, and mosses than less stable, coarse-textured soils (Kleiner and Harper 1977; Hansen *et al.* 1999; Fig. 2-4F, USDI 2001). Fine-textured soils within LCGMA (LCGMA Evaluation, Chapter 2, Soil Resources) consist mainly of two classification units (76 and 77) that comprise about 92 percent of the major soil components. CU S76 and CU 76L are variants of CU 76 and make up about 6 percent of the GMA. Surface textures of these CUs are fine-textured silty clays and silt loams to loam, with rock fragments in the soil profile that range from gravely to very stony. The remaining 2 percent of the GMA consists of CUs 15, 31, and 41 that are soils associated with seasonal lake basins and spring/meadow areas. CU 96 is a minor soil type occurring as rock outcrops or escarpments along lava plateaus.

The effective rooting depth throughout most of LCGMA (CUs 76, 76L, S76, and 77) is very shallow to shallow (10-20 inches) and is limited primarily by parent material and low annual precipitation (8-12 inches). Soil chemistry is neutral to slightly alkaline with depth in most soil profiles.

Non-biotic (physical) soil surface crusts are a major structural feature in many arid regions. Their properties and manner of formation have been studied for many years, primarily because of their detrimental effects on agricultural crops. These crusts are transient soil surface layers that are structurally different from the material immediately beneath them. Physical crust can reduce water infiltration and prevent the emergence of vascular plant seedlings (USDI, 2001). This physical or rain crust layer is often harder than the rest of the soil because compounds such as salts, lime, and silica are deposited at the surface as water evaporates (Harper and Marble 1988; Johansen 1993; Ladyman and Muldavin 1996).

In LCGMA, areas with Soil CU 76L are prone to the development of physical crust layers. Soil CU 76L is located primarily in small portions of Drummond Basin Pasture, Spring Pasture, and Starvation Brush Control, although this soil also occurs elsewhere in the GMA as a minor component of Mapping Unit 76-76L/2-3. Soil CU 76L occurs on relatively flat slopes that allow surface water, from precipitation and snowmelt, to pond and not run off into drainages. Seasonal ponding creates a fine-textured, physical surface crust as well as a compaction lens in the soil horizon about two to four inches below the surface, restricting soil permeability.

When this naturally occurring soil compaction layer is present it reduces effective rooting depth for herbaceous plants and limits their distribution. Consequently, vascular plant communities and biological crusts in areas with soil CU 76L are less diverse and productive than in other CUs because of the increased fine mineral particle accumulation on the surface and in the soil profile.

Where large plants, such as big sagebrush, become established, their more robust root systems can penetrate and break up this horizon, allowing lichens, mosses, and small-rooted herbaceous species to colonize.

Total biological crust cover is inversely related to vascular plant cover, as less plant cover results in more surface available for colonization and growth of crustal organisms. Thus, when all crust types are combined, biological crust cover is greatest at lower, drier elevations where harsh environmental conditions limit vascular plant cover (USDI, 2001). The highest percentage of crust (both as total vegetative cover and as total ground cover) in LCGMA usually occurred in the low elevation, sparsely vegetated salt desert transition cover type, which grows in shallow, fine- textured soils in areas of limited precipitation. These salt desert communities supported large amounts of lichens and mosses adjacent to shrubs and cyanobacteria in the shrub interspaces. Salt desert communities occur in all pastures of Star Valley community Allotment and in Pole Creek Seeding Pasture of Louse Canyon Community Allotment.

In the northern and eastern portions of LCGMA, pastures located at lower elevations receive 8-10 inches of precipitation and have low sagebrush and big sagebrush cover types which are usually denser than salt desert shrub communities. Crust occurrence was lower in these areas, likely because of competition with higher density shrub cover for moisture and space. Crust cover consisting mainly of lichens and mosses ranged up to 6-15 percent of total vegetative cover and to 6-15 percent of total ground cover at most assessment sites, including the Wyoming big sagebrush cover type in Drummond Basin Pasture.

In general, at higher elevations, greater vascular plant cover precludes crust growth (USDI, 2001). In the middle and southern portions of LCGMA where elevations and precipitation (12-16 inches) are higher, crusts overall were lower in abundance compared to northern and eastern regions. Higher elevation areas include Horse Hill Pasture, Louse Canyon Pasture, and approximately half of South Tent Creek Pasture. Crusts in about half of the assessment sites comprised only 1-5 percent of total vegetative and ground cover, though crusts ranged up to16-30 percent of total vegetative cover and to 6-15 percent of ground cover at some sites. This generally lower crust abundance may be due to existing livestock grazing season-of-use, higher elevations, dense big and low sagebrush cover, or a combination of factors.

Landscape-Level Surface Disturbance to Biological Crust

Surface disturbance generally results in loss of species diversity, biomass, and surface cover of biological crust components. After severe disturbance, the resulting crust is generally greatly simplified from a community made up of multiple species of cyanobacteria, lichens, and mosses to a community often dominated by one or a few species of cyanobacteria (USDI 2001). When crusts are completely removed, recovery can be excessively slow, especially in areas of low effective precipitation and/or sandy soils.

Severe surface disturbance occurred in LCGMA with the conversion of native rangeland to seeded crested wheatgrass. Large portions of Starvation Seeding, Pole Creek Seeding, and Steer Canyon Seeding pastures were plowed or disked, then drilled and seeded with crested wheatgrass during the 1960's. These mechanical activities disturbed and altered the existing biological crust composition. Over the decades, big sagebrush has recolonized parts of Pole Creek Seeding,

which also supports some recovery of blue bunch wheatgrass, bottlebrush squirreltail grass, and Sandberg's blue grass. Recolonization of big sagebrush has also occurred to some extent in Steer Canyon Seeding, and some sagebrush plants are scattered throughout Starvation Seeding.

Abundance of biological crust varied greatly among seeded areas. Based on step-point inventory, crusts in Starvation Seeding comprised about 8 percent of total vegetative cover and 2 percent of total ground cover. Crusts in Steer Canyon Seeding comprised 25 percent of total vegetative cover and 9 percent of total ground cover, whereas Pole Creek Seeding crusts ranged from 6 to 30 percent of total vegetative cover and 6 to 30 percent ground cover over the three assessment sites in that pasture. Apparently some recovery of crusts has occurred in these seedings post-treatment.

Wild and prescribed fire also causes widespread disturbance to soil surfaces. Because of low fire occurrence and near continuous shrub cover in LCGMA, crusts have a medium for protection and colonization and the potential for recovery. Only about 7,200 acres of native range have been disturbed by wildfire (LCGMA Evaluation, Chapter 2, Fire) and no prescribed fires have been ignited in the unit. Even in years with large numbers of fires, such as 1986, 2000, and 2001, LCGMA has not sustained appreciable shrub cover loss due to fire. The GMA landscape has continuous low and big sagebrush connectivity in 95 percent of the area, and research indicates that crusts recover more quickly from disturbance under shrub canopies than in adjacent plant interspaces (Eldridge, 1996; Fig. 4.9, USDI 2001).

Livestock Grazing and Biological Crust

In contrast to severe, widespread surface disturbances, crusts crushed in place with vehicles, foot traffic, and livestock recover much faster, especially on fine-textured soils. Crusts recover more quickly under shrub canopies than in adjacent plant interspaces (Fig. 4.9, USDI 2001; Eldridge 1996).

Crusts on all soil types are least vulnerable to disturbance when soils are frozen or snow covered. Biological crust on sandy soils is less susceptible to disturbance when moist or wet; on clay soils, when crust is dry. In general, light to moderate stocking in early- to mid-wet season is recommended (Fig 2.5, USDI 2001; Marble and Harper 1989; Memmott *et al.* 1998). Winter grazing most closely replicates the grazing strategy of native herbivores, which use more productive, higher-elevation sites during the summer and lower-elevation sites in winter. Implementation of rest/rotation strategies that minimize frequency of surface disturbance during dry seasons and maximize periods between disturbances will reduce impacts to biological crusts. Dispersal of livestock throughout useable portions of pastures would also reduce impacts. Livestock exclusion from reference areas and sites with highly erodible soils or low vascular plant cover is appropriate to protect biological crust and site stability (Fig. 5.3, USDI 2001; Miller *et al.* 1994; Burkhardt 1996).

Stocking levels and season-of-use should be ascertained on an annual basis, with optimal cover of both vascular plants and biological soil crusts as the management goal (Kaltenecker and Wicklow-Howard 1994; Kaltenecker et al. 1999b). Optimal plant cover should be based on site capability and rangeland health indicators of site stability and nutrient cycling (USDI 2001).

Ponzetti and McCune (2001) conducted an examination of nine shrub-steppe sites in central and eastern Oregon in order to better understand how the presence of livestock and other biotic and abiotic factors influence the abundance and distribution of soil crust organisms. They compared crusts in ungrazed livestock exclosures to adjacent grazed pastures.

Some of their published findings are as follows:

- In western North America, the distribution and composition of crust communities in relation to environmental and biotic variables is poorly understood, both within and across ecosystems.

- There is conclusive evidence that total crust cover and biotic soil surface roughness were greater within the exclosures and there was more bare ground in the grazed pastures. On average, crust cover was 29% lower and soil surface roughness was 25% lower outside. Since biotic crusts are known to increase soil stability, any reduction in biotic crust cover and surface roughness increases the potential for soil loss. On average, bunchgrass cover and organic litter were 11% greater within the exclosures. Overall, we found no significant difference in vascular plant composition between grazed and ungrazed pastures, and no difference in vascular plant species richness or total cover. Since the average age since exclosure establishment is 37 years we assume there has been enough time elapsed for recovery from grazing to occur.

- We can infer from these results that, in general, biotic crusts from shrub steppe habitats in Oregon are likely to develop greater species richness if they are protected from livestock grazing. However, the magnitude of that difference and the years of protection required to realize an increase in richness remains unknown, and may vary from site to site.

- We detected clear livestock-related differences between grazed and long-ungrazed biotic crust communities, but not between vascular plant communities. Thus, biotic soil crusts demonstrated recovery after removal of grazing, despite the fact that recovery of vascular plants was not as obvious. Based on this information, we generalized that within our study region, biotic soil crust communities are more sensitive to livestock disturbance than vascular plant communities.

- Our results suggest that recent average grazing pressure at the study transects had been light to moderate, producing few or no detectable differences in plant composition. Grazing and utilization records for these sites are consistent with our belief that average grazing intensity has been light to moderate in recent years (Holechek *et al*. 1989).

- We hypothesize that total crust cover is highest on neutral to slightly acidic and on highly calcareous soils, and lowest on soils of slight to moderate calcareousness.

- The soil chemistry gradient is by far the strongest explanatory factor for the compositional differences among research sites. Other important factors include average annual temperature, elevation, and shrub cover. In the ordination of these data, the compositional effects of grazing were overwhelmed by the stronger soil chemistry and

climate gradient. Thus, we detected a general pattern in biotic soil crust response to cessation of grazing, despite broad compositional, climatic and edaphic difference among research sites.

- Oregon's biological crusts appear to be more sensitive to livestock distribution than vascular plants, and there are significant differences in the cover and composition of Oregon's crusts based on regional edaphic and climatic factors.

Grazing intensity in LCGMA is "light" to "moderate" in native pastures, while seeded pastures allow utilization levels up to 60 percent. Although Ponzetti and McCune (2001) indicated that livestock disturbance impacts biological crust cover, crusts are found throughout LCGMA. During the 2000 field season, the interdisciplinary team did not observe any areas devoid of crusts, or crusts in discontinuous or small isolated patches. This ubiquity of crust could indicate that crust cover within the GMA can be maintained at sustainable levels when exposed to light to moderate livestock grazing use. However, the distribution and composition of crust communities in relation to physical and biotic variables is poorly understood, both within and across ecosystems.

Studies concerning the impacts of disturbance on biological crusts cover a large range of climatic zones, soil types, and levels of disturbance. Because standards for measuring crust recovery are currently lacking, it is not surprising that in the literature recovery rates from disturbance have ranged widely (2 to more than 3,800 years), and either appear to show no pattern or often appear contradictory (Anderson *et al.* 1982; Callison *et al.* 1985; Jeffries and Klopatek 1987; Cole 1990; Belnap 1995, 1996; Belnap and Warren 1998).

Water and Wind Erosion

Biological soil crusts are effective in reducing wind and water erosion of soil surfaces, and crust cover loss significantly increases water erosion of both coarse- and fine-textured soils (McKenna-Neumann *et al.* 1996; Belnap and Gillette 1997, 1998). Wind can be a major erosive force in deserts, as sparse vegetation leaves large patches of soil unprotected by plant litter or vegetative cover (Goudie 1978). Increased sediment production and movement are a direct result of disturbance and removal of biological crusts. The impact of biological soil crust on hydrological cycles can be highly variable and can result from a combination of site, soil, and crust factors. However, lack of standardized data collection methods and descriptions of soil, biological crust, and climatic characteristics at study sites makes comparison of research results difficult (USDI 2001).

The potential for wind and water erosion in LCGMA is thought to be low due to relatively flat to rolling terrain, soil surface textures, and shrub cover. Recovery from disturbance by all types of biological crust components is faster in fine-textured soils than in coarse-textured soils, as fine-textured soils are often stabilized by chemical and rain crusts and retain soil surface moisture longer (as reviewed in Harper and Marble 1988; Johansen 1993; Ladyman and Muldavin 1996). Recovery of wind resistance at some sites is also more rapid in fine-textured soils, probably due to physical or rain crust formation after rainfall. Silty soils show a 50% recovery of wind resistance to erosion after a single large rain event.

Soil resources in LCGMA were assessed in the Evaluation for basic physical functions, including Soil/Site Stability (capacity to limit redistribution and loss of soil resources, including nutrients and organic matter, by wind and water), Hydrologic Function (capacity to capture, store, and safely release water, to resist a reduction in this capacity, and to recover this capacity following degradation), and Integrity of the Biotic Community (capacity to support functional and structural communities, to resist losses due to disturbance, and to recover following disturbance). All of these functions relate directly or indirectly to biological crust cover, either as a deterrent to wind and water erosion or as a component of an intact biological community.

At each assessment site, all indicators were compared to indicators obtained at relatively pristine reference areas. Existing ecological site descriptions (vegetation composition and percent cover for that site) were reviewed for consistency with the soils and vegetation found at the area of interest. Unfortunately, no Ecological Site Guides for biological crusts existed during the 2000 field season, and site guides for crust are still not available (Mike G. Karl, Rangeland Ecologist, BLM, National Science and Technology Center, pers. com., 2004). Therefore, the percentages of biological crust cover recorded for LCGMA cannot at present be compared to Potential Natural Community or to crust cover that existed historically. Additionally, "Biological Soil Crust: Ecology and Management" (USDI-BLM 2001), was not available for reference during the 2000 field season when these sites were inventoried. Since that time, resource personnel in Jordan Field Office have obtained this technical reference and have attended training on biological crusts specifically utilizing it.

Assessment results for Soil/Site Stability and Hydrological Function showed that, in general, uplands in LCGMA had extremely stable soil surfaces with few signs of wind or water erosion, or sediment movement. All LCGMA pastures met Rangeland Standard 1 and overall, most soil, hydrologic, and biotic characteristics (including presence of invasive weeds) departed only slightly from reference sites and ecological site descriptions. Soil site stability and hydrological function indicators for rills, water flow patterns, pedestals and/or terracettes, gullies, wind scour, and litter movement suggested that soils are extremely stable throughout the upland rangelands. Forty-two assessment sites were rated as "None to Slight" departure from established Ecological Reference Areas ratings for these indicators. The only exception was a rating of "Slight" departure in Starvation Seeding Pasture for litter movement. This pasture mostly consists of crested wheatgrass with only scattered amounts of Wyoming big sagebrush. Because of the sparse sagebrush cover, this 40 year-old seeding is more prone to litter movement from wind scour.

One of the chief indicators of soil erosion and sedimentation is water flow patterns. During the field assessment, the interdisciplinary team did not find flow patterns (e.g., rills and litter movement) in the soil surface attributable to snowmelt or rainfall runoff, indicating that soil infiltration rates are in balance with precipitation. Usually, water flowing overland will move surface litter and loose sediment into small debris accumulations near the base of larger woody litter, bunch grasses, shrubs, and rocks. Lack of flow patterns and erosion is indicative of gently sloping landforms, generally good vegetative cover, soil rock content, and absence of moderate to heavy compacted soils.

WILDLIFE AND WILDLIFE HABITATS/SPECIAL STATUS ANIMAL SPECIES

Assumptions Common to All Alternatives:
Shrubland and grassland threshold objectives for LCGMA wildlife discussed in this EA are calculated on the basis of the best available survey data which indicate that approximately 394,100 acres of LCGMA are comprised of Wyoming, mountain, and basin big sagebrush communities. This figure is used as the basis for calculating cumulative effects impacts of land treatment and wildfire in LCGMA alternative analyses.

The SEORMP ROD directs BLM to practice multiple spatial scale management of Wyoming, basin, and mountain big sagebrush communities at the activity plan level in order to conserve habitats important to greater sage-grouse and other animals that occupy sagebrush habitats. Multiple scale management means the agency will consider habitat character for wildlife at the Resource Area, GMA, and pasture level and then prescribe management based on those findings. See the ROD, *Management of Vegetation within Steppe Rangelands Occupied by Sage Grouse and Other Species that use Sagebrush Habitats,* Appendix F, page F-5.

The ROD states that, over the long term, 30% or less of Wyoming, basin, and mountain big sagebrush range sites in Jordan Resource Area should exist as grassland communities (Class 1 and 2 habitats, as specified in Appendix F). Based on the best current information, these grassland habitats types will be distributed within Jordan Resource Area GMA's as follows:

GMA Assessment Priority	GMA	Estimated total public land acres including all habitat types	Estimated % of total JRA public land base	Maximum allowable % of grassland conditions in Wyoming, basin, and mountain big sagebrush range sites, including wildfire and land treatments
1	Louse Canyon	522,922	20.0%	**15%**
2	Trout Creek	531,318	20.3%	**15%**
3	Saddle Butte	184,186	7.1%	**55%**
4	Jackies Butte	218,270	8.4%	**65%**
5	Soldier Creek	251,602	9.6%	**25%**
6	Rattlesnake	211,224	8.1%	**15%**
7	Cow Creek	251,674	9.6%	**70%**
8	Barren valley	440,613	16.9%	**20%**

Under all alternatives, LCGMA terrestrial wildlife species (both game and non-game) considered to be of management importance include:

Landbirds: Brewer's sparrow (*Spizella breweri*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), black-throated sparrow (*Amphispiza bilineata*), sage sparrow (*Amphispiza belli*), loggerhead shrike (*Lanius ludovicianus*), sage thrasher (*Oreoscoptes montanus*), greater sage-grouse (*Centrocercus urophasianus*), northern bald eagle (*Haliaaetus leucocephalus*)

Mammals: California bighorn sheep (*Ovis canadensis californiana*), pygmy rabbit (*Brachylagus idahoensis*), pronghorn (*Antilocapra americana*)

Reptiles: northern sagebrush lizard (*Sceloporus graciosus*), short-horned lizard (*Phrynosoma douglassi*)

AQUATIC SPECIES AND HABITAT

Assumptions Common to All Alternatives:
Management activities that improve vegetation in uplands and riparian areas are assumed to decrease spring or storm event flows, increase channel stability and shading, and reverse the negative effects of excessive runoff on aquatic habitat.

Livestock grazing (other than trailing) will be restricted in West Little Owyhee River in key inland redband trout habitat extending from the headwaters to Anderson Crossing.

4. ENVIRONMENTAL IMPACTS

RANGELAND VEGETATION

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5 (2003). The following mid-scale objectives are excerpted from SEORMP ROD (2002):

SEORMP ROD Objective 1: *Restore, protect, and enhance the diversity and distribution of desirable vegetation communities including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water and energy cycles.*

SEORMP ROD Objective 2: *Manage big sagebrush cover in seedings and on native rangeland to meet the life history requirements of sagebrush-dependent wildlife.*

SEORMP ROD Objective 3: *Control the introduction and proliferation of noxious weed species and reduce the extent and density of established weed species to within acceptable limits.*

Alternative I—Rangeland Vegetation
This alternative emphasizes commodity production and extraction and proposes upland vegetation treatments on 17,900 acres, about 117 miles of new fencing, about 32 miles of new pipeline, one new spring development, and 24 new water troughs. In addition, 19 spring projects

would be renovated. Coincident with these range improvements would an AUM increase of 10,029.

Increases in authorized AUM's in Alternative I may result from an increase in livestock herd size. For example, Anderson Allotment AUM increases would only be accounted for if an increase in herd size is assumed.

General Impacts
The proposed land treatments totaling 17,900 acres under this alternative would result in an increase in continuous blocks of grassland vegetation. With the completion of these treatments approximately 7% of LCGMA would be rangeland seedings. While 17,900 acres are proposed for treatment, only 11,600 acres would be newly seeded and 6,300 acres would be a re-seeded. Following treatment, increased grassland dominance and forage production would result in additional permitted AUM's.

Large, continuous blocks of treated acreage would reduce connectivity of shrub types on the landscape. The rate of shrub recruitment in the treated area would depend on the amount of shrubs killed during treatment. Shrub mortality would vary with treatment method. Increases in perennial grasses may benefit areas lacking herbaceous vegetation by filling open niches susceptible to invasion by undesirable species, but would not maintain the structural diversity found in existing sagebrush communities.

Existing and newly treated seedings would have stocking levels of 3 acres per AUM, and at these levels reduced seed production could be expected and plant vigor would likely be poor because grass plants would be utilized near their productive capabilities. Also, at these stocking levels it is anticipated that sagebrush would return to the site sooner due to the heavy demand placed on the grasses. Grass plants with poor vigor could eventually expire, which would lead to opened niches that most likely would be filled with sage brush.

Prescribed fire, mechanical (brush beating), or chemical methods may be used for land treatment. Prescribed fire would be the least controllable of the three methods, and would result in near total removal of sagebrush except for islands of unburned vegetation which lacked fine fuels needed to carry fire. While all classes of sagebrush would be killed by the fire and consumed, existing perennial grasses and forbs should remain provided that fire prescriptions are followed. Burning would provide a seedbed rich in nutrients to support the native species planted. Of the possible vegetation treatment methods, prescribed fire would have the most pronounced and long lasting effects on the landscape. The burned area would be free from sagebrush for several decades and would have the appearance of a grass-dominated rangeland. In the long term, perhaps 50 to 70 years, sagebrush would reestablish from seed sources surrounding each treated area and from the unburned shrub patches left within the treated area.

Impacts on the landscape from mechanical treatment methods, such as brush beating, would have the shortest duration and be the least pronounced of the three treatment options. Up to 80% of sagebrush plants, consisting primarily of mature plants, would be permanently removed from the treatment area, but many of the younger sagebrush plants would remain after treatment. Younger plants are smaller, more limber, and are not impacted by the beater as frequently or

severely as mature plants. The surviving young plants would occur at relatively low densities throughout the treated area. Existing perennial grasses and forbs would be unaffected by treatment and would improve in vigor due to decreased competition with sagebrush. Sagebrush litter would remain on site after treatment and would aid in seedling establishment by reducing evaporation and allowing the soil surface to retain moisture longer. Litter would also reduce erosion from rain drop impact. Because livestock allocation at 3 acres per AUM would reduce grass vigor and leave open niches, sagebrush could re-colonize the treated area to pre-treatment levels within 20 years or less following mechanical treatment.

Chemical treatment methods, such as herbicide application, would result in a near total removal of sagebrush from the treated area, but these methods are not typically as effective as burning. Existing perennial grasses would be unaffected by treatment due to the use of selective herbicides that only control broadleaf vegetation, but non-target broadleaf species, such as native forbs, could also be removed from production. Chemical methods are more controllable than prescribed fire and less controllable than mechanical methods. More control is desirable because selected sagebrush stands could be left untreated, thus providing seed sources for sagebrush re-colonization. As after mechanical treatment, standing sagebrush litter would remain on site and would allow snow capture and reduce erosion and evaporation, although shading and soil surface protection would be less with chemical treatment. Remaining plant litter would also provide some cover for wildlife. Stocking levels of 3 acres/AUM may not allow for adequate seed production and plant vigor would likely be poor, and herbaceous vegetation would be replaced with sagebrush at a quicker rate than would naturally occur.

Any effects associated with brush control through burning or mechanical means, by way of emissions of smoke or dust, would be short lived and within the parameters of natural occurrences. The area is extremely remote, and so, the chances of affecting members of the general public in any measurable way would also be remote.

In lower elevation areas with light precipitation, vegetation treatments may increase the risk of invasion and dominance of exotic species, such as cheatgrass, because potential seed sources exist north and west of LCGMA. After vegetation manipulation and prior to establishment of seeded species, the risk of weed invasion may increase as niches are opened that were once filled by shrubs. While there may be an increased risk of invasion, that risk is still considered relatively low because exotic species are rare in LCGMA, and most areas consist of healthy, intact native vegetation.

Regardless of the treatment method chosen, drill seeding with adapted native herbaceous vegetation would occur after shrub removal in order to augment existing native plants and hasten the establishment of desirable perennial vegetation. Drilling would also help prevent establishment of exotic annual species. Surface disturbance from drilling could allow a foothold for exotic and/or invasive species, but invasion is unlikely due to the limited existence of exotics in LCGMA.

A minimum of two growing seasons of rest from grazing following seeding of the treated areas would allow for new plants to become established and well-rooted enough to withstand grazing

pressures. This rest period could be extended if establishment of perennial vegetation is delayed for any reason.

Water development projects, such as construction of new pipelines, necessary for implementation of grazing prescriptions would open very lightly utilized areas to increased livestock use. The SEORMP discourages development of additional livestock water in high quality native rangelands that are either ungrazed or lightly grazed unless specific benefits to resource values can be identified (SEORMP FEIS, Chapter 1, Rangeland/Grazing Use Management, page 19). Consequently, full implementation of this alternative may not be possible. New pipelines would be ripped in to minimize the disturbed area associated with construction, except for those portions where ripping would not adequately bury the pipe. In this case a backhoe or track hoe could be used. The sections of new pipelines not adjacent to existing roads would have service roads created for maintenance purposes, thereby increasing opportunities for exotic species establishment. Nearly all visible signs from pipeline construction would be expected to fade away in a period of two to five years. Native perennial vegetation would be seeded on any trenches dug, and ripped areas would re-vegetate naturally within two years. Sagebrush plants damaged by cross country travel would recover quickly, and tracks should be eliminated in five years, except for newly formed pipeline service roads.

Areas surrounding new water troughs grazed during the hot season would be heavily impacted and denuded of vegetation due to livestock concentration. Earlier or later in the season when cooler temperatures exist, livestock would distribute themselves more evenly over the pasture and large denuded areas around water sources would not occur. New water troughs would increase the opportunity for invasion and establishment of noxious weeds because of soil compaction from increased hoof action and vegetation removal, though invasion would not be anticipated due to the limited existence of exotic species in LCGMA.

Reconstruction of existing spring developments where trough relocation is necessary would negatively impact upland vegetation in the immediate vicinity of the water trough due to hoof action and livestock concentration. These impacts would be essentially the same as for other water troughs in LCGMA.

Six spring development projects would be abandoned under this alternative, and as a result, grazing use of rangeland vegetation at these areas would decrease because livestock would not congregate as heavily once troughs are removed. Plant vigor would improve over the existing situation.

Fence mileage in LCGMA would increase 30% over the existing situation, from approximately 280 miles (including boundary fencing) to approximately 397 miles. Construction of riparian corridor exclosure fencing, which incorporates upland as well as riparian vegetation, would provide opportunities to compare conditions between grazed and un-grazed communities and aid in future monitoring. Adjacent to exclosure fencing, it is anticipated that livestock trails would exist because cattle would be accustomed to watering in these areas. Trails would be narrow, but may become entrenched and denuded of vegetation. In areas associated with water gaps, which are access points left for livestock to water once riparian fencing is constructed, localized impacts to vegetation and soils may occur where hoof action and grazing would be concentrated.

Although impacts to these water gaps would be greater than the existing situation, larger areas within the exclosures would have no livestock impact, resulting in a net decrease in impacts to riparian areas and associated rangeland vegetation.

New pasture division fences would provide more management flexibility to defer use and/or rest pastures, thus maintaining or improving upland as well as riparian condition. New division fencing could cause localized impacts to rangeland vegetation from construction activities and livestock trailing along fences that obstruct habitual livestock travel patterns. Impacts from construction would consist of crushed vegetation in the immediate vicinity of the new fence and would be short term. Livestock would trample vegetation next to certain new pasture division fencing either from being herded or from traveling along the new fence. Trails for driving livestock would have the appearance of moderately to heavily utilized areas, and vegetation in the immediate vicinity of the trail may be reduced. Areas adjacent to the trail would not be impacted.

With the construction of new pipelines and fencing that create smaller pastures, use of rangeland vegetation would occur more even across pastures in LCGMA.

The critical growing period for rangeland grasses is defined as the period between and including the boot stage and anthesis. The critical growing period in LCGMA generally occurs from May 15 to July 15. In many higher elevation areas, the current year's growth may not begin until May 1, and grazing use that occurs before this date will primarily remove the previous year's growth (or standing litter).

This alternative would push the upper edge of the productive capabilities of rangeland vegetation in LCGMA. Utilization of all permitted AUM's in this alternative may not be achievable under the maximum utilization limits imposed, particularly in years with less than adequate moisture. Utilization levels would increase slightly and the areas impacted by livestock use would increase in all pastures due to increased grazing use and new water developments. Pastures scheduled for grazing after July 15 would be less affected by slightly higher grazing intensity because use would occur primarily after seed ripe.

Pasture By Pasture Impacts

Anderson Allotment

Grazing in North, Bull Flat, and Spring pastures would change very little from that which is currently authorized. North Pasture, the turn-out pasture, would be grazed February 15—March 31 each year. In the first year, Bull Flat Pasture would be used April 1—May 15 and Spring Pasture from May 16—July 31. The use in Bull Flat and Spring pastures would alternate every year. Grazing use in North Pasture would occur prior to the start of the growing season each year while rangeland vegetation is quiescent, and no adverse impacts would be expected. By alternating the season of use for Bull Flat and Spring pastures, each would receive deferment from grazing during the critical growing period (May 15 – July 15) every other year, thereby ensuring healthy range conditions. This would allow forage plants to complete growth without interruption of the carbohydrate storage cycle and ensure that the physiological needs of the plant would be met.

The maximum allowable grazing utilization limit for these native pastures in the Anderson Allotment would be lowered from 50% to 40%. Because this alternative calls for an increase of available AUM's, actual use would likely increase slightly.

The only projects proposed under this alternative is ½ mile of gap fencing to complete the boundary between Bull Flat and Spring pastures, and about ½ mile of fencing to create a branding corral in the southeast corner of Spring Pasture. The gap fencing would aid in implementing the deferred rotation because livestock would no longer be able to drift back and forth through unfenced portions of the pasture boundary.

Campbell Allotment

In Campbell Allotment, Peacock and Twin Spring pastures would be early season use pastures, with grazing scheduled March 1—May 31. These two pastures are part of a rest/rotation grazing system that would receive two years of use and then two years of full rest. These pastures alternate so that when one is used, the other would be rested. A continued rest/rotation grazing system in these pastures would maintain the condition of rangeland vegetation. The two consecutive years of rest would ensure that native grasses would complete their lifecycles and produce seed in rest years. The maximum utilization level for these native pastures would be 40%, which would be less than the current 50%. No new range improvements are proposed.

Sacramento Hill Pasture would be divided by fencing to create North and South Sacramento Hill pastures. These two pastures would function as a deferred rotation grazing system, thereby allowing deferment of grazing during the critical growing season every other year for each pasture. The seasons-of-use for these pastures would be March 16—May 15 and May 16—July 15. This system of deferment would ensure that the health and vigor of rangeland vegetation would be maintained by providing critical growing season rest in alternate years. This system of deferment differs from the current rest/rotation system employed, but rangeland vegetation health should be maintained as a result of the deferment. Allowing livestock to utilize these pastures every year would take some grazing pressure off Peacock or Twin Springs pastures, which is where livestock from Sacramento Hill Pasture currently go when it is rested.

North and South Sacramento Hill pastures would have an increase in grazing use which would be attributed to subdividing one large pasture into two smaller pastures and the development of new water sources by means of a pipeline extension. Four miles of new fence would separate these pastures, and 6.25 miles of new pipeline would be installed with five new troughs. These range improvements would cause new areas of disturbance from livestock use and concentration, as described under "General Impacts", above. The new pipeline would provide more reliable water sources for these pastures and improve distribution of livestock. Grazing use at existing water sources would be expected to remain the same because the additional grazing would be concentrated around the new water sources.

Another proposed range improvement project in North Sacramento Hill Pasture would be a riparian exclosure on Antelope Creek which would restrict livestock access on two miles of Antelope Creek using four miles of fence. Utilization on rangeland vegetation in the vicinity of this exclosure could decrease because livestock would not be watering in this section of Antelope Creek.

Another deferred rotation grazing system would be scheduled for Starvation Brush Control and Starvation Seeding pastures. The seasons-of-use for these two pastures would be June 1—August 14 and July 1—August 14, where each pasture would receive growing season deferment until after flowering every other year. Not every grass plant in these pastures would be able to fully complete its physiological function prior to grazing use. However, most plants would be able to complete their life cycles because, in the 15 days that grazing would occur, livestock would not be able to graze the majority of plants due to large pasture size and the stocking levels with which they would be grazed. In addition, by July 1, the carbohydrate storage cycle would be nearly completed and there would be no appreciable impact to the storage cycle or plant health by the time the cycle is finally completed, 15 days later on average. A reduction in the grazing utilization limit from 50% to 40% in Starvation Brush Control Pasture would lower grazing intensity in that pasture and increase standing litter and seeding success. In Starvation Seeding, an increase in the utilization limit from 50% to 60% would result in greater impacts to forage species compared to the existing situation.

Vegetation treatment would be proposed for 5600 acres in the southern end of Starvation Brush Control Pasture. This area would be temporarily fenced to exclude livestock until new plants become established and rooted well enough to withstand grazing pressures.

Horse Hill Pasture would be a late season use pasture from August 15 to October 30 every year. Health and vigor of the rangeland vegetation would be maintained because grasses would be able to complete their entire growth and reproductive cycles prior to grazing. Under existing scheduled use, grasses complete all growth and physiological functions before grazing; existing healthy pasture conditions would be expected to continue under Alternative I.

Approximately 11 miles of stream corridor and five springs would be excluded from grazing in order to ensure riparian health while allowing late season grazing. Water gaps would be placed between exclosures and impacts at these water gaps would be greater than currently observed. Upland vegetation near these water gaps would see greater use than would be observed elsewhere in the pasture.

Louse Canyon Community Allotment

Louse Canyon Community Allotment would be divided into three separate allotments (Wilkinson, Anderson, and Nouque allotments) in order create allotments for private use and improve land stewardship. Construction of 37 miles of fencing would create new allotment boundaries. With smaller pastures it is expected that there would be more consistent livestock distribution across pastures since animals would not be able to range as far as they currently do.

In Wilkinson Allotment, grazing in North and South Drummond Basin pastures would be early use, occurring March 1—May 15 every year. Livestock use would occur prior to the critical growing season, and therefore the grasses would complete their reproductive life cycles and set and disperse seed every year, resulting in overall rangeland health and a sustained vegetation community. Use in these pastures would be similar to that currently authorized in Drummond Basin Pasture, where the existing grazing strategy in this healthy pasture has not impacted the function of rangeland vegetation.

Steer Canyon Native Pasture would be scheduled for use May 16—May 31. This pasture would be utilized mainly to move from Drummond Basin to Lower Louse Canyon. While this use period is partly within the critical growing season, negative impacts would be minimal due to the short duration of grazing and removal of livestock by May 31. Rangeland vegetation may have a slightly reduced seed production potential, but carbohydrate storage should be completed.

Lower Louse Canyon and Chipmunk pastures would be used as part of a deferred rotation grazing system, with each pasture receiving critical growing season deferment every other year. The pastures would be grazed June 1—July 15 and July 16—September 30. By allowing grasses in each pasture to complete their reproductive life cycle and set seed every other year, rangeland vegetation would retain health and vigor even though used during the critical growth period every other year.

Chino Pasture would be scheduled for use June 1—August 1 every year, which would concentrate grazing during the critical growing season. Grazing this pasture to the 40% utilization level every year would likely reduce the ability of native grasses to produce seed because each plant would likely be grazed several times during the season. This repeated cropping of grass plants could result in declines in upland vegetation trend for the pasture due to a depletion of plant carbohydrate reserves. However, downward trends would not be anticipated because proposed use would be similar to what has been previously authorized, and currently upland vegetation trend is upward. Forb production would improve under the proposed grazing regime because turnout (June 1) would be later than the current schedule and grazing would begin after the critical growing period for forbs.

Steer Canyon Seeding Pasture would be grazed August 15—October 30 every year. Use in this pasture would not occur until after seed ripe, and consequently grass plants would be allowed to complete their reproductive life cycles and set and disperse seed every year. Late grazing use would ensure that the biological needs of grass plants are met and that upland vegetation conditions continue to meet standards for rangeland health.

Steer Canyon Seeding Pasture would receive 6,300 acres of vegetation treatment. Brush beating (without reseeding) would be used to remove sagebrush that has re-colonized an existing crested wheatgrass seeding. By decreasing competition for available moisture, sagebrush removal would increase production of desirable grasses.

The new Pole Creek Pasture would be grazed June 1—June 31 and October 1—October 15 each year. Use in June would occur during the critical growing period and seed production would likely be impaired. Rangeland vegetation health and vigor could potentially be reduced because the carbohydrate reserve cycle may become depleted. However, under the existing authorized use, trend in upland vegetation in this pasture was constant. Because this pasture is proposed to receive use similar to the existing use (which is both during and after the critical growing season, with the same AUM's), trend would likely remain constant.

Anderson and Cavietta pastures would form a deferred grazing system, and would be scheduled for use July1—July 31 and August 1—September 30. Each pasture would receive growing season deferment from livestock grazing every other year, when grasses would complete their

life cycles and set seed prior to grazing. Rangeland vegetation health and vigor would be maintained or improved over the existing conditions by providing deferment for these pastures.

The new Nouque Allotment would consist of Frenchman Creek Seeding and Upper Louse Canyon pastures. Frenchman Creek Seeding would be used early in the season, from March 16—May 31. Grazing would occur during the first part of the critical growing season and rangeland vegetation could be adversely affected. Grass plants would have to initiate growth more than once. Plants may not be able to fully complete the carbohydrate reserve cycle and could go quiescent, with a net deficit at the end of the growing season. Repeated years of early use could cause individual grass plant mortality. The maximum allowable utilization limit for this pasture would be 60%, which is the same as is currently authorized, and the proposed use period would be the same as authorized in previous years.

Upper Louse Canyon Pasture would be grazed June 1—September 30 every year, which would concentrate use in this pasture during the critical growing season. Grazing this pasture to the 40% utilization level every year would likely reduce the ability of native grasses to produce seed because each plant would likely be grazed several times during the season. This repeated cropping of grass plants could result in declines in upland vegetation trend for the pasture due to a depletion of plant carbohydrate reserves. However, downward trends would not be anticipated because proposed grazing would be similar to what has been previously authorized, and currently upland vegetation trend is upward. Forb production would improve under the proposed grazing regime because turnout (June 1) would be later than the current schedule and grazing would begin after the critical growing period for forbs.

Star Valley Community Allotment

Tristate Pasture would be used March 1—May 31 every year. This period extends into the critical growing season of grasses and forbs, and therefore seed production and plant vigor and health may be reduced. Clipping grass plants while they are actively growing and forcing re-initiation of growth would draw on carbohydrate reserves and weaken individual plants. Plants may not be able to fully complete the carbohydrate reserve cycle and could go quiescent, with a net deficit at the end of the growing season. Repeated years of early grazing and repeated clipping during a season could cause individual grass plant mortality, especially with increased grazing use in this pasture.

Available AUM's would increase in Tristate Pasture, partly due to six miles of new pipeline and five new troughs that would be located near the southern end of the pasture. Areas of concentration would occur around troughs, but use should not appear heavy because livestock would disperse away from water sources during the proposed spring grazing period when it is cool. Most of the pasture would remain in its current healthy condition

A 6,000 acres vegetation treatment would take place in Tristate Pasture. The sagebrush overstory would be burned and the area re-seeded with native grasses. Livestock use of rangeland vegetation would increase in the treated area because of additional available forage. Native grasses would benefit from decreased competition with shrub species and have greater growth potential due to additional available moisture.

North Stoney Corral Pasture would be grazed March 1—May 31 every year, the same as Tristate Pasture. Impacts to rangeland vegetation would be similar. The only proposed range improvement project would be reconstruction of Stoney Corral Well, which would not change livestock distribution nor impact rangeland vegetation.

Grazing use in North Stoney Corral Pasture would increase, but because of the large pasture size and relatively light stocking rate, impacts to rangeland vegetation would not be likely to increase above existing levels.

North Tent Creek Pasture would be included in a rest/rotation grazing system from June 1—September 30 every other year. Forbs would not be affected, but key forage grasses would be negatively impacted by grazing during a portion of the critical growing season, though most use would occur after the boot stage. In the rest year, native grasses would attain maximum growth and would complete all physiological functions, including seed production, and seeds would be dispersed. Residual plant litter would aid in trapping moisture and increase plant health and growth potential. The rest year would ensure that native grasses would complete their lifecycles and would maintain rangeland vegetation in good condition.

North Tent Creek Pasture would receive an increase in available AUM's in part due to a new pipeline system. The pipeline would extend from South Tent Creek Pasture and supply three water troughs in North Tent Creek Pasture. Even with the additional grazing use, average livestock use of rangeland vegetation would not likely increase because the new sources of water would disperse grazing over a greater area.

South Tent Creek Pasture would be scheduled for grazing June 1— September 30 every year, with a maximum utilization limit of 40%. Grazing this pasture to the 40% level every year during the critical growing season would likely eliminate key grass species around water sources and reduce grass production elsewhere. Seed production and plant vigor would be impaired because plants would be grazed while actively growing. Repeated initiation of growth would draw on carbohydrate reserves and weaken the plant, increasing likelihood of individual plant mortality. The use proposed for this pasture would intensify grazing impacts and increase the probability that an individual grass plant would be cropped. Forb production would not be affected because grazing would begin after the critical growing period for forbs.

During the rest year, North Tent Creek Pasture livestock would use South Tent Creek Pasture, adding to Nouque's livestock that graze South Tent Creek every year. When both herds are in South Tent Creek Pasture, utilization would be expected to reach the 40% maximum limit. This higher grazing use may be feasible because of additional water supplied by two new pipelines and nine new troughs. With utilization restricted to 40%, South Tent Creek Pasture may not be able to accommodate this level of grazing in less productive years when forage is limiting.

The new water sources would allow more even distribution of livestock throughout South Tent Creek Pasture. The northern portion of this pasture would receive more grazing use than has historically occurred. Currently, native grasses in the north are able to complete all physiological functions and set and disperse seed, which may not continue to occur due to heavier utilization and concentrated livestock use during the critical growing season. Riparian areas in the southern

end of the pasture would be fenced and livestock would water at gaps. The water gaps would incur concentrated use as previously discussed under this alternative, and rangeland vegetation would receive more impacts in localized areas.

Little Owyhee Allotment
Little Owyhee Allotment would be used in the same manner as South Tent Creek Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for South Tent Creek Pasture.

Quinn River Allotment
Quinn River Allotment would be used in the same manner as Upper Louse Canyon Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for Upper Louse Canyon Pasture.

Ambrose Maher Allotment
Ambrose Maher Allotment would be scheduled for early season and late season use, February 12—May 24 and October 16—October 29. Grazing would avoid most of the critical growing period, and grasses and forbs would complete their physiological functions and set and disperse seed. No changes in grazing use or new project construction would occur in this allotment. Rangeland vegetation would continue to maintain its health and vigor.

ROD Objective 1, which emphasizes native vegetation communities, would be met under this alternative. Species, community, and structural diversity, in addition to habitat connectivity, would occur at the mid-scale across the area.

ROD Objective 2, concerning sagebrush-dependent wildlife, would not be met. See the Wildlife and Wildlife Habitats section, below.

ROD Objective 3 would be met due to paucity of weeds in the area and continued implementation of Vale District Five-Year Noxious Weed Control Plan (ROD, 2001). Noxious weeds widely distributed on private and public land northwest of LCGMA are buffered by high condition, healthy, functioning rangelands in LCGMA with few open niches and few opportunities for invasion. Domestic livestock and wildlife would continue to disperse seed and disturb soils in localized areas, thus aiding establishment and expansion of noxious weeds. Protection of existing range health and native range conditions would help preclude broad infestations of weeds.

The LCGMA Evaluation Objectives would be met because maximum utilization limits would be 40% for native pastures and 60% for non-native seedings.

Alternative II —Rangeland Vegetation
This alternative proposes to continue authorizing livestock grazing in the same manner and degree as is currently authorized, even though many riparian areas in LCGMA are not meeting standards for Rangeland Health.

General Impacts
Pastures with non-native perennial species (i.e., crested wheatgrass seedings) would continue to be managed primarily for forage production, and would make minimal progress toward supporting greater species or structural diversity. No vegetation treatments would be implemented.

There would be no new water developments under this alternative, only renovation or reconstruction of 17 existing spring projects. Activities relating to renovation and reconstruction may consist of relocating water troughs, relocating and extending pipelines to troughs, new fencing of spring sources and/or riparian areas, and reconstruction of existing fencing. Relocating water troughs would create a small disturbance around the new trough placement where vegetation would be denuded due to livestock concentration. Only exclosures needed to protect spring sources associated with spring project renovation would be constructed. There would be initial disturbance to rangeland vegetation from fence construction and pipeline relocation/extension, but overall, vegetation condition at the springs would improve when livestock are excluded. At newly fenced spring sources, it is anticipated that livestock trails would form along the fence line as livestock attempt to access these areas for water. Trails may be denuded of vegetation, but rangeland vegetation next to the trail would remain.

AUM allocation would not change, and grazing utilization levels and distribution of use would likely remain constant.

Six springs in LCGMA would be abandoned under this alternative, and as a result, grazing use of rangeland vegetation at these areas would decrease because livestock would not congregate as heavily once troughs are removed.

Noxious weeds are not expected to increase under this alternative since ground-disturbing activities would be minimal and few niches in rangeland vegetation would be opened where noxious weeds could establish. In general, rangeland vegetation in LCGMA is intact and healthy, and noxious weeds or exotic annual grasses are scarce or absent.

Impacts to grasses and forbs in pastures that are grazed every year during the critical growing season would be mitigated by light utilization levels, low stocking rates, and/or regular rest periods. These pastures would continue to maintain healthy, productive rangeland vegetation free from exotic annual and /or invasive species.

Pasture By Pasture Impacts

Anderson Allotment
Grazing in this allotment's three pastures, North, Bull Flat, and Spring, would be authorized in the same manner and degree as they have been historically. North Pasture would be the turnout pasture and used March 1—March 31. Livestock would then be moved to Bull Flat and Spring pastures from April 1—July 31.

Grazing in North Pasture would occur prior to the critical growing season, and therefore would not affect the health or vigor of native grasses and forbs. Plants would attain maximum growth and complete all physiological cycles and set and disperse seeds.

Bull Flat and Spring pastures would be grazed throughout the critical growing season, but grazing impacts on forbs and key forage grasses are mitigated by generally "slight" to "light" utilization levels. Although the potential exists for decreased seed production and declining trend in upland vegetation, these pastures are currently healthy and productive. and meet Rangeland Health standards. Declines in vegetation trends are not expected.

Campbell Allotment

Peacock and Twin Springs pastures would continue to be part of a rest/rotation grazing system and would be grazed March 1—June 15 in alternate years, ensuring that each pasture receives full rest every other year. In rest years, native grasses would attain maximum growth, complete all physiological functions, and produce and disperse seed. In rest years, native grasses in wet soils would not be vulnerable to trampling damage. A rest/rotation grazing system in these pastures would maintain the health and vigor of the rangeland vegetation

Sacramento Hill Pasture would be used March 1—June 15 for two years, and rested for one year. Plant health and vigor would be maintained by allowing grasses to complete all physiological functions and set and disperse seed during rest years. In rest years, native grasses in wet soils would not be vulnerable to trampling damage. Although this pasture receives less overall rest than Peacock or Twin Springs, utilizations are generally "light" and upland vegetation trend is upward.

Starvation Brush Control and Starvation Seeding pastures would continue to be part of a deferred grazing system which allows deferment from grazing every other year during the critical growing season. These pastures would be grazed June 1—September 1 and July 15—September 1 and would alternate with each other. Every other year, grasses in the pasture that is grazed later would be able to complete their physiological cycles and set and disperse seed. Although pastures would be grazed during the critical growing season in alternate years, the deferment would maintain rangeland vegetation health and vigor.

Horse Hill Pasture would be used by livestock late in the season from August 1— October 30 every year. Because grazing would be after the critical growing season, there would be no negative effects on rangeland vegetation. Native grasses and forbs would attain maximum growth and would complete all physiological functions. Full seed production and dispersal would occur each year prior to grazing.

Louse Canyon Community Allotment

Drummond Basin Pasture would continue to be an early season pasture, grazed March 1—May 15 each year. Since use would occur prior to the critical growing season, native grasses and forbs would complete their physiological cycles and set and disperse seed every year. Rangeland vegetation would retain its health and vigor, and would continue to be maintained in late or Potential Natural Community ecological status.

Steer Canyon Seeding Pasture would receive use May 1—June 15 and August 1—September 30 every year. With the earlier May-June season of use extending well into the critical growing season, reduced seed production may occur. Overall health and vigor of grasses may also decrease as plants would likely have to reinitiate growth several times after repeated clipping. Plants may not be able to fully complete the carbohydrate reserve cycle and could go quiescent, with a net deficit at the end of the growing season. Repeated years of early use could cause individual grass plant mortality if it is unable to store adequate reserves. If mortality in perennial grass plants occurs, sagebrush densities would continue to increase. Downward trend in the seeded portion of Steer Canyon Seeding suggests that these impacts are occurring.

Louse Canyon Pasture would continue to have a grazing season of approximately 200 days from April 15—October 31 each year. Grazing would occur throughout the critical growing period and may cause declines in upland vegetation trend, especially in portions of the pasture with moderate to heavy utilizations near water sources such as Steer Canyon Reservoir. Impacts would be the same as described for Steer Canyon Seeding, above.

Pole Creek Seeding Pasture would be grazed May 20—May 30 and September 15— October 15. Some use would occur during the critical growing season in May, but because duration of grazing would be brief and utilization levels are typically "light", individual plants would not likely be cropped repeatedly and impacts would be minor. The potential exists, however, for reduced seed production from those plants that are grazed. The later use season would have little effect on rangeland vegetation because grazing would occur after plants have fully completed their annual carbohydrate cycle.

Star Valley Community Allotment

Tristate Pasture would be authorized for use March 1—May 31 annually. This period extends somewhat into the critical growing season of grasses and forbs, but generally "slight" to "light" utilization levels and light stocking rates of over 40 acres/AUM would mitigate potential impacts of early season use on plant physiology and seed production.

North Stoney Corral Pasture would be grazed March 1—May 31. Effects to rangeland vegetation would be similar to those described under Tristate Pasture, above.

North Tent Creek Pasture would be included in a rest/rotation grazing system with use scheduled June 1—September 30 every other year. Forbs would not be affected because grazing would occur after their carbohydrate cycle is complete. Grazing impacts on key forage grasses would be mitigated by generally "light" utilization levels, low stocking rates at 55 acres/ AUM, and regular rest periods. Key forage grasses could be negatively impacted (in the grazed year) by grazing during a portion of the critical growing season, though most use would occur after the boot stage. In rest years, native grasses would attain maximum growth and would complete all physiological functions, including seed production, and seeds would be dispersed. Residual plant litter would aid in trapping moisture and increase plant health and growth potential. The rest year would ensure that native grasses would complete their lifecycles and would maintain healthy, productive rangeland vegetation.

South Tent Creek Pasture would be grazed June 1—October 31 every year, with higher livestock numbers in alternative years. These additional livestock come from North Tent Creek Pasture on years when it is rested. The grazing season in this pasture would occur during the critical growing season for key forage grasses, but grazing impacts would be mitigated by generally "light" utilization levels. Forbs would not be affected because grazing would occur after their carbohydrate cycle is complete. Although the potential exists for decreased seed production in grasses and declining trends in upland vegetation, these pastures are currently healthy and productive, meet Rangeland Health standards for uplands, and have an overall upward trend in upland vegetation.

Little Owyhee Allotment
Little Owyhee Allotment would be used in the same manner as South Tent Creek Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for South Tent Creek Pasture.

Quinn River Allotment
Quinn River Allotment would be used in the same manner as Upper Louse Canyon Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for Upper Louse Canyon Pasture.

Ambrose Maher Allotment
Ambrose Maher Allotment would be scheduled for early season and late season use, February 12—May 30 and October 15—October 21. Grazing would avoid most of the critical growing period, and grasses and forbs would complete their physiological cycles and set and disperse seed. No changes in grazing use would occur in this allotment. Rangeland vegetation would continue to maintain its health and vigor.

All rangeland vegetation objectives would be met under this alternative. For a detailed discussion of ROD Objective 2, refer to Wildlife and Wildlife Habitats in the Environmental Impacts section.

The LCGMA objectives for rangeland vegetation would be met under this alternative because stocking rates would not increase and, therefore, utilization levels would remain predominantly "light".

Alternative III—Rangeland Vegetation
This alternative is recommended as BLM's preferred alternative because it would provide for a sustained yield of forage for livestock grazing while maintaining resource values for long-term multiple use, consistent with resource objectives. This alternative would construct approximately 12.25 miles of new pipeline, 58 miles of new fencing, 9 new water troughs, 17 spring project renovations, and conduct upland vegetation treatments on 3,500 acres within LCGMA.

Under Alternative III, about 75 percent of all new seedings within the SEORMP area would be planted with native seed mixes and the remaining 25 percent would be non-native seed mixtures (SEORMP FEIS, page 419).

General Impacts
The proposed vegetation treatment, consisting of 3,500 acres, would be intended primarily to achieve DRFC's rather than increase forage production. With the completion of this vegetation treatment approximately 5% of LCGMA would be rangeland seedings. Land treatments would reseed native herbaceous species that would maintain existing diversity, thereby avoiding introduction of new species and permanent changes in vegetation composition. The treatment area consists of shrub-dominated communities in Starvation Brush Control Pasture. Treatment methods may include prescribed fire, mechanical (brush beating), or chemical methods. The effects of each treatment method would be the same as described in Alternative I.

In lower elevation areas with light precipitation, vegetation treatments may increase the risk of invasion and dominance of exotic species, such as cheatgrass, because potential seed sources exist north and west of LCGMA. After vegetation manipulation and prior to establishment of seeded species, the risk of weed invasion may increase as niches are opened that were once filled by shrubs. While there may be an increased risk of invasion, that risk is still considered relatively low because exotic species are rare in LCGMA, and most areas consist of healthy, intact native vegetation.

Regardless of the treatment method chosen, drill seeding with adapted native herbaceous species would occur after shrub removal in order to augment existing native plants and hasten the establishment of desirable perennial vegetation. Because the herbaceous understory lacks diversity in this area, seeding would increase the amount of perennial grass cover, which would then allow Starvation Brush Control Pasture to meet Rangeland Health Standard 3. Surface disturbance from drilling could allow a foothold for exotic and/or invasive species, but invasion is unlikely due to the limited existence of exotics in LCGMA. Patches of big sagebrush would be left within the treated area to serve as seed sources for re-colonization.

Following treatment, the landscape would have the appearance of a grass dominated rangeland. This appearance would gradually diminish over the long term (20 to 70 years) as natural sagebrush re-colonization takes place and plant communities reach a balance of grasses, forbs, and shrubs. The rate of recruitment of shrubs in the treated area would be relative to the rate of mortality depending on the type of treatment method. Increased perennial grassland vegetation may benefit areas lacking herbaceous understory vegetation by filling open niches that could allow for undesirable species to establish, but would not maintain the structural diversity found in existing shrublands.

A minimum of two growing seasons of rest from grazing following seeding of the treated areas would allow for new plants to become established and well-rooted enough to withstand grazing pressures. This rest period could be extended if establishment of perennial vegetation is delayed for any reason.

New pipelines would be ripped in to minimize the disturbed area associated with construction, except for those portions where ripping would not adequately bury the pipe. In this case a backhoe or track hoe could be used. The sections of new pipelines installed in newly disturbed areas would not have service roads created for maintenance purposes. By not creating more roads in LCGMA, opportunities for exotic species establishment would be limited. Nearly all

visible signs from pipeline construction would be expected to fade away in a period of two to five years. Native perennial vegetation would be seeded on any trenches dug, and ripped areas would re-vegetate naturally within two years. Sagebrush plants damaged by cross country travel would respond quickly, and tracks should be eliminated in five years.

Areas surrounding new water troughs and grazed during the hot season would be heavily impacted and denuded of vegetation due to livestock concentration. Earlier or later in the season when cooler temperatures exist, livestock would distribute themselves more evenly over the pasture and large denuded areas around water sources would not occur.
New water troughs would increase the opportunity for invasion and establishment of noxious weeds because of soil compaction from increased hoof action and vegetation removal, though invasion not anticipated due to the limited existence of exotic species in LCGMA.

Reconstruction of existing spring developments where trough relocation is necessary would negatively impact upland vegetation in the immediate vicinity of the water trough due to hoof action and livestock concentration. These impacts would be essentially the same as for other water troughs in LCGMA.

Six spring development projects would be abandoned under this alternative, and as a result, grazing use of rangeland vegetation at these areas would decrease because livestock would not congregate as heavily once troughs are removed. Plant vigor would improve over the existing situation.

Fence mileage in LCGMA would increase approximately 18% over the existing situation, from approximately 280 miles (including boundary fencing) to approximately 338 miles. Construction of riparian corridor fencing, which incorporates upland as well as riparian vegetation, would provide opportunities to compare conditions between grazed and un-grazed communities and aid in future monitoring. Adjacent to exclosure fencing, it is anticipated that livestock trails would exist because cattle would be accustomed to watering in these areas. Trails would be narrow, but may become entrenched and denuded of vegetation. Livestock trails would occur over a miniscule portion of the total acres in LCGMA.

New pasture division fences would provide more management flexibility to defer use and/or rest pastures, thus maintaining or improving upland as well as riparian condition. New division fencing could cause localized impacts to rangeland vegetation from construction activities and livestock trailing along fences that obstruct habitual livestock travel patterns. Impacts from construction would consist of crushed vegetation in the immediate vicinity of the new fence and would be short term.

While there would be impacts due to construction of range improvement projects, such as fencing, pipelines, and troughs, these projects would disperse livestock so that utilization in upland and riparian vegetation would be more uniform. New pasture division fencing would allow implementation of grazing systems conducive to upland health by providing deferment or rest.

Proposed grazing schedules in this alternative would increase the frequency of livestock moves

and trailing compared to the current situation. Livestock would be herded mainly over traditional livestock trails and therefore new areas would not be disturbed. Trails for driving livestock would have the appearance of moderate to heavily utilized areas, and vegetation in the immediate vicinity of the trail may be reduced. Areas adjacent to the trail would not be impacted. Existing livestock trails may become marginally wider and more entrenched with increased use.

The critical growing period for rangeland grasses is defined as the period between and including the boot stage and anthesis. The critical growing period in LCGMA generally occurs from May 15 to July 15. In many higher elevation areas, the current year's growth may not begin until May 1, and grazing use that occurs before this date will primarily remove the previous year's growth (or standing litter).

Native pastures that employ rest/rotation grazing systems and lack riparian concerns (North Sacramento Hill, South Sacramento Hill, Peacock, and Twin Spring pastures) would have a maximum allowable utilization level of 50%, the same as currently authorized. This utilization level would not negatively impact rangeland vegetation. Monitoring data for these pastures showed that upland vegetation trend is upward and Rangeland Health Standards 1-5 were met (LCGMA Evaluation, 2003), indicating that continuing to graze at current utilization levels would maintain or improve rangeland vegetation health and vigor.

Pasture By Pasture Impacts

Anderson Allotment

Season-of-use in Anderson Allotment would be shortened by 15 days and shifted 15 days earlier in the year, compared to the existing authorization. The total amount of AUM's available for livestock in this allotment would remain the same, and therefore livestock numbers would increase from 830 to 850 to compensate for the shorter season.

North Pasture would continue to be the turn-out pasture and would be grazed February 15—March 31 each year (See Map 3—Anderson Pasture Moves). Shifting the turn-out date 15 days earlier would not negatively affect rangeland vegetation because livestock would be consuming the standing litter at either time of the year. Use in North Pasture would occur prior to the growing season while rangeland vegetation is quiescent, and no adverse impacts would be expected.

Bull Flat and Spring pastures would form a deferred rotation grazing system, with use occurring April 1—May15 and May 16—June 30. By alternating the seasons-of-use for Bull Flat and Spring pastures, each would receive deferment from grazing during the critical growing period every other year, thereby ensuring range health and productivity. This would allow forage plants to complete growth without interruption of the carbohydrate storage cycle and ensure that the physiological needs of the plant would be met.

The maximum allowable utilization limit for these native pastures would be lowered from 50%, which is currently authorized, to 40%. This would likely have no effect on vegetation because grazing utilizations in Anderson Allotment average less than 27%.

The only projects proposed under this alternative is ½ mile of gap fencing to complete the boundary between the Bull Flat and Spring Pastures and the abandonment of one reservoir. The gap fencing would aid in implementing the deferred rotation because livestock would no longer be able to drift back and forth through unfenced portions of the pasture boundary.

Campbell Allotment

In Campbell Allotment, Peacock and Twin Spring pastures would be early season use pastures, with grazing scheduled March 1—May 31 (See Map 4—Campbell Pasture Moves). These two pastures are part of a rest/rotation grazing system and when one pasture is used the other one receives a full year of rest. The rest/rotation system is the same as is currently authorized, and therefore healthy range conditions that currently exist would be maintained. In rest years, grasses and forbs plants would achieve maximum growth, complete their carbohydrate cycles, and set and disperse seed. Plants in wet soils would not be vulnerable to trampling damage. With the continuing of a rest/rotation grazing system these pastures would maintain healthy, productive rangeland vegetation.

The maximum utilization level for Peacock and Twin Spring pastures would remain at 50%. This utilization level would not have a negative impact on rangeland vegetation. Monitoring data show that trend in upland vegetation is upward and Standards 1-5 for Rangeland Health were met (LCGMA Evaluation, 2003). Therefore, grazing at current levels would continue to maintain or improve rangeland vegetation health and vigor. No new range improvements are proposed for these pastures.

Sacramento Hill Pasture would be divided by fencing to create North and South Sacramento Hill pastures. These two pastures would be grazed by about 15% of the herd as either a deferred rotation system or rest/rotation, depending on which system is most practicable logistically. For deferred rotation, grazing would be March 16—May 15 and May 16—July 15, thereby allowing deferment of grazing during the critical growing season every other year for each pasture. Maximum utilization levels would be 40%.This system of deferment would ensure that the health and vigor of rangeland vegetation would be maintained by providing critical growing season rest in alternate years. Livestock would move to Starvation Seeding after July 15.

The rest/rotation system is not shown on Map 4. For rest/rotation, one pasture would be used March 16—April 30 and the other would receive rest. Cattle would then move to Horse Hill Pasture. This system would not impact grasses or forbs during the critical growing season, and in the rest year, standing litter would remain in place and plants in wet soils would not be vulnerable to trampling damage. Healthy and productive rangeland vegetation would be maintained or improved.

Either grazing system would protect resource values, maintain or improve riparian and upland health, and meet rangeland vegetation objectives by providing rest or avoiding use during the critical growing season.

Proposed range improvements for Sacramento Hill Pasture include four miles of division fence that to create the North and South pastures, and the development of new water sources by constructing a pipeline extension and three new troughs. The new pipeline would provide more

reliable water sources for these pastures and improve distribution of livestock. These range improvements would cause new areas of disturbance from livestock use and concentration, as described under "General Impacts", above. The new pipeline extension would installed in undisturbed land would not have an adjacent service road for maintenance purposes. Not having a service road next to this pipeline would minimize the risk of noxious weeds and other invasive plant species.

Horse Hill Pasture would be divided by 11 miles of fencing to create two pastures (Horse Hill North and Horse Hill South). These two pastures would be grazed April 15—July 15 every year if the Sacramento Hill pastures are used as a rest/rotation system, or May 16—July 15 every year if Sacramento Hill pastures are used as a deferred grazing system. The most intense grazing (the largest number of cattle) in the Horse Hill pastures would occur June 1—July 15 when 85% of the herd joins the 15% that came earlier from the Sacramento Hill pastures. The full herd would be present in Horse Hill for 45 days, a reduction from the 90 days previously authorized. This reduction in duration would benefit forage grasses by decreasing the number of times each grass plant is likely to be clipped by livestock.

With a maximum utilization limit of 40% in the Horse Hill pastures and given the large size of the pasture, rangeland vegetation would be expected to retain its health and vigor despite utilization during the critical growing season. The opportunity for livestock dispersal and the shortened season of use would allow grass plants to produce and set seed over most of the pasture because individual plants would not be repeatedly clipped.

Two springs in the Horse Hill pastures would be fenced to exclude livestock. Decreased livestock use of adjacent upland vegetation would be expected where, without water, cattle would no longer concentrate at these locations. Livestock trailing would occur on the short term along the exclosure fence lines because cattle would be blocked from their accustomed watering sources.

Starvation Brush Control Pasture (15% of the herd) and Starvation Seeding Pasture (85% of the herd) would both be grazed July 16—October 15 every year. Maximum utilization limits would be 40% for Starvation Brush Control Pasture and 60% for Starvation Seeding. Use would occur after the critical growing season for grasses and forbs, and plants would complete their carbohydrate storage cycles, and set and disperse seed. Health and vigor of rangeland vegetation would be maintained or improved.

Vegetation treatment would be proposed for 3,500 acres in the southern end of Starvation Brush Control Pasture. Impacts of vegetation treatments and drilling to rangeland vegetation would be the same as discussed in Alternative I. This area would be temporarily fenced to exclude livestock until new plants become established and rooted well enough to withstand grazing pressures. Surface disturbance from treatment and drilling could allow exotic and/or invasive species to establish, but invasion is unlikely due to limited existence of exotics in LCGMA.

Louse Canyon Community Allotment

Drummond Basin Pasture would be an early season pasture, grazed March 1—May 15 each year (See Map 5—Louse Canyon Community Pasture Moves). Since use would occur prior to the

critical growing season, native grasses and forbs would complete their physiological cycles and set and disperse seed every year. Rangeland vegetation would retain its health and vigor, and would continue to be maintained in late or Potential Natural Community ecological status.

The new Steer Canyon Native Pasture would be created with approximately six miles of new fence that would separate the seeded acreage from the native acreage in Steer Canyon Seeding Pasture. Steer Canyon Native Pasture would be grazed May 16—May 31. Livestock would use this pasture primarily during their move from Drummond Basin Pasture to Lower Louse Canyon Pasture. While this use period season is partly within the critical growing season, negative impacts to forage species would be minimal duration of use would be brief and no livestock would be present after May 31, allowing plant recovery and regrowth. Carbohydrate storage and seed production should be completed for most plants.

Steer Canyon Seeding Pasture would be used September 1—October 15 every year, which would be well after the critical growing season for forage plants. This shift away from the critical growing season use which occurs currently would allow grasses and forbs to complete their carbohydrate storage cycles, set and disperse seed. Rangeland vegetation would improve in health and vigor. The maximum allowable utilization limit would remain 60% as is currently authorized.

The Middle and Lower Louse Canyon pastures would be formed with the construction of approximately 8 miles of fence that would subdivide Louse Canyon Pasture. Middle Louse Canyon Pasture would be used June 1—July 15 each year, which is during the critical growing period for rangeland grasses. The grazing season for this pasture would be shortened to 45 days from the 200 days currently authorized. This shorter season, combined with a 40% maximum utilization limit, would help ensure that grass plants would not receive multiple clipping from livestock grazing. Most grass plants would be able to produce seed under this “light” utilization, and the health and vigor of rangeland vegetation would remain or improve. Use in this pasture previously occurred throughout the critical growing season and upland trend for rangeland vegetation has remained constant, so it is anticipated that with the adjustments to pasture use proposed in this alternative, upland trends would be upward.

The new Lower Louse Canyon Pasture would be grazed July 16—August 31 every year. Use would occur after the critical growing season. Grasses and forbs would complete their carbohydrate storage cycles, set and disperse seed, and rangeland vegetation would maintain or improve its health and vigor.

Upper Louse Canyon Pasture would be grazed June 1—July 31 and June 1 to June 30 in alternating years, which would concentrate use during the critical growing season for key forage grasses. The grazing season for this pasture would be shortened from the 200 days currently authorized to 60 or 30 days, depending on the year. As with Middle Louse Canyon Pasture, the shorter season, combined with a 40% maximum utilization limit, would help ensure that grass plants would not receive multiple clipping from livestock grazing. Most grass plants would be able to produce seed under this “light” utilization, and the health and vigor of rangeland vegetation would remain or improve. Use in this pasture previously occurred throughout the critical growing season and upland trend for rangeland vegetation has remained constant, so it is

anticipated that with the adjustments to pasture use proposed in this alternative, upland trends would be upward.

Pole Creek Seeding Pasture would be grazed September 1—September 30 each year, well after the critical growing season. Effect of this grazing regime on rangeland plants would be the same as discussed for Steer Canyon Seeding, above.

A new pipeline extension (¾ mile) and one trough would be constructed in Pole Creek Seeding Pasture. The exclusion of livestock from 1.5 miles of Pole Creek would eliminate a major source of water, and consequently this trough would improve livestock distribution by supplying a reliable water source in the northwest portion of the pasture.

Star Valley Community Allotment

Tristate Pasture would be authorized for use March 1—May 31 annually (See Map 6—Star Valley Community Pasture Moves). This period extends somewhat into the critical growing season of grasses and forbs, but generally "slight" to "light" utilization levels and light stocking rates of over 40 acres/AUM would mitigate potential impacts of early season use on plant physiology and seed production. This pasture would be expected to maintain its healthy, productive rangeland vegetation.

The maximum allowable utilization level would be lowered from 50% to 40%, which would have minimal effects on rangeland vegetation because past grazing use has rarely exceeded 40%.

One well (White Trails) in Tristate Pasture would be reconstructed. Effects on rangeland vegetation would not differ from those occurring at the existing well at that site, which include localized soil compaction and loss of vegetation from congregating livestock.

North Stoney Corral Pasture would be grazed March 1—May 31. Effects to rangeland vegetation would be similar to those described under Tristate Pasture, above. Effects on rangeland vegetation from the proposed reconstruction of Stoney Corral Well would not differ from those occurring at the existing well at that site, which include localized soil compaction and loss of vegetation from congregating livestock.

North Tent Creek Pasture would be grazed June 1—July 31 every year, which is during the critical growing period for rangeland grasses. Forbs would not be affected because grazing would occur after their carbohydrate cycle is complete. Grazing impacts on key forage grasses would be mitigated by generally "light" utilization levels and a maximum level of 40%, and low stocking rates of about 55 acres/ AUM, which would help ensure that grass plants would not receive multiple clippings from livestock grazing. Most grass plants would be able to produce seed under this "light" utilization, and the health and vigor of rangeland vegetation would be maintained.

A new pipeline from South Tent Creek Pasture would supply water to one new trough in North Tent Creek Pasture. This trough would improve livestock distribution and dispersal. Impacts around the trough would be as previously described for hot season grazing under General Impacts, above.

The new Southwest Tent Creek Pasture would be created with approximately 12 miles of new fence that would separate higher elevation riparian areas from the upland vegetation portion of South Tent Creek Pasture. Southwest Tent Creek Pasture would be grazed in a rest/ rotation system, with use scheduled July 1— July 31 every other year. In rest years, rangeland vegetation would achieve its full growth potential and complete the carbohydrate storage cycle without interruption. Plants would complete all of their physiological functions and set and disperse seed. Standing litter would remain during rest years and would aid in snow capture, reduce evaporation, and reduce erosion from rain drop impact.

South Tent Creek Pasture would be scheduled for use August 1—September 30 every year. Use would occur well after the critical growing season for forage plants. This shift away from the critical growing season use which currently occurs would allow grasses and forbs to complete their carbohydrate storage cycles, and set and disperse seed. Rangeland vegetation would improve in health and vigor.

The overall size of South Tent Creek Pasture would decrease with the formation of Southwest Tent Creek Pasture. Installation of a new pipeline (7 miles) and three new troughs would allow more even distribution of livestock throughout South Tent Creek Pasture because more water sources would be available. The additional water sources would especially affect the northern portion of this pasture, which would receive more use than has historically occurred and which could more frequently come close to the 40% maximum utilization level.

Little Owyhee Allotment
Little Owyhee Allotment would be used in the same manner as Southwest Tent Creek Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for Southwest Tent Creek Pasture.

Quinn River Allotment
Quinn River Allotment would be used in the same manner as Upper Louse Canyon Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for Upper Louse Canyon Pasture.

Ambrose Maher Allotment
Ambrose Maher Allotment would be grazed early season and late season, February 12—May 24 (with about 50 bulls) and October 1—October 21 (with the full herd). Grazing would avoid most of the critical growing period, and grasses and forbs would complete their physiological cycles and set and disperse seed. No changes in grazing use would occur in this allotment, and rangeland vegetation would continue to maintain its current health and vigor.

ROD Objective 1, which emphasizes native vegetation communities, would be met under this alternative. Species, community, and structural diversity, in addition to habitat connectivity, would occur at the mid-scale across the area.

ROD Objective 2, concerning sagebrush-dependent wildlife, would be met. Refer to the Wildlife and Wildlife Habitats section, below.

ROD Objective 3 would be met due to paucity of weeds in the area and continued implementation of Vale District Five-Year Noxious Weed Control Plan (ROD, 2001). Noxious weeds widely distributed on private and public land northwest of LCGMA are buffered by high condition, healthy, functioning rangelands in LCGMA with few open niches and few opportunities for invasion. Domestic livestock and wildlife would continue to disperse seed and disturb soils in localized areas, thus aiding establishment and expansion of noxious weeds. Protection of existing range health and native range conditions would help preclude broad infestations of weeds.

The LCGMA Evaluation Objectives would also be met.

Alternative IV—Rangeland Vegetation

This alternative would emphasize natural values and the functioning of natural systems. Commodity production and rangeland projects would be substantially constrained to protect sensitive resources or accelerate improvement in their condition by allowing for periods of full rest in all pastures grazed during the critical growing season (usually these are also pastures with riparian concerns). This alternative would construct about 8 miles of new fencing, 17 spring projects renovations, and conduct upland vegetation treatments on 3,500 acres within LCGMA.

General Impacts

Impacts from vegetation manipulation projects on 3500 acres in Starvation Brush Control Pasture as well as treatment procedures would be the same as Alternative III. Land treatments would reseed native herbaceous species that would maintain existing diversity, thereby avoiding introduction of new species and permanent changes in vegetation composition. The proposed vegetation treatment in shrub-dominated communities may be completed using prescribed fire, mechanical (brush beating), or chemical methods. The effects of each treatment method would be the same as described in Alternative I.

Livestock exclusion fences would be built around eight riparian areas in order to protect vegetation and allow progress toward attainment of Rangeland Health Standard 2. Livestock trails are expected to form around newly constructed riparian exclosures because cattle would be accustomed to watering in these areas. Trails may be denuded of vegetation and have the appearance of moderate to heavy use, but rangeland vegetation adjacent to the trail would have few impacts.

Reconstruction of existing spring developments where trough relocation is necessary would negatively impact upland vegetation in the immediate vicinity of the water trough due to hoof action and livestock concentration. These impacts would be essentially the same as for other water troughs in LCGMA.

Six spring development projects would be abandoned under this alternative, and would have the same impacts as in Alternative III.

Areas around water troughs would be areas of concentrated use, but the impacts to rangeland vegetation would be reduced because pastures that are grazed during the hot season, when livestock tend to congregate at water sources, would receive rest every other year. This rest

would mitigate grazing impacts, and rangeland vegetation around water sources would be maintained or improved.

Proposed grazing schedules in this alternative would increase frequency of livestock moves and trailing compared to the current situation because permittees would remove their cattle from the allotment early in the grazing season to rest certain pastures and bring them back for fall grazing. Since mid-season livestock removal does not occur under the current system, livestock trailing would increase and the effects of trailing would be more pronounced. Existing livestock trails may become wider and more entrenched with increased use and adjacent vegetation would be negatively affected.

Maximum allowable utilization levels would be reduced on native range from 40% and 50% (depending on the pasture) to 30%; levels would be reduced on seedings from 60% to 50%. By leaving more plant material in place at the end of the grazing season, the additional litter would reduce evaporation and erosion due to rain drop impact.

Reducing available AUM's by 12,453 would benefit rangeland vegetation by decreasing grazing intensity and maximizing growth potential, seed production, and volume of standing litter. Implementing periods of rest in pastures used during the critical growth period and lowering maximum utilization levels to 30% for native rangeland and 50% for seeded rangelands would maintain or improve healthy, productive rangeland vegetation.

Pasture By Pasture Impacts

Anderson Allotment
All three pastures in Anderson allotment would be used in the same manner and degree as is currently authorized, except that the period of use in the allotment would end one month earlier. The effects of the proposed grazing seasons for North, Bull Flat, and Spring pastures on rangeland vegetation would be the same as discussed in Alternative II.

The two new projects (gap fencing and reservoir abandonment) would be the same as proposed in Alternative III and impacts would be the same.

Campbell Allotment
Allowing for rest in most pastures of Campbell Allotment would result in a reduction of 2,584 available AUM's for this alternative. Decreased grazing intensity would benefit rangeland vegetation by maximizing growth potential, seed production, and volume of standing litter.

Peacock and Twin Springs pastures would be early season use pastures, with grazing scheduled March 1—May 31. These two pastures are part of a rest/rotation grazing system that would receive two years of use and then two years of full rest. These pastures alternate so that when one is used, the other would be rested. This system would be the same as proposed in Alternative I and impacts would be the same as described in Alternative I.

Sacramento Hill Pasture would be grazed March 16—July 15 for two years and rested for one year. Grazing use would occur during the critical growing period for grasses and forbs. With

two consecutive years of use and only one year of rest, plant mortality may occur. Plants would not be able to complete the carbohydrate storage process and could go to quiescence at the end of the growing season with a net loss. Two consecutive years of this stress would likely lead to a decline in upland vegetation trend.

Horse Hill Pasture would be grazed June 1—July 15 for one year, alternating with one year of rest. The rest year and light average utilization levels would mitigate for use during the critical growing season and allow plants to replenish carbohydrate reserves, complete all physiological functions, and set and disperse seeds. Standing litter would remain on site and would benefit the pasture by retaining soil moisture and reducing wind scour.

Starvation Brush Control and the Starvation Seeding Pastures would form a deferred rotation grazing system, thereby allowing deferment of grazing during the critical growing season every other year for each pasture. Use would occur July 1—September 30 and August 16—September 30. Every other year, one pasture would receive the later use and critical growing season deferment; all grass plants would complete the carbohydrate storage process and set and disperse seed prior to grazing. Grasses in the pasture receiving early use would have some impacts from grazing, but because use would occur only during the last 15 days of the critical growing season, most plants would complete their physiological functions before livestock could disperse widely. Forbs would not be affected because in either year grazing would occur after their carbohydrate cycle is complete and seeds are dispersed. This system of deferment would ensure that the health and vigor of rangeland vegetation would be maintained in these pastures.

In those years when Starvation Brush Control Pasture would receive the early use, impacts to rangeland vegetation around water sources would increase because water sources are limited in this pasture. Livestock distribution would be poor, and some areas pasture would receive little use while those areas around water would be moderately to heavily grazed. Utilization levels for the pasture would remain less than 30%, however, because grazing use is averaged throughout the pasture.

Vegetation treatment (3,500 acres) would occur in Starvation Brush Control Pasture. Impacts and protocols for this treatment would be the same as discussed in Alternative III.

Louse Canyon Community Allotment

Louse Canyon Community Allotment would receive a 8,538 reduction in available AUM's because of the amount of rest provided for pastures. Decreased grazing intensity would benefit rangeland vegetation by maximizing growth potential, seed production, and volume of standing litter.

Drummond Basin Pasture would be scheduled for use March 1—May 31 every year. This period extends two weeks into the critical growing season for grasses and forbs, but grazing impacts would be mitigated by large pasture size, low stocking rates, and the reduction in available AUM's. A sizeable reduction in seed production or plant vigor would not be anticipated for the pasture. In addition, the readily available water during this early season-of-use would allow livestock to disperse more evenly throughout the pasture, thereby lessening the probability that livestock would clip the same plant more than once. Most grass plants should be able to set and

disperse seed. Drummond Basin Pasture would be expected to retain its healthy, productive rangeland vegetation condition with the proposed grazing season.

Lower Louse Canyon Pasture would be grazed June 1—July 15 for one year, alternating with one year of rest. While this pasture would be used through the critical growing season, resting this pasture would result in fewer negative impacts than the current situation and would allow grass plants to complete the carbohydrate storage cycle, reach their growth potential, and set and disperse seed every other year. Forbs would not be affected because in either year grazing would occur after their carbohydrate cycle is complete and seeds are dispersed. Rangeland vegetation health and vigor would be maintained or improve under a rest rotation grazing system. Standing litter would remain on site and would benefit the pasture by retaining soil moisture and reducing wind scour.

Upper Louse canyon Pasture would be grazed June 1—August 1 for one year, alternating with one year of rest. Because the grazing season is similar, grazing impacts to this pasture would be comparable to those for Lower Louse Canyon Pasture (see paragraph above).

Both Steer Canyon Seeding and Pole Creek Seeding pastures would be used July 16—September 1 every year. Grazing would occur after the critical growing season, and therefore rangeland vegetation would maintain or improve its health and productivity.

Star Valley Community Allotment

Star Valley Community Allotment would receive a 1,331 reduction in available AUM's because of the amount of rest provided for pastures. Decreased grazing intensity would benefit rangeland vegetation by maximizing growth potential, seed production, and volume of standing litter.

Tristate Pasture would be scheduled for use March 1—May 31 every year. This grazing period and impacts to rangeland vegetation would be the same as proposed in Alternative III.

North Tent Creek Pasture would also be grazed March 1—May 31 every year, the same as Tristate Pasture, above. This period extends somewhat into the critical growing season of grasses and forbs, but generally "slight" to "light" utilization levels and light stocking rates would mitigate potential impacts of early season use on plant physiology and seed production. This grazing system would have fewer impacts on grasses than Alternative III because less of the critical growing season would be included, but impacts may be greater for forbs in this alterative. North Tent Creek Pasture would be expected to maintain healthy, productive rangeland vegetation.

North Stoney Corral Pasture would be grazed July 16—September 15 in one year, and June 1—July 31 the next year. Every other year, the pasture would receive later use and critical growing season deferment; all grass plants would complete the carbohydrate storage process and set and disperse seed prior to grazing. In the year the pasture receives early use, grasses would have some impacts from grazing, but use would avoid the critical boot stage. Forbs would not be affected because in either year grazing would occur after their carbohydrate cycle is complete and seeds are dispersed. This system of deferment would ensure that the health and vigor of rangeland vegetation would be maintained in this pasture.

South Tent Creek Pasture would be grazed June 1—July 15 for one year, alternating with one year of rest. While this pasture would be used through the critical growing season, resting this pasture would result in fewer negative impacts than the current situation and would allow grass plants to complete the carbohydrate storage cycle, reach their growth potential, and set and disperse seed every other year. Forbs would not be affected because in either year grazing would occur after their carbohydrate cycle is complete and seeds are dispersed. Rangeland vegetation health and vigor would be maintained or improve under a rest rotation grazing system. Standing litter would remain on site and would benefit the pasture by retaining soil moisture and reducing wind scour.

Little Owyhee Allotment
Little Owyhee Allotment would be used in the same manner as Southwest Tent Creek Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for Southwest Tent Creek Pasture.

Quinn River Allotment
Quinn River Allotment would be used in the same manner as Upper Louse Canyon Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for Upper Louse Canyon Pasture.

Ambrose Maher Allotment
Ambrose Maher Allotment would be grazed early season and late season, February 12—May 30 and September 1—September 7. Grazing would avoid most of the critical growing period, and grasses and forbs would complete their physiological cycles and set and disperse seed. Rangeland vegetation would continue to maintain its current health and vigor.

Under this alternative, ROD Objective 1, with emphasis on improving understory conditions in sagebrush dominated range, would be met. Species, community, and structural diversity would occur at most landscape scales. Habitat connectivity would be high, especially within areas supporting high value resources.

ROD Objective 2 would be met in most native and nonnative vegetation communities. For a detailed discussion, refer to Wildlife and Wildlife Habitats section, below.

ROD Objective 3 would be met, in the same manner as discussed in Alternative I.

The LCGMA Objectives would be met because management is directed to promote natural processes and community health.

Alternative IV-a—Rangeland Vegetation
This alternative would be the same as Alternative IV, except that year-long rest would not occur in pastures grazed during the critical growing season (usually these are also pastures with riparian concerns).

General Impacts
Impacts to rangeland vegetation from proposed projects, including vegetation treatments, spring development project reconstruction, spring project abandonment, and riparian exclosures, and would be similar to those described in Alternative IV. Conditions near water sources and trailing impacts would also be the same as described in Alternative IV.

Maximum allowable grazing utilization levels would be the same as those in Alternative IV. These low utilization limits would help mitigate impacts to rangeland vegetation health where use is scheduled during the critical growth period.

Reducing available AUM's by 6,460 would benefit rangeland vegetation by decreasing grazing intensity and maximizing growth potential, seed production, and volume of standing litter. Decreasing utilization levels to 30% for native rangeland and 50% for seeded rangelands would help maintain or improve rangeland vegetation health for pastures scheduled to be used during the critical growth period, but, without pasture rest, improvements would occur at a lower rate or to a lesser extent than in Alternative IV.

Pasture By Pasture Impacts

Anderson Allotment
All pastures would be grazed in the same manner and would incur the same impacts to rangeland vegetation as described in Alternative IV.

Campbell Allotment
With the development of grazing systems in this alternative, available use in Campbell Allotment would be reduced by 1,254 AUM's, a greater reduction than Alternative IV. Decreased grazing intensity would benefit rangeland vegetation by improving growth potential, seed production, and volume of standing litter.

Peacock and Twin Springs Pastures would be grazed March 1—May 31 every other year. These two pastures are part of a rest/rotation grazing system and when one pasture is used the other one receives a full year of rest. This system is the same as described in Alternative III for these pastures, and the impacts of grazing would also be the same as Alternative III.

Sacramento Hill Pasture would be scheduled for use from March 16—May 31 every year. Grazing would occur during the first part of the critical growing season, although low maximum utilization limits (30%) and historic "light" use in Sacramento Hill Pasture would help mitigate impacts to rangeland vegetation. Rangeland vegetation could be adversely affected by early season use because clipped grasses and forbs would have to initiate growth more than once. Plants may not be able to fully complete the carbohydrate reserve cycle and could go quiescent, with a net deficit at the end of the growing season. Repeated years of early use could cause individual grass plant mortality.

Grazing in Horse Hill Pasture would occur June 1—July 15 every year, which is during the critical growing period for grasses. The grazing season for this pasture would be shortened to 45 days from the 90 days currently authorized. This shorter season, combined with a 30%

maximum utilization limit, would help ensure that plants would not receive multiple clippings from livestock grazing. Most plants would be able to produce seed under this "light" utilization, and the health and vigor of rangeland vegetation would remain or improve.

Starvation Brush Control and Starvation Seeding Pastures would form a deferred rotation grazing system, thereby allowing deferment of grazing during the critical growing season every other year for each pasture. Use would occur July 15—September 30 and August 16—September 30, which is similar to that proposed in Alternative IV. Impacts to rangeland vegetation would be the same as described in Alternative IV.

Louse Canyon Community Allotment

Grazing use in Louse Canyon Community Allotment would be reduced by 4,177 AUM's, about half the reduction proposed for Alternative IV. Rangeland vegetation would benefit from the decreased grazing intensity, but these benefits would be less than in Alternative IV.

Drummond Basin Pasture would be grazed March 1—May 31 every year. This use would be the same as proposed in Alternative IV, and impacts to rangeland vegetation would also be the same as those described in Alternative IV.

Grazing would occur in Lower Louse Canyon Pasture June 1—July 15 every year, which is during the critical growing period for rangeland grasses. The grazing season for this pasture would be shortened to 45 days from the 200 days currently authorized. This shorter season, combined with a 30% maximum utilization limit, would help ensure that grass plants would not receive multiple clipping from livestock grazing. Most grass plants would be able to produce seed under this "light" utilization, and the health and vigor of rangeland vegetation would remain or improve. Use in this pasture previously occurred throughout the critical growing season and upland trend for rangeland vegetation has remained constant, so it is anticipated that with the adjustments to pasture use proposed in this alternative, upland trends would be upward.

Upper Louse Canyon Pasture would be grazed June 1—August 1 every year. Impacts to rangeland vegetation would be similar to those described for Lower Louse Canyon Pasture, above, but because the grazing period would be two weeks longer, impacts would be greater. However, the 30% maximum utilization limit would help ensure that grass plants would not receive multiple clipping from livestock grazing.

Both Steer Canyon Seeding and Pole Creek Seeding pastures would be used July 16—September 1 every year, the same as in Alternative IV. Grazing would occur after the critical growing season, and therefore rangeland vegetation would maintain or improve its health and productivity.

Star Valley Community Allotment

Star Valley Community Allotment would receive a 1029 AUM reduction in permitted use, a reduction similar to that proposed in Alternative IV. Rangeland vegetation would benefit from the decreased grazing intensity, but these benefits would be less than in Alternative IV.

Tristate Pasture would be grazed March 1—May 31 every year. This grazing period would be the same as proposed in Alternatives III and IV, but negative impacts would be less due to fewer available AUM's.

North Tent Creek Pasture would also be grazed March 1—May 31 every year, and impacts would be the same as described for this pasture in Alternative IV.

Grazing in North Stoney Corral Pasture would occur July 16—September 15 and June 1—July 31, in alternate years. The grazing period and impacts to rangeland vegetation would be the same as in Alternative IV. This system of deferment would ensure that the health and vigor of rangeland vegetation would be maintained in this pasture.

South Tent Creek Pasture would be grazed June 1—July 31 every year. The grazing season in this pasture would be during the critical growing season for key forage grasses, but grazing impacts would be mitigated by generally "light" utilization levels, a 30% maximum utilization limit, and a shorter grazing season (shortened to 60 days from the 150 days currently authorized). Forbs would not be affected because grazing would occur after their carbohydrate cycle is complete. Although the potential exists for decreased seed production in grasses and declining trends in upland vegetation, these pastures are currently healthy and productive, meet Rangeland Health standards for uplands, and have an overall upward trend in upland vegetation.

Little Owyhee Allotment
Little Owyhee Allotment would be used in the same manner as South Tent Creek Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for South Tent Creek Pasture.

Quinn River Allotment
Quinn River Allotment would be used in the same manner as Upper Louse Canyon Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for Upper Louse Canyon Pasture.

Ambrose Maher Allotment
Ambrose Maher Allotment would be grazed early season and late season, February 12—May 30 and September 1—September 7, the same as in Alternative IV. Grazing would avoid most of the critical growing period, and grasses and forbs would complete their physiological cycles and set and disperse seed. Rangeland vegetation would continue to maintain its current health and vigor.

Under this alternative, ROD Objective 1, with emphasis on improving understory conditions in sagebrush dominated range, would be met. Species, community, and structural diversity would occur at most landscape scales. Habitat connectivity would be high, especially within areas supporting high value resources.

ROD Objective 2 would be met in most native and non-native vegetation communities. For a detailed discussion, refer to Wildlife and Wildlife Habitats section, below.

ROD Objective 3 would be met in the same manner as discussed in Alternative I.

LCGMA Objectives would be met because management is directed to promote natural processes and community health.

Alternative V—Rangeland Vegetation

This alternative emphasizes natural values and the functioning of natural systems, and would exclude commodities and certain other public uses from pastures with sensitive resource values. Livestock use would be excluded from pastures that have redband trout strongholds or habitat of species listed under the Endangered Species Act and pastures that include substantially intact sagebrush-dependent species habitat.

General Impacts

Vegetation treatment projects proposed in this alternative would convert 24,300 acres of non-native (crested wheatgrass) seedings to functioning, native perennial communities. Sagebrush that had re-established in existing seedings would be reduced, which could negatively impact sagebrush-dependent wildlife. These vegetation treatments would be accomplished by either mechanical, chemical, or prescribed fire methods, and the impacts of treatment would be the same as those described for Alternative I.

Impacts from vegetation treatments and treatment protocols for this alternative would be the same as described in Alternative III.

Pasture closure, combined with a maximum allowable utilization limit on native range of 30 %, would result in a reduction of 29,280 available AUM's. Pasture closures would remove livestock and their impacts to vegetation from 74 % of LCGMA. Plant communities in closed pastures would benefit, especially in those areas not currently close to DRFC goals or where livestock congregate. Most pastures from which livestock would be removed are currently in late or PNC ecological status. Decreased grazing intensity would benefit rangeland vegetation by maximizing growth potential, seed production, and volume of standing litter. Improvements to rangeland vegetation would occur at a faster rate and to a greater extent than in Alternative I—IV-a.

Rangeland project removal would impact vegetation and soil resources at project sites in the short-term, and create opportunity for undesirable weeds or annuals to establish. However, lack of grazing in these areas would increase desirable plant cover which would inhibit weedy invasions.

Pasture By Pasture Impacts

Anderson Allotment

All pastures would be closed to grazing. Because rangeland vegetation in these pastures is currently at or near PNC ecological status, vegetation health would likely remain static. Pasture closure would eliminate 2,857 AUM's of grazing use.

Campbell Allotment
Peacock and Twin Springs North pastures would be grazed March 1—May 31 every year. This period extends two weeks into the critical growing season for grasses and forbs, but grazing impacts would be mitigated by large pasture size, low stocking rates, and the reduction in available AUM's. A sizeable reduction in seed production or plant vigor would not be anticipated for these pastures. In addition, the readily available water during this early season-of-use would allow livestock to disperse more evenly throughout the pastures, thereby lessening the probability that livestock would clip the same plant more than once. Most grass plants should be able to set and disperse seed. Peacock and Twin Springs North pastures would be expected to retain healthy, productive rangeland vegetation condition with the proposed grazing season.

Starvation Brush Control and Starvation Seeding Pastures would form a deferred rotation grazing system, thereby allowing deferment of grazing during the critical growing season every other year for each pasture. Use would occur May 1—July 31 and August 1—September 30. Every other year, one pasture would receive the later use and critical growing season deferment; all grass plants would complete the carbohydrate storage process and set and disperse seed prior to grazing. Grasses in the pasture receiving early use would have some impacts from grazing. Rangeland vegetation health and vigor would be maintained or improved under this system, especially when considering the large reduction in available AUMs.

Twin Springs Middle, Twin Springs South, Horse Hill, Sacramento Hill, and Larribeau pastures would be closed to livestock, and rangeland vegetation health and vigor would be maintained or improved in the absence of grazing. Pasture closure and reduced stocking rates would result in a reduction of 8,083 AUM's for this allotment.

Louse Canyon Community Allotment
Steer Canyon Seeding Pasture would be grazed May 1—June 30 one year and March 1—April 30 the next year. The early use period would not occur within the critical growing period and therefore plants could complete their carbohydrate storage cycle, and set and disperse seed every other year, thereby maintaining healthy, productive rangeland vegetation.

Pole Creek Seeding, Drummond Basin, and Louse Canyon pastures would be closed to livestock, and rangeland vegetation health and vigor would be maintained or improved in the absence of grazing. Pasture closure and reduced stocking rates would result in a reduction of 10,555 AUM's for this allotment.

Star Valley Community Allotment
Tristate Pasture would be used March 1—May 31 every year. This grazing period would be the same as proposed in Alternative III, but negative impacts would be considerably less due to fewer available AUM's.

North Tent Creek, South Tent Creek and North Stoney Corral pastures would be closed to livestock, and rangeland vegetation health and vigor would be maintained or improved in the absence of grazing. Pasture closure and reduced stocking rates would result in a reduction of 5,929 AUM's for this allotment.

Little Owyhee Allotment
Little Owyhee Allotment would be closed to livestock, and rangeland vegetation health and vigor would be maintained or improved in the absence of grazing. Pasture closure and reduced stocking rates would result in a reduction of 892 available AUM's for this allotment.

Quinn River Allotment
Quinn River Allotment would be closed to livestock, and rangeland vegetation health and vigor would be maintained or improved in the absence of grazing. Pasture closure and reduced stocking rates would result in a reduction of 447 available AUM's for this allotment.

Ambrose Maher Allotment
Ambrose Maher Allotment would also be closed to livestock, and rangeland vegetation health and vigor would be maintained or improved in the absence of grazing. Pasture closure and reduced stocking rates would result in a reduction of 517 available AUM's for this allotment.

All rangeland vegetation objectives would be met under this alternative. For a detailed discussion of ROD Objective 2, refer to the Wildlife and Wildlife Habitats section, below.

Alternative VI—Rangeland Vegetation
This alternative emphasizes resting all pastures with riparian areas that are Non-Functioning or Functioning-at-Risk for a minimum of five years to jump start riparian recovery. After this period of rest, grazing would occur at a greatly reduced rate

General Impacts
Vegetation treatment projects proposed in this alternative would convert 24,300 acres of non-native (crested wheatgrass) seedings to functioning, native perennial communities. These projects would be the same as proposed in Alternative V and impacts to rangeland vegetation would be the same.

Short term (5 years) rest from grazing in pastures where riparian areas are not at, or making significant progress toward, Proper Functioning Condition would remove livestock impacts to vegetation and soil resources and expedite recovery of riparian vegetation. In addition, grazing would not occur during the hot season nor during the critical growing season for grasses and forbs. Health and vigor of rangeland vegetation would improve because plants would complete carbohydrate storage cycles, achieve growth potential, set seed, and disperse seed every year.

For a majority of the proposed October 1—April 1 grazing season, most pastures would be partially to completely inaccessible to livestock, livestock operators, and the BLM due to snow accumulation. Inaccessibility could prevent BLM from monitoring grazed pastures and completing utilization studies which would lead to incomplete data for further assessments.

The maximum allowable utilization level would be lowered to 35%, instead of the current 40% and 50%, depending on the pasture. This limit, combined with a 14,376 decrease in available AUM's, would allow additional plant litter to remain on site. This standing litter would have the benefits as was described "Plant Physiology", above.

The 6-inch stubble height and 5% trampled bank requirements for triggering livestock removal would result in no grazing on major portions of pastures, especially because these limits would be reached rapidly at springs, seeps, streams, and other water sources. If livestock are removed when vegetation near natural water sources is used down to 6 inches, utilization levels for the pasture would likely be in the "no use" category (0-5%). This negligible use while plants are quiescent would benefit rangeland vegetation in the same manner as would complete rest.

Impacts to rangeland vegetation from rangeland project removal would be the same as described in Alternative V.

Pasture By Pasture Impacts

Anderson Allotment
All interior fencing in Anderson Allotment would be removed, creating one large pasture. Grazing would occur March 1—April 30 every year, and because use would occur prior to the critical growing period, grasses and forbs would complete all physiological functions and the carbohydrate storage cycle every year, maximizing growth potential and seed production.

Rangeland vegetation in this allotment is currently at or near PNC ecological status, which would likely persist under this grazing system. This allotment would receive a reduction of 1497 available AUM's.

Campbell Allotment
Horse Hill Pasture would be grazed October 1—November 30 every year, which would be after plants have completed all physiological functions and set and dispersed seed. Grazing during this time period would have minimal impacts to rangeland vegetation.
However, it is unlikely that livestock would be able to use this pasture for the allotted amount of time because vegetation around springs would be grazed to 6 inches and 5% of riparian banks would be trampled almost immediately. Utilization levels observed over this pasture would be in the "no use" category.

Starvation Brush Control Pasture would be scheduled for use December 1—December 30 every year, but this period may begin sooner with the likelihood of cattle being moved out of Horse Hill Pasture early. Livestock grazing would have minimal impacts on rangeland vegetation because use would occur while plants are quiescent. Grasses and forbs would complete the carbohydrate storage process and all physiological functions each year. Livestock would likely not be able to use this pasture as long as proposed because stubble height and bank trampling standards would be reached rapidly on that portion of Field Creek in this pasture.

Starvation Seeding would be scheduled for grazing January 1—January 30 every year, but this period may begin sooner if cattle are moved out of Starvation Brush Control Pasture early. Livestock would not be able to use Starvation Seeding because there would be no water after removal of the pipeline and troughs. During this time period prior to snow melt, Antelope Creek would not be flowing.

Sacramento Hill Pasture would be grazed February 1—April 30 every year, but this period would begin sooner with the likelihood of cattle leaving Starvation Seeding Pasture early. Impacts to rangeland vegetation would be the same as those discussed for Starvation Brush Control Pasture. Livestock would likely not be able to use this pasture as long as proposed because stubble height and bank trampling standards would be reached rapidly on that portion of Antelope Creek in this pasture.

Twin Springs Pastures would be scheduled for use February 1—March 15 every year, but this grazing period would begin sooner with the likelihood of cattle leaving Starvation Seeding Pasture early. Impacts to rangeland vegetation would be similar to those discussed for the Starvation Brush Control Pasture.

Peacock Pasture would be scheduled for use March 16—April 30 every year, but use would begin sooner with the likelihood of cattle leaving Twin Springs Pastures early. Impacts to rangeland vegetation would be similar to those discussed for Starvation Brush Control Pasture.

Because livestock numbers in this allotment would be decreased and grazing seasons shortened, available use would be reduced by 2,584 AUM's.

Louse Canyon Community Allotment

Upper Louse Canyon Pasture would be grazed October 1—November 15 every year, which would be after grasses and forbs have completed all physiological functions and set and dispersed seed. Grazing during this time period would have minimal impacts to rangeland vegetation. However, it is unlikely that livestock would be able to use this pasture for the allotted amount of time because vegetation around springs would be grazed to 6 inches and 5% of riparian banks would be trampled almost immediately. Utilization levels observed over this pasture would be in the "no use" category.

Lower Louse Canyon Pasture would be used November 16—January 30 every year, but use would begin sooner with the likelihood of cattle leaving Upper Louse Canyon Pasture early. Grazing would have minimal impact on rangeland vegetation. However, livestock would likely not be able to use this pasture as long as proposed because stubble height and bank trampling standards would be reached rapidly on the many springs in this pasture. Livestock distribution would be poor due to the removal of water sources derived from pipelines and troughs. Grazing utilization in this pasture would be the "no use" level.

Steer Canyon Seeding and Pole Creek Seeding would both be grazed February 1—February 28 every year, but use would begin sooner with the likelihood of cattle leaving Lower Louse Canyon Pasture early. Grazing would have minimal impact on rangeland vegetation. However, livestock would likely not be able to graze as long as proposed because stubble height and bank trampling standards would be reached rapidly on Field Creek, Pole Creek, and the springs in these pastures. Livestock distribution would be poor due to the removal of water sources derived from pipelines and troughs. Grazing utilization would be the "no use" level.

Drummond Basin Pasture would be scheduled for use March 1—April 30 every year, but this use would begin sooner with the likelihood of cattle leaving Steer Canyon Seeding and Pole Creek

Seeding early. Livestock grazing would have minimal impact on rangeland vegetation because use would occur while plants are quiescent. Grasses and forbs would complete the carbohydrate storage process and all physiological functions each year.

Because livestock numbers in this allotment would be decreased and grazing seasons shortened, available grazing use would be reduced by 8,578 AUM's.

Star Valley Community Allotment
North Stoney Corral Pasture would be grazed October 1—November 15 every year, which would be after plants have completed all physiological functions and set and dispersed seed. Grazing during this time period would have minimal impacts to rangeland vegetation.

Tristate and North Tent Creek pastures would be used November 16—January 30 every year. Livestock grazing would have minimal impact on rangeland vegetation.

South Tent Creek Pasture would be grazed February 1—April 30 every year. Livestock grazing would have minimal impact on rangeland vegetation. Grasses and forbs would complete the carbohydrate storage process and all physiological functions each year.
However, livestock would likely not be able to graze as long as proposed because stubble height and bank trampling standards would be reached rapidly on Tent Creek and several springs that are in this pasture. Grazing utilization would be the "no use" level.

Because livestock numbers in this allotment would be decreased and grazing seasons shortened, available grazing use would be reduced by 1,331 AUM's.

Little Owyhee Allotment
Little Owyhee Allotment would be used in the same manner as South Tent Creek Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for South Tent Creek Pasture.

Because livestock numbers in this allotment would be decreased and grazing seasons shortened, available grazing use would be reduced by 222 AUM's.

Quinn River Allotment
Quinn River Allotment would be used in the same manner as Upper Louse Canyon Pasture because there is no boundary fence between the two areas. Impacts to this allotment would be similar to those discussed for the Upper Louse Canyon Pasture.

Ambrose Maher Allotment
Ambrose Maher Allotment would be grazed May 1—May 10 and September 15—October 30 every year. The use for May would likely occur earlier because livestock would move through pastures in Louse Canyon Community and Anderson allotments in less time than scheduled because of stubble height and bank trampling standards imposed. Grazing would occur prior to the critical growth period and grasses and forbs would complete all physiological functions every year.

Because livestock numbers in this allotment would be decreased and grazing seasons shortened, available grazing use would be reduced by 164 AUM's.

Under this alternative, ROD Objective 1 would be met with emphasis on the conversion of nonnative seedings to native perennial vegetation types. Species, community, and structural diversity would occur at most scales. Habitat connectivity would be high, especially within areas supporting high value resources.

ROD Objective 2 may be met depending on the sequence of land treatments. For a detailed discussion, refer to the Wildlife and Wildlife Habitats section, below.

ROD Objective 3 would be met in the same manner as discussed in Alternative I.

LCGMA Objectives would be met because management is directed to promote natural processes and community health.

RANGELAND/GRAZING USE

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5 (2003). The following mid-scale objectives are excerpted from SEORMP ROD (September 2002):

SEORMP ROD Objective: *Provide for a sustained level of livestock grazing consistent with other resource objectives and public land use allocations.*

Alternative I—Rangeland/Grazing Use

This alternative would result in a net, long-term average increase of up to 10,029 additional AUM's available for livestock within each allotment as follows:

Anderson Allotment	842 AUM's
Campbell Allotment	2,633 AUM's
Louse Canyon Allotment	2,341 AUM's
Star Valley Allotment	4,213 AUM's
Quinn River	0 AUM's
Little Owyhee	0 AUM's
Ambrose Maher	0 AUM's

Common livestock grazing use by multiple permittees in Louse Canyon Community and Star Valley Community Allotments would be eliminated in favor of individual grazing allotments with only one authorized permittee.

General Impacts

Proposed land treatments totaling 17,900 acres under this alternative would result in an increase in continuous blocks of grassland vegetation. Following treatment, increased grassland dominance and forage production would result in additional available AUM's. Grazing use, at this level and intensity, would be occurring at or near the sustainable limit of rangeland grasses.

Over the long term, livestock forage (grass) production would be expected to decline somewhat because of site recovery to a balanced natural community of shrubs, grasses and forbs.

A minimum of two growing seasons of rest from grazing following seeding of the treated areas would allow for new plants to become established and well-rooted enough to withstand grazing pressures. This rest period could be extended if establishment of perennial vegetation is delayed for any reason. Available AUM's would be slightly reduced when treated areas are rested, creating short-term negative impacts to grazing use, but in the long term, land treatments would provide benefits from increased forage availability.

Grazing schedules in this alternative were developed to maximize benefits to the livestock industry, and to the extent possible, improve the health, vigor, and productivity of desirable perennial vegetation. Proposed rangeland projects, such as pipelines, troughs, and fences, would increase management flexibility and forage availability and would provide additional livestock water sources, create new grazing systems, and allow access to underutilized forage resources. AUM's available for livestock would be increased by up to 27%. Since rangeland vegetation would be used at higher rates, this increase in AUM's may not be sustainable over the long-term because maximizing grazing use could lead to declining upland vegetative trend. The maximum allowable grazing utilization levels would be 40% for native pastures and 60% for seedings. This would result in a decreased maximum level of utilization for some pastures, though it would have little effect on grazing use because maximum allowable grazing utilization recorded in LCGMA actual use reports has rarely exceeded 40% (see Table 2).

Redevelopment of existing livestock watering projects and construction of new watering projects would benefit operators. Development of wells and associated pipelines would allow more consistent use of pastures where reservoir water availability is unreliable. The proposed well and pipeline projects would allow implementation of deferred rotation grazing systems to maintain upland conditions. Spring development reconstruction projects would not likely change grazing use patterns from the existing situation, except where spring sources would be fenced to exclude livestock use. An small amount of forage would be made permanently unavailable due to fencing of spring sources.

New pipelines and water troughs would allow for better distribution of livestock across pastures by allowing livestock to access areas that are currently underutilized. Grazing use would be more uniform across the pasture, and there should be few utilization points in the moderate to heavy range. Since the number of utilization points in the "heavy" range would be reduced in this alternative, livestock would be able to use pastures for longer periods without exceeding the 40% maximum allowable utilization limit.

New pasture division fencing to create private use areas would allow for better livestock management, distribute animals more evenly within pastures, and facilitate herding and deferred rotation grazing schedules. In Louse Canyon Community Allotment, smaller private allotments would reduce herding problems currently encountered by allowing operators to locate, work, and move livestock more easily, but would require operators to move their livestock more often. New trails would form with new grazing systems and fencing. These high impact areas would have compacted soils denuded of vegetation. Private allotments could eliminate the need to share

reductions in grazing use after wildfires or drought.

Construction of riparian corridor fencing, which incorporates upland as well as riparian vegetation, would impact grazing by concentrating use in water gaps and restricting livestock movements within a pasture. In addition, riparian areas, which produce a greater amount of forage than do uplands, would be permanently excluded from grazing. Fencing riparian areas to exclude livestock would eliminate management constraints in upland acreage currently restricted by riparian objectives, and provide qualitative and quantitative data for evaluating the effectiveness of management. Fenced exclosures would comprise approximately 60% of new fence miles, contributing to a 30% increase in fence mileage in LCGMA. No reductions in available AUM's would be attributed to construction of riparian corridor fencing.

Formation of individual grazing allotments would avoid common use allotment management complications of livestock herd management occurring under current management in Louse Canyon and Star Valley Community Allotments. The cumulative effects of land treatments, fencing, water development projects, and increased livestock herd sizes would result in a net average increase of up to 10,029 available AUM's (a 27% increase) within LCGMA allotments compared to current management. Some short-term reductions in AUM's and grazing management flexibility would be necessary because of grazing rest periods needed following land treatments. Riparian exclosure fencing would not reduce average AUM availability for livestock.

Impacts to Individual Permittees

Lucky 7 Ranch (existing permitted grazing confined to Campbell Allotment)
Lucky 7 Ranch average AUM's of use would increase over the long term, but a temporary 599 AUM reduction would be required because of reseeding in Starvation Brush Control pasture. Fence maintenance responsibility would increase because of an additional 31.25 miles of new fencing. Livestock access to water in Antelope Creek and Field Creek within Horse Hill Pasture would be limited to water gaps. With the exception of additional riparian exclusion fencing that would present new obstacles to livestock movements, management of livestock herds would be very similar to customary practices. Campbell Allotment is not grazed in common with other livestock users so this alternative would not resolve any management complications associated with administration of common use allotments.

Owyhee Grazing Association L.L.C. (existing permitted grazing within Ambrose Maher, Anderson, and Louse Canyon Community allotments)
Owyhee Grazing Association L.L.C. would be allowed an average AUM increase over the long term and no temporary AUM reductions due to land treatments would be required. Fence maintenance responsibility would increase because of the 31 miles of new fencing required to form an individual allotment from the existing Louse Canyon Community Allotment. Livestock access to water in Lower Pole Creek would be eliminated but replaced by a short pipeline extension and trough from an existing pipeline. A private use area would allow Owyhee Grazing Association L.L.C. to gather, herd, and trail livestock with greater ease because their livestock would not be running in common with other permittees' stock. With the exception of additional

fencing that would present new obstacles to livestock movements, management of livestock herds would be very similar to customary practices.

Kimble Wilkinson Ranches (existing permitted grazing confined to Louse Canyon Community Allotment)
Kimble Wilkinson Ranches would be allowed an average AUM increase over the long term but a temporary 897 AUM reduction would be required due to brush beating proposed in Steer Canyon Seeding. Fence maintenance responsibility would increase because of the 31 miles of new fencing required to form individual allotments from the existing Louse Canyon Community Allotment. Private use areas would allow Kimble Wilkinson Ranches to gather, herd, and trail livestock with greater ease, because their livestock would not be running in common with other permittees' stock. Subdivision of Steer Canyon Seeding into native and seeded areas would require the permittee to gather and move livestock once more than under current management.

Nouque Ranch (existing permitted grazing within Star Valley Community and Louse Canyon Community allotments)
Nouque Ranch would be allowed an average AUM increase of 321 over the long term but a temporary 250 AUM reduction would be required because of seeding in Tristate Pasture.

The total acreage available for Nouque Ranch would decrease as a result of individual allotments being formed from the existing Louse Canyon Community Allotment. Under this alternative, Nouque and Kimball Wilkinson Ranches would be completely separate livestock operations and would no longer run in common. Nouque would have increased maintenance responsibilities with the new riparian exclosures and division fences in Tristate and South Tent Creek pastures. Livestock would be allowed access to riparian areas only at water gaps.

New pipeline systems (about 20 miles) and water wells would be constructed in South Tent Creek and Tristate pastures, which would greatly add to Nouque's project maintenance responsibilities. However, these new pipelines and wells would allow better livestock distribution in both pastures and result in more uniform vegetation utilization.

Fort McDermitt Stockman's Association (FMSA) (existing permitted grazing within Star Valley Community Allotment)
FMSA would be allowed a 2,245 AUM increase over the long term but a temporary 250 AUM reduction would be required because of land treatment in North Tent Creek Pasture.

Construction of a pipeline (about 4 miles) and 3 new water troughs would increase FMSA project maintenance responsibilities and improve livestock distribution in North Tent Creek Pasture. These troughs would allow cattle to graze in areas not currently accessible due to lack of water. The new water system would result in more uniform vegetation utilization throughout the pasture.

Grazing use in South Tent Creek Pasture would increase due to increased herd sizes for Nouque and FMSA, and because FMSA would have all of their livestock in this pasture every other year. Under this alternative, the ROD Rangeland/Grazing Use Objective to provide a sustained level of livestock use would be met in a manner consistent with most Rangeland Health Standards and

Guides. However, Alternative I would result in increased livestock grazing impacts to biological crusts. In addition, the SEORMP management objectives under Rangeland Vegetation, Wildlife and Wildlife Habitat, and Special Status Animal Species would not be met because of cumulative adverse impacts related to project developments, roads, and intense grazing use over many more localized areas. The specific reasons for why the land use plan objectives would not be met are described under the wildlife habitat and rangeland vegetation analyses of this EA.

Alternative II—Rangeland/Grazing Use

Alternative II livestock grazing use would be the same as described in the LCGMA Evaluation, Chapter 2 (Grazing Allotments). Current permitted AUM's, average actual use, average utilization, and current stocking rates are shown in Table 2 of this EA. No changes in livestock permittee responsibilities for project maintenance, construction, or financing of pipelines and fences would occur. Spring restoration and relocation projects would not likely change grazing use patterns compared to existing management except where spring sources would be fenced to exclude livestock use. An small amount of forage would be excluded from livestock use due to spring source fencing. Because existing management generally reflects the preferences of permittees that have evolved over time, customary permittee management practices would be fully maintained.

General Impacts

Maintenance of sagebrush for sagebrush-dependent wildlife may limit forage production on many sites across LCGMA. Without removal of dominant sagebrush vegetation, grazing opportunities in areas with poor herbaceous production would continue to be limited.

Both Starvation and Steer Canyon seedings would continue to be managed primarily for grass forage production. Utilization in these seedings would occur after seed ripe on an annual basis, with maximum utilization set at 60%.

Livestock management actions, such as deferred or rest/ rotation grazing systems, would continue to benefit livestock grazing by sustaining healthy, productive rangeland vegetation and more available forage.

Reconstructing 17 spring development projects in LCGMA would benefit operators by creating better watering facilities away from wet riparian areas. Spring restoration projects would not likely change grazing use patterns from the existing situation, except where spring sources would be fenced to exclude livestock use. A small amount of forage would be made permanently unavailable due to fencing of spring sources.

Grazing permittees would continue to operate in the manner currently authorized, and therefore impacts to grazing use would remain the same for each operation in LCGMA.

The ROD Rangeland/Grazing Use Objective to provide a sustained level of livestock would be met and the customary grazing practices preferred by permittees would be continued. However, SEORMP management objectives and consistency with the Rangeland Health Standards and Guides for Water Resources and Riparian/Wetlands, Fish and Aquatic Habitat, Wildlife and

Wildlife Habitat, and Special Status Animal Species would not be met. Explanations for failure to meet these land use plan objectives are described under the appropriate sections of this EA.

The ROD Rangeland/Grazing Use Objective to provide a sustained level of livestock would be met. However, SEORMP management objectives and consistency with Rangeland Health Standards and Guides for Water Resources and Riparian/Wetlands, Fish and Aquatic Habitat, Wildlife and Wildlife Habitat, and Special Status Animal Species would not. Explanations for failure to meet these land use plan objectives are described under the appropriate sections of this EA.

Alternative III—Rangeland/Grazing Use

Map 2 (Alternative III) shows proposed projects for this alternative. Refer to pasture livestock move maps (Maps 3—6) provided in this EA for illustrations of how and when livestock movements would occur through grazing allotments and pastures in Alternative III.

Compared to existing management, Alternative III proposes adjustments to the sequence and timing of grazing use for most LCGMA permittees in order to meet management objectives. Total average AUM's available for livestock within existing allotments would remain unchanged. Explanations for why current average AUM's would be expected to remain unchanged have been described under Rangeland Vegetation, above, and are restated here for each permittee.

The location, number, and types of projects leading to Alternative III management have already been described in detail under Rangeland Vegetation, above.

General Impacts

Development of new rangeland water projects, division fences, and exclosures would have impacts on livestock operations similar to those that have already described under Alternative I.

Because of proposed riparian exclosures, additional water sources would be needed to continue or enhance uniformity in grazing use. Without additional water sources, reductions in grazing use would occur.

Subdividing some large pastures would ease herding problems currently encountered in Louse Canyon Community, Campbell, and Star Valley Community allotments; smaller pastures would make it easier for operators to locate, work, and move livestock. While smaller pastures would require operators to move their livestock more often, pasture utilization would be more uniform.

Exclosure fencing would occur at various springs and along reaches of Tent Creek, Pole Creek, and West Little Owyhee River. Fences necessary to protect riparian areas would require additional maintenance responsibilities for permittees. A small amount of forage would be made unavailable in exclosures and no reductions in available AUM's would result from construction of these projects. Spring project reconstruction would reduce impacts on meadow habitats but have no affect on livestock distribution or upland vegetation utilization. There could be a temporary adverse impact to rangeland use if proposed pipelines and troughs were not completed before riparian areas were excluded and new grazing rotations were implemented. Without

timely construction of proposed projects, livestock utilization would then become more concentrated on existing water sources and areas further from water sources would not be utilized.

There would be impacts to grazing use associated with management necessary to protect riparian communities and meet water quality standards. In pastures with riparian concerns, the proposed grazing systems would shift grazing to earlier in the year so that riparian plant regrowth could occur after livestock are removed. Late season grazing would occur in seedings instead of higher elevation native rangelands with abundant streams and meadows. New grazing rotations would require livestock operators to gather and move their livestock more often than under current management.

Impacts to Individual Permittees

Lucky 7 Ranch
Following vegetation treatment proposed for Starvation Brush Control Pasture, Lucky 7 Ranch would have a temporary 374 AUM reduction for resource protection as described under Alternative I. A vegetation treatment in Starvation Brush Control Pasture would favor herbaceous perennials and increase livestock forage availability.

Lucky 7 Ranch would be responsible for maintaining an additional 19 miles of new fence as a result of subdividing Horse Hill and Sacramento Hill pastures. New fencing would result in more pasture moves during the grazing season compared to the present situation. For instance, Lucky 7 Ranch would gather and trail their livestock from the north end of Campbell Allotment through Starvation Brush Control and Starvation Seeding pastures to Horse Hill Pasture at the southern end, then return to Starvation Brush Control and Starvation Seeding after leaving Horse Hill pasture on July 15. At the end of the season, the operator would again gather and trail cattle south through Horse Hill Pasture (see Map 4). Compared to current management, permittee trailing distances would nearly double.

Proposed division fencing in Campbell Allotment would split Sacramento Hill Pasture into Sacramento Hill North and Sacramento Hill South pastures. The grazing system for these pastures would be either rest/rotation or deferred rotation depending on what is logistically practicable. Because Sacramento Hill is an early use pasture, there would be adequate time for regrowth in riparian areas influenced by perennial water. Either grazing system would protect resource values, maintain or improve riparian and upland health, and meet the rangeland/grazing use objective.

Pastures that employ rest/rotation grazing systems and lack riparian function concerns (Sacramento Hill North, Sacramento Hill South, Peacock, and Twin Spring pastures) would have a maximum allowable upland utilization level of 50%, which is the same level authorized under current management. Evaluation data have already shown that under current management these pastures are meeting Rangeland Health Standards 1-5. Continuation of current management would be expected to provide a sustained level of livestock grazing consistent with other resource objectives.

A pipeline extension (4.25 miles) would permit the addition of 3 more water troughs in North and South Sacramento Hill pastures and thereby allow Lucky 7 Ranch to better utilize forage because of improved livestock distribution. Because livestock distribution would be more uniform across the pastures, utilization levels would not fluctuate as widely as has been the case under current management. More even utilization would reduce the extent of moderate to heavy use in areas of congregation, such as near water sources.

As already described under Rangeland Vegetation, above, in Horse Hill North and South pastures the maximum allowable upland utilization level [1] would be reduced on native range from 50% under current management to a "light" utilization range which could vary from 21% to 40%. The desired target of maximum allowable utilization would be set at 30%. Based on past actual use and utilization data (see Table 2), Alternative III grazing impacts in Horse Hill North and South pastures would not be expected to exceed the 30% maximum allowable upland utilization, and this explains why average AUM's harvested within the Horses Hill pastures would not be expected to change under Alternative III. Lowering the maximum allowable utilization level could potentially reduce the average number of AUM's available for livestock use in years when precipitation is below average or cold temperatures limit livestock forage production.

If utilization nears this 40% maximum limit, livestock would be moved to the next pasture or, if in the last pasture of the rotation, removed from BLM lands. Without this "light" utilization limit, pastures grazed annually during the critical growing season would likely decline in plant community health for reasons directly related to grazing use. Pastures where grazing use would occur after July 15 would avoid the potential adverse impacts to plant health that can occur during the critical growing season.

Owyhee Grazing Association L.L.C.

Owyhee Grazing Association L.L.C. would operate nearly the same as currently, except that the grazing season would begin 15 days earlier and end 30 days sooner. Adjusting the use dates for this allotment would have no additional impacts to rangeland vegetation and the permittee would be able to make full use of available AUM's for Louse Canyon pasture of Louse Canyon Community Allotment.

Middle and Lower Louse Canyon pastures would be formed with the construction of approximately 8 miles of fence that would subdivide Louse Canyon Pasture. Middle Louse Canyon would contain many of the riparian areas that did not meet the riparian and water quality Standards for Rangeland Health. Owyhee Grazing Association L.L.C. would be encumbered by the same "light" utilization criteria in Middle Louse Canyon pasture as described under the Lucky 7 Ranch because grazing use would occur each year during the critical growing season. Grazing this pasture prior to July 15 would enable the operators to use available AUM's while improving riparian conditions because adequate moisture would be present for riparian vegetation regrowth after cattle are removed. Pasture subdivision would allow Owyhee Grazing Association L.L.C. to concentrate use in smaller pastures, resulting in more uniform livestock distribution and better utilization of forage.

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[1] Maximum allowable utilization is determined on the basis of averaging all utilization figures gathered at utilization points within a pasture.

Fencing to create new pastures and riparian exclosures would add additional maintenance responsibilities to this permittee, but Owyhee Grazing Association L.L.C. would also benefit by his ability to make use of available AUM's while at the same time meeting riparian Standards for Rangeland Health. The new pasture would also require Owyhee Grazing Association L.L.C. to gather and move their livestock one more time compared to the existing situation.

Owyhee Grazing Association L.L.C. would have a short additional pipeline and trough to maintain. This pipeline would provide water to sustain livestock after Pole Creek is fenced to exclude them. Grazing use would not be impacted because the new water source would be located near the existing water at Pole Creek.

Kimble Wilkinson Ranches

Kimble Wilkinson Ranches would graze in common with Owyhee Grazing Association L.L.C. in Lower and Middle Louse Canyon pastures, and therefore the impacts of this alternative would be similar for both permittees.

In Middle Louse Canyon Pasture, the maximum allowable upland utilization level would be reduced on native range from 40% under current management to a "light" utilization range which could vary from 21% to 40%. The desired target of maximum allowable utilization would be set at 30% for reasons related to grazing use during the critical growing season already described.

Kimble Wilkinson Ranches would have sole maintenance responsibility for an additional 6 miles of fence in Steer Canyon Seeding Pasture, which would divide this pasture into Steer Canyon Native and Steer Canyon Seeding pastures. This permittee would use Steer Canyon Native Pasture for 15 days every spring when moving from Drummond Basin to Middle Louse Canyon pastures. Steer Canyon Native Pasture would facilitate trailing because it would be easier to gather livestock in a smaller pasture.

Nouque Ranch

In Star Valley Community Allotment, the existing South Tent Creek Pasture would be subdivided by 12 miles of new fence that would separate higher elevation riparian areas into the new Southwest Tent Creek Pasture and leave the remaining uplands in South Tent Creek Pasture. Southwest Tent Creek Pasture would contain most of the riparian areas for this allotment that did not meet the Standards for Rangeland Health, and it would be grazed every other year.

Because most of Nouque Ranch's permitted use occurs in pastures that were not meeting riparian Standards for Rangeland Health (South Tent Creek, Upper Louse Canyon), a grazing system that includes periods of rest and restricted use dates was developed for this alternative. The proposed grazing system allows this permittee to make use of available AUM's, but Nouque Ranch would also be required to gather and move livestock more often and maintain more miles of fences and pipelines.

A 7 mile pipeline with 3 new water troughs would be constructed in South Tent Creek Pasture. This would result in more uniform distribution of livestock throughout South Tent Creek Pasture because more water sources would be available to distribute livestock. The proposed pipeline would be considered essential for the alternative to work properly because reliable livestock

water does not exist in the majority of South Tent Creek Pasture at the present time. Due to variable precipitation patterns, livestock water storage in existing reservoirs is not dependable every year.

Nouque Ranch would incur more trailing requirements compared to current management in a manner similar to those described for Lucky 7 Ranch. Nouque Ranch would need to move cattle out of pastures with riparian concerns by July 31, return to lower elevation upland pastures until the end of the grazing season, and then trail back through Southwest Tent Creek and Upper Louse Canyon pastures in order to go home.

Fort McDermitt Stockman's Association (FMSA)
Improved livestock distribution in the North Tent Creek Pasture would occur with the construction of the Tent Creek Cow Camp Pipeline which would place a new water trough in the southern end of this pasture. This trough would allow cattle to graze in areas not consistently accessible due to lack of reliable water sources. Utilization of rangeland vegetation would be more consistent across this pasture and areas of higher utilization would be minimized since livestock use would be dispersed.

FMSA would have greater project maintenance responsibilities with the construction of fencing and pipelines in the South and North Tent Creek pastures. The Association would run in common with Nouque Ranch every other year in the South Tent Creek Pasture.

Under this alternative, the ROD Rangeland/Grazing Use Objective to provide a sustained level of livestock would be met in a manner consistent with the Rangeland Health Standards and Guides. SEORMP management objectives for all other program areas (e.g., Soil, Water Resources and Riparian/Wetland Areas; Wildlife and Wildlife Habitats), would also be met for reasons described under the appropriate program sections of this EA, and with impacts that were foreseen and analyzed under the SEORMP FEIS.

Selection of Alternative III would be dependent on the acquisition of joint funding from BLM, livestock permittees, and the Owyhee Watershed Council. BLM funding alone would be inadequate to meet the financial demands of projects proposed. If these combined funds do not become available in a timely fashion, Alternative IV-a would need to be adopted on a final or temporary basis because it would meet management objectives with existing fences, water developments, and other management infrastructure.

Alternative IV—Rangeland/Grazing Use
Alternative IV proposes a series of adjustments to the sequence and timing of grazing use for most LCGMA permittees in order to meet management objectives. Total forage available for livestock use within existing allotments would be reduced by 12,453 AUM's or about 34% of the AUM's available for livestock under current management.

Alternating years of grazing rest would occur in all pastures used during the critical growing season. Very few rangeland improvement projects for the benefit of livestock grazing use would be constructed.

General Impacts
Vegetation treatment impacts and benefits proposed in this alternative would be the same as Alternative III.

This alternative would reduce utilization levels from 40% and 50% (depending on the pasture) for native range and 60% for seedings to 30% for native range and 50% for seedings. Lowering the maximum allowable utilization level could potentially have a negative impact on grazing use in certain years depending on growing conditions as described under Alternative I. If maximum allowable utilization levels are reached before scheduled livestock move dates, permittees would be required to move to the next pasture earlier than planned. If utilization limits are reached in the last pasture of the rotation, the permittee would remove their livestock from BLM lands.

Past utilization data have shown that utilization levels for most pastures in LCGMA average at or just slightly above 30%. Therefore, under Alternative IV average actual use AUM's would decline overall as a consequence of grazing rest periods but utilization levels would remain similar to current management.

Impacts associated with spring project restoration would consist of fencing riparian areas to exclude livestock, which would require additional maintenance responsibilities for permittees. A small amount of forage would be made permanently unavailable in exclosures, but no reductions in permit allocations would be attributed to construction of these projects. Spring project reconstruction would have no effect on livestock distribution or vegetation utilization.

There would be impacts to grazing use associated with management of riparian communities and meeting of water quality standards. Permittees would be required to rest riparian pastures every other year, thereby limiting livestock operators to either a yearling cattle operation or temporary herd reductions to coincide with rest periods. Any additional forage production resulting from improved plant health would be unavailable for livestock because of the requirement for grazing rest and reduced overall livestock herd size necessary during the rest years. Without extensive riparian fencing, livestock management would have less flexibility compared to Alternative I. Louse Canyon Community Allotment permittees would be most affected, potentially resulting in the loss of viable livestock operations. Campbell and Star Valley Community allotments would be less impacted by the reduction of grazing in riparian pastures; Anderson Allotment would be unaffected.

AUM losses to permittees would have to be replaced with costly alfalfa or hay forage purchased on the open market. Trucking livestock to pasture outside of the McDermitt area would result in loss of profits due to trucking costs.

Impacts to Individual Permittees

Lucky 7 Ranch
Following the vegetation treatment proposed for Starvation Brush Control Pasture, Lucky 7 Ranch would have a 374 AUM reduction as described under Alternative I.

The grazing season for Lucky 7 Ranch would be reduced for many years due to required periods of rest for riparian pastures. For some years, Lucky 7 Ranch would be able to have one continuous grazing season, but for the majority of years the permittee would have periods during the grazing season where there would be no use scheduled. At times of no scheduled use, Lucky 7 Ranch would have to remove all of their livestock from BLM public lands, only to return livestock after 15 to 90 days, depending on the year.

Lucky 7 Ranch would face drastic herd fluctuations, and even during the best years there would be reduced available AUM's. This livestock operation may not continue to be a sustainable and viable operation with implementation of this alternative.

Owyhee Grazing Association L.L.C.
The Owyhee Grazing Association L.L.C grazing season would be continuous for year 1 and would have a 15-day period with no scheduled use during year 2. Anderson Allotment would incur few changes its manner of grazing. When Lower Louse Canyon Pasture would be rested in year 2, Owyhee Grazing Association would have to remove their livestock from BLM lands, but could resume grazing once authorized in Pole Creek Seeding. The total grazing season for Owyhee Grazing Association would be shortened and periods of rest would further reduce available AUM's, and because of these changes this livestock operation may not continue to be sustainable and viable.

Kimble Wilkinson Ranches
The impacts of the grazing season on Kimble Wilkinson Ranches would be similar to those described for Owyhee Grazing Association, except that Kimble Wilkinson Ranches would not be authorized to graze on BLM lands for 45 days during year 2 of the cycle when Lower Louse Canyon Pasture would be rested. The grazing season would be shortened and livestock numbers would be reduced. These changes, combined with periods of no scheduled use, may result in this livestock operation ceasing to remain sustainable and viable.

Nouque Ranch
The grazing season for Nouque Ranch would be drastically shortened, but the season would remain continuous and there would be no period when use would not be scheduled. Nouque Ranch would face reductions in AUM's due to the necessity for resting riparian pastures and a shortened grazing season. Therefore, this livestock operation may not continue to be sustainable and viable.

Fort McDermitt Stockman's Association
The grazing season for the FMSA would be similar to that discussed for Kimble Wilkinson Ranches, and therefore the impacts to grazing use would also be similar. This livestock operation may no longer continue to be sustainable and viable.

Under this alternative, the ROD Rangeland/Grazing Use Objective to provide a sustained level of livestock would not be met, since some livestock operations would cease to exist as viable enterprises with the implementation of full periods of rest for pastures with riparian areas.

SEORMP management objectives for all other resource programs would be met.

Alternative IV-a—Rangeland/Grazing Use

This alternative would be similar to Alternative IV in that it would result in few new rangeland development projects. However, it is different from Alternative IV because it would not require alternating years of yearlong grazing rest in pastures with important riparian resources as described further in this analysis. Total forage available for livestock use within existing allotments would be reduced by a maximum of 6,460 AUM's, or about 17%, as follows:

Anderson Allotment	0 AUM's
Campbell Allotment	1,254 AUM's
Louse Canyon Allotment	4,177 AUM's
Star Valley Allotment	1,029 AUM's
Quinn River	0 AUM's
Little Owyhee	0 AUM's
Ambrose Maher	0 AUM's

AUM reductions would be based on actual grazing use data for 2002 and 2003 under the interim grazing strategy (see LCGMA Evaluation, Table 7).

General Impacts

The vegetation treatment proposed in this alternative is the same as in Alternative III and the impacts to rangeland/grazing use would be the same as previously analyzed. Restoration and maintenance of native vegetation communities with native seed mixes would increase herbaceous production and enhance livestock management flexibility.

Maximum allowable utilization limits and impacts on livestock operators would be the same as Alternative IV. By imposing lower maximum allowable utilization limits rather than alternating years of rest for riparian pastures, livestock operators would have continuous grazing seasons every year without timing gaps in pasture availability. By allowing all pastures to be used every year, herd sizes would not need to fluctuate and operators could continue to run cow/calf pairs (rather than yearlings) which is their stated preference.

Compared to current management, the shorter duration and higher intensity grazing system proposed would allow for maintenance or improvement of riparian and upland conditions. Reducing duration of grazing in some pastures and prohibiting use beyond July 15 or July 31 in pastures with riparian concerns would reduce the average number of AUM's harvested by livestock compared to current management. Reductions of this magnitude would likely limit management flexibility for operators and could potentially make some operations no longer viable.

Impacts to grazing use would be similar to those described in Alternative III associated with management of riparian communities and meeting of water quality standards. In pastures with riparian concerns, the proposed grazing system would shift grazing to earlier in the year so that plant regrowth could occur after livestock are removed. New grazing rotations would require livestock operators to gather and move their livestock more often than under the existing situation. Frequency of livestock trailing would increase in the same manner discussed in Alternative III.

Project construction designed to protect riparian areas and new grazing systems would allow grazing use of adjacent uplands to continue in riparian pastures.

Impacts to Individual Permittees

Lucky 7 Ranch
Following the vegetation treatment proposed for the Starvation Brush Control Pasture, available AUM's would be temporarily reduced by 374 due to rest for the treated area. This reduction would be in place for two years or more, as described under Alternative I.

The proposed grazing season would require Lucky 7 Ranch to gather and trail their livestock more often than is required under the existing authorization. Livestock would start the season in the northern pastures of Campbell Allotment, then be trailed south to Horse Hill Pasture. After July 15, livestock would be moved north to Starvation Seeding Pasture until the end of the grazing season, when they would again trail south to home through Horse Hill Pasture. Trailing distance under this alternative would nearly double compared to the existing situation.

Owyhee Grazing Association L.L.C.
The grazing season for Owyhee Grazing Association L.L.C. would be similar to that currently authorized, and therefore impacts to grazing use with respect to livestock moves and trailing would remain about the same. Owyhee Grazing Association's grazing season would likely be shortened by 45 days in Louse Canyon Allotment and 15 days in Anderson Allotment because of riparian management requirements. Although the grazing period would be reduced in these allotments, the total number of livestock could be increased without exceeding the maximum utilization restrictions that apply in this alternative. Thus, the total average number of AUM's harvested by livestock would remain the same as under current management.

Kimble Wilkinson Ranches
The length of the grazing season for Kimble Wilkinson Ranches would be limited for reasons similar to those described for Owyhee Grazing Association. Therefore, the impacts on grazing use would be similar.

Nouque Ranch
The grazing season for Nouque Ranch would be reduced approximately 60 days under this alternative because all but Tristate Pasture would have restricted use dates related to riparian issues. Nouque Ranch's grazing season would end on July 31 to allow for riparian vegetation regrowth, even though utilization of upland rangeland grasses would remain in the "slight" category. With this restricted season-of-use, Nouque Ranch average annual AUM's available to livestock would likely be reduced by 2,324, or 55 %. As a result of such reductions, this livestock operation may no longer remain sustainable and viable.

Fort McDermitt Stockman's Association
The grazing season for FMSA would be shorter than the current authorization, but available AUM's would only be reduced by 272 because the FMSA pastures do not have riparian constraints.

Under this alternative, the ROD Rangeland/Grazing Use Objective to provide a sustained level of livestock grazing use would be met, but at a substantially reduced level compared to current management.

SEORMP management objectives for all other resource programs would be met.

Alternative V—Rangeland/Grazing Use

This alternative would be similar to Alternative IV in that it would result in few new rangeland development projects. However, it is different from Alternative IV because it would not require alternating years of yearlong grazing rest in pastures with important riparian resources. Total forage available for livestock use within existing allotments would be reduced by a maximum of 29,280 AUM's (79%), as follows:

Anderson Allotment	2,857 AUM's
Campbell Allotment	8,083 AUM's
Louse Canyon Allotment	10,555 AUM's
Star Valley Allotment	5,929 AUM's
Quinn River	447 AUM's
Little Owyhee	892 AUM's
Ambrose Maher	517 AUM's

Reductions in AUMs are the result of fewer acres available for livestock grazing and changes in grazing schedules.

General Impacts

Vegetation manipulation projects proposed in this alternative would convert all nonnative (crested wheatgrass) seedings (24,300 acres) to functioning native perennial communities. While herbaceous production would increase following treatment, much of this production would not be available to livestock due to pasture closure and lowered maximum allowable utilization levels.

Maximum allowable utilization levels for native range and for seedings converted to native vegetation would be lowered from 40% and 50% (depending on the pasture) to 30%, which may further limit grazing use in pastures where use could occur.

Removal of livestock grazing from pastures supporting redband trout and sagebrush-dependent wildlife would eliminate available livestock forage on approximately 389,990 acres in LCGMA. Management flexibility would be dramatically reduced in all allotments as a result. Many pastures would be closed to grazing, and pastures where grazing would be authorized are not sufficient to sustain viable grazing operations. Pasture closures would cause large reductions in AUM's for all livestock operators. Maintenance of sagebrush for sagebrush-dependent wildlife may limit additional forage production on many sites within LCGMA.

By closing approximately 74% of LCGMA to grazing, AUM's would decline by 29,280. With a reduction of this size, grazing would likely be eliminated from public lands in LCGMA.

Impacts to Individual Permittees

Lucky 7 Ranch
Lucky 7 Ranch's grazing use would be restricted to Twin Springs North, Peacock, Starvation Brush Control and Starvation Seeding pastures. Twin Springs Middle, Twin Springs South, Sacramento Hill, and Horse Hill pastures would be closed to grazing. This permittee would face a reduction of 8,083 AUM's, which is 57% of their preference, under this alternative.

This livestock operation would likely not remain sustainable and viable under this alternative.

Owyhee Grazing Association L.L.C.
In Louse Canyon Community Allotment, grazing use would be restricted to two months annually in Steer Canyon Seeding with a greatly reduced herd size. Owyhee Grazing Association would be reduced to half of the 751 AUM's available for use in this pasture. Kimble Wilkinson Ranches, who runs in common with Owyhee Grazing Association in this allotment, would have the other half of available AUM's.

Anderson and Ambrose Maher allotments, and Pole Creek Seeding and Louse Canyon Pastures of Louse Canyon Community Allotment, would be closed to livestock grazing. Owyhee Grazing Association would not be likely to trail their livestock the distance from their home ranch near Jordan Valley, OR to make use of 375 AUM's. Therefore, this livestock operation would likely not remain sustainable and viable.

Kimble Wilkinson Ranches
The grazing season would be similar to that described for Owyhee Grazing Association, and therefore the impacts to grazing use would be similar. Drummond Basin and Louse Canyon pastures of Louse canyon Community Allotment would be closed to grazing in this alternative. Therefore, this livestock operation would likely not remain sustainable and viable under this alternative.

Nouque Ranch
Nouque Ranch's grazing use would be restricted to two months every year in Tristate Pasture with a greatly reduced herd size. Nouque Ranch would retain half of the 909 AUM's available for use in this pasture. FMSA, who run in common with Nouque Ranch in Star Valley Community Allotment, would have the other half of available AUM's.

Louse Canyon Pasture of Louse Canyon Community Allotment and the South Tent Creek Pasture of Star Valley Community Allotment would be closed to grazing. Therefore, Nouque Ranch would likely not trail their livestock the distance from the home ranch near McDermitt, NV to make use of 454 AUM's in Tristate Pasture. This livestock operation would likely not remain sustainable and viable.

Fort McDermitt Stockman's Association
The grazing season for FMSA under this alternative would be similar to that described for Nouque Ranch, and thus the impacts to grazing use would be similar. North Stoney Corral and North Tent Creek pastures of Star Valley Community Allotment would be closed to grazing.

Therefore, this livestock operation would likely not remain sustainable and viable under this alternative.

Under this alternative, the ROD Objective for Rangeland/Grazing Use would not be met, because all livestock operations within LCGMA would likely not remain sustainable and viable.

Alternative VI—Rangeland/Grazing Use

This alternative would rest all pastures with riparian areas that are Non-Functioning or Functioning-at-Risk for a minimum of five years in order to jump start riparian recovery. After this rest period, grazing use would resume but at a level 14,376 AUM's (39%) below what is currently allowed.- Resting pastures for 5 years in order to jump start recovery would have devastating impacts to future grazing use, since herds would take time to recover to authorized stocking levels. Once grazing resumes, it would be at greatly reduced rates and AUM's.

General Impacts

Impacts resulting from upland vegetation treatments would be the same as those identified in Alternative V.

All pastures with riparian areas in Non-Functioning or Functioning-at-Risk condition would be closed to grazing for a minimum of five years. Grazing use in these pastures would not resume until specific standards of recovery are met, and only at greatly reduced rates.

There would be no water gaps or salting of livestock allowed in this alternative and utilization standards (stubble height ≥ 6 inches and ≤ 5 % bank trampling) would be applied in riparian areas. Therefore, grazing use would be abbreviated in pastures with riparian areas because these utilization standards would be met near riparian water sources before the amount of grazing time scheduled could be used. Without fences, herding would be the sole management option to limit livestock use in riparian areas. However, livestock herding would not be practicable due to large pasture sizes and inaccessibility during winter months.

With the removal of pipelines and associated water troughs proposed in this alternative, livestock would have to water in riparian areas for pastures where natural water sources exist. In pastures with no natural water sources, such as Starvation Seeding, forage would be unavailable because livestock would not have water. By complying with utilization standards for riparian areas, a sustained level of livestock use would not occur.

Each permittees actual grazing use may be more restricted than that authorized for this alternative because utilization standards would be reached in a matter of days at springs and other natural riparian areas. Removal of existing pipelines and water troughs would actually reduce the amount of time necessary for livestock to reach maximum utilization levels because artificial water sources that draw cattle into the uplands would be gone.

Impacts to Individual Permittees

Lucky 7 Ranch
Use would be scheduled for one to three months in each pasture authorized for grazing, but pastures would not receive this much use because utilization standards would be reached in a matter of days near springs and other available water sources.

Starvation Seeding Pasture does not have springs, but grazing use would still be restricted because livestock would have no place to water after removal of existing pipelines and water troughs. While Antelope Creek does run through this pasture it is intermittent and would not be flowing during the grazing period.

Although Lucky 7 Ranch would be scheduled for 7 months of grazing use, their grazing season would likely be only 30 to 60 days after compliance with utilization standards. This livestock operation would likely not remain sustainable and viable under this alternative.

Owyhee Grazing Association
Grazing use would be scheduled for 45 days in both Upper and Lower Louse Canyon pastures. Livestock would not be able to graze in these pastures for this length of time because utilization standards would be reached in a matter of days, after which livestock would be moved to the next pasture.

Pole Creek Seeding Pasture would be scheduled for 1 month of grazing, but this pasture too would reach utilization standards rapidly on the unfenced portion of Pole Creek. Owyhee Grazing Association livestock would then move to Anderson Allotment where use would continue until utilization standards would be met, and then would trail home.

Although Owyhee Grazing Association would be scheduled for 7 months of grazing use, their grazing season would likely be only 30 to 60 days after compliance with utilization standards. This livestock operation would likely not remain sustainable and viable under this alternative.

Kimble Wilkinson Ranches
The grazing season for Kimble Wilkinson Ranches would be similar to that described for Owyhee Grazing Association, and therefore the impacts to grazing use would be similar. This livestock operation would likely not remain sustainable and viable under this alternative, especially after compliance with utilization standards.

Nouque Ranch
Grazing use would be scheduled in Upper Louse Canyon Pasture of Louse Canyon Community Allotment for 45 days, but utilization standards around springs would be met quickly and livestock would be required to move to the next pasture. The next pasture Nouque Ranch would next be authorized to graze Tristate Pasture of Star Valley Community Allotment for 2 ½ months, and may be able to use the allotted time because this pasture lacks riparian areas. Nouque Ranch's last pasture would be South Tent Creek, where livestock use would reach utilization standards in a matter of days, after which livestock would be removed from BLM public lands.

This livestock operation would likely not remain sustainable and viable under this alternative, especially after compliance with utilization standards.

Fort McDermitt Stockman's Association
Grazing use would be scheduled for 45 days in both North Stoney Corral and North Tent Creek pastures of Star Valley Community Allotment. Use could likely not exceed utilization standards. FMSA would also be scheduled for use in South Tent Creek Pasture, but because Nouque Ranch would likely move into this pasture prior to FMSA, the utilization standards would have already been met and this pasture could receive no more use for the season.

This livestock operation would likely not remain sustainable and viable under this alternative, especially after compliance with utilization standards.

Under this alternative, the ROD Grazing Use Objective to provide a sustained level of grazing use would not be met because all livestock operations within LCGMA would likely not remain sustainable and viable operations.

SEORMP management objectives for all other resource programs would be met.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN/RESEARCH NATURAL AREAS

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5(2003). The following mid-scale objectives are excerpted from SEORMP ROD (2002):

***SEORMP ROD Objective**: Designate areas of critical environmental concern (ACEC's)/research natural areas (RNA's) where relevant and importance criteria are met and special management attention is required to protect the values identified.*

Alternative I—ACEC's/RNA's
Only one ACEC/RNA, Toppin Butte in Star Valley Community Allotment, occurs in LCGMA. Although this alternative proposes construction of the greatest number of projects and greatest intensity of livestock grazing of all the alternatives, no impacts are anticipated to Toppin Butte ACEC/RNA. None of the projects proposed are near enough to cause impacts to this ACEC's relevant and important values. Other management would remain as directed in the SEORMP.

The objective for ACEC/RNA management would be met in this alternative.

Alternative II—ACEC's/RNA's
Under current management as outlined in the SEORMP, the Toppin Butte ACEC/RNA is managed adequately to protect the relevant and important values for which the ACEC/RNA was established.

The objective for ACEC/RNA management would be met in this alternative.

Alternative III—ACEC's/RNA's
Impacts as a result of project construction and overall management of the ACEC/RNA would be the same as discussed in Alternative I. With considerably less acreage proposed for upland vegetation treatments, any impacts to the ACEC/RNA would be further minimized and would not be expected in this alternative.

The objective for ACEC/RNA management would be met in this alternative.

Alternative IV—ACEC's/RNA's
Impacts would be the same as described in Alternative III. However, concentrations of livestock for short durations in some areas may result in impacts to special status plants at Bull Flat Playa which is adjacent to the ACEC/RNA. Monitoring of this area would be necessary to determine impacts and to develop mitigations should impacts be recorded.

The objective for ACEC/RNA management would be met in this alternative.

Alternative IV-a—ACEC's/RNA's
Impacts would be the same as described in Alternative III.

The objective for ACEC/RNA management would be met in this alternative.

Alternative V—ACEC's/RNA's
With greatly reduced grazing use and no new project construction, few to no direct or indirect impacts would ever occur to any portion of the ACEC/RNA.

The objective for ACEC/RNA management would be met in this alternative.

Alternative VI—ACEC's/RNA's
With no grazing for five years and then grazing restricted after that time period, few to no direct or indirect impacts would ever occur to any portion of the ACEC/RNA.

The objective for ACEC/RNA management would be met in this alternative.

SPECIAL STATUS PLANT SPECIES

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5(2003). The following mid-scale objectives are excerpted from SEORMP ROD (2002):

***SEORMP ROD Objective**: Manage public land to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions will be: (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered species.*

Alternative I—Special Status Plant Species
Although this alternative proposes construction of the greatest number of projects and greatest intensity of livestock grazing of all the alternatives, no impacts are anticipated to the LCGMA's special status plants or their habitat. This GMA is not geologically unusual and is not known to have high concentrations of rare or unusual plants. None of the special status plants are known to be ingested by livestock. Site-specific clearances would be conducted prior to project construction to mitigate any direct impacts from construction activities.

The two special status plant species found only at Anderson Crossing would remain protected within the area excluded from livestock grazing. The species occurring at Bull Flat and Pigeontoe playas are not near proposed water developments or fencing proposals. It is not possible to predict potential impacts of increased livestock concentrations on the playas, although studies would be initiated and adjustments made if impacts were to occur to the special status species at these sites. Inventories for Cusick's primrose and broad fleabane in 2002 and 2003 have shown that their populations are more numerous than originally suspected and are stable in locations remote from livestock grazing areas. Even additional grazing would not impact them.

Prior to upland vegetation treatments, inventories for special status plants would be conducted at sites where species would be suspected to most likely occur so that treatments could avoid those areas. Land treatments may cause some loss of Owyhee sagebrush sites, although recent surveys in LCGMA have shown this species to be more extensive and stable than originally thought, and no net impacts to overall and long-term species stability and survival would be anticipated.

The ROD Objective for management of special status plants would be met in this alternative.

Alternative II—Special Status Plant Species
Under current management all known special status plant species populations appear to be stable. However, profuse-flowered mesa mint studies in 2004 and 2005 should provide information regarding population and habitat stability for this species. Special status species at Anderson Crossing would continue to be protected, and populations of other species with widespread and stable sites should remain stable. Studies would need to be conducted for species occurring in grazed areas to assess their long-term population and habitat stability.

The ROD Objective for management of special status plants would be met in this alternative.

Alternative III —Special Status Plant Species
Impacts as a result of project construction would be the same as for Alternative I. With considerably less acreage proposed for upland vegetation treatments, any impacts to Owyhee sagebrush would be negligible. In Starvation Brush Control, any sites where Owyhee sagebrush may potentially occur would be avoided during treatments. Long term, cumulative impacts of this alternative would result in stable populations of special status plants which would be subject to normal patterns of population fluctuation.

The ROD Objective for management of special status plants would be met in this alternative.

<u>Alternative IV</u> —Special Status Plant Species
Impacts would be the same as described in Alternative III. However, concentrations of livestock for short durations in some areas may result in impacts to special status plants at Bull Flat and Pigeontoe playas. Monitoring these areas would be necessary to determine impacts and to develop mitigations should impacts be recorded.

The ROD Objective for management of special status plants would be met in this alternative.

<u>Alternative IV-a</u> —Special Status Plant Species
Impacts would be the same as described in Alternative III.

The ROD Objective for management of special status plants would be met in this alternative.

<u>Alternative V</u> —Special Status Plant Species
With greatly reduced grazing use and no new project construction, few to no direct or indirect impacts would occur to any populations of special status plant species within the entire LCGMA. All populations would follow natural patterns of fluctuation.

The ROD Objective for management of special status plants would be met in this alternative.

<u>Alternative VI</u> —Special Status Plant Species
Prior to upland vegetation treatments and native plant restoration on 24,000 acres, inventories for special status plants would be conducted at sites where species would be suspected to most likely occur so that treatments could avoid those areas. Although the restoration process may inadvertently impact some special status plant sites, the overall, long-term effects of restoration would promote establishment of these plants. No direct or indirect impacts would occur to special status plants from livestock grazing or new project construction with implementation of this alternative.

The ROD Objective for management of special status plants would be met in this alternative.

SOIL, WATER RESOURCES, AND RIPARIAN/WETLAND AREAS

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5 (2003). The following mid-scale objectives are excerpted from SEORMP ROD (2002):

SEORMP ROD Objective 1: *Ensure that surface water and ground water influenced by BLM activities comply with or are making process toward achieving State of Oregon water quality standards for beneficial uses as established per stream by the Oregon Department of Environmental Quality (ODEQ).*

SEORMP ROD Objective 2: *Restore, maintain, or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.*

Alternative I —Soil, Water Resources, and Riparian/Wetland Areas
Vegetation manipulation proposed on four upland sites in Starvation Brush Control, Steer Canyon Seeding, Tristate, and North Tent Creek pastures would have short-term adverse effects on soils, water quality and quantity, and RCA's. Upland treatments aimed at enhancing forage production and increasing desirable herbaceous species would alter existing watershed runoff and erosion characteristics. The four treatment sites all contain the same Order 4 soils classification and similar vegetation (SEORMP FEIS, page 463; Appendix S, page 391).

Prescribed fire, mechanical (brush beating), or chemical methods may be used for land treatment. Prescribed fire could result in surface disturbance from subsequent wind erosion and raindrop impact and would affect existing biological soil crusts, which require many years to recover. Prescribed fire treatment is discussed at length below. Brush beating creates large amounts of organic litter which reduces the influence on soils from wind and water erosion, would have little effect on crust, but could produce some compaction and disturbance to soils. Chemical spraying of vegetation would result in little or no soil compaction, disturbance to crusts, or increased runoff from uplands. However, there is little information on the effects of repeated application or long-term effects of herbicides such as glyphote on crustal species. Therefore, caution should be used when applying these chemicals to remnant native areas supporting biological soil crust (Youtie *et al.* 1999). Chemical spray would defoliate sagebrush and other large shrubs that normally decrease raindrop impact to soil surfaces. However, rainfall (LCGMA Evaluation, Map 10) is low in the GMA, and raindrop impact would cause only minor erosion effects to soils before herbaceous cover increased. Although shrubs would be defoliated, the standing woody material would aid in reducing snow scouring and potential wind erosion (SEORMP FEIS, Appendix S, page 391).

Prescribed fire land treatment would have a greater impact on area soils than either mechanical or chemical methods. Soils within the treatment areas (LCGMA Evaluation, Map 14) are fine-textured and stony, with silt loam soil surfaces. Because LCGMA receives limited precipitation, burned over soils could lose soil microorganisms and crusts, litter, soil nutrients and desirable grass and shrub species, causing short-term loss of productivity. These impacts to soil resources are expected to be greatest the first year post-fire. Soil surface physical and biological characteristics should return to pre-fire conditions within three growing seasons, perhaps longer for some biological crusts.

After prescribed fire, the loss of vegetation and litter from the surface horizon would subject the soils to enhanced wind and water erosion, depleting soil nutrients and affecting the reestablishment of biological crusts. However, potential for erosion would be short-term. Once vegetation is reestablished, wind and water erosion effects on soils, biological crust, and nutrients would be reduced. Erosion from water is likely to be less than wind erosion because of the relatively flat to rolling terrain that would receive rangeland drilling. Recovery of all types of biological crust components would be faster in the fine-textured soils of LCGMA than in coarse-textured soils found elsewhere. Fine-textured soils are often stabilized by chemical and rain crusts and retain soil surface moisture longer (as reviewed in Harper and Marble 1988; Johansen 1993; Ladyman and Muldavin1996). Surface resistance to wind erosion also recovers more rapidly in fine-textured soils, probably due to physical or rain crust formation after rainfall. Silty soils show a 50% recovery of wind resistance after a single large rain event. This physical or rain

crust layer is often harder than the rest of the soil because compounds such as salts, lime, and silica are deposited at the surface as water evaporates.

Biological crusts not affected by prescribed fire treatments would be subject to short-term disturbance from drilling seed into the soil surface. Over the long-term, because biological crust expands very slowly in sites limited by moisture, recovery rates of crusts existing after fire will be limited. Organisms within biological crusts are metabolically active only when wet; thus, recovery is faster in regions and microsites with greater effective precipitation (Harper and Marble 1988; Johansen *et al*. 1993). Crusts on north and east slopes, as well as at higher elevations, usually will recover more quickly than crusts on south and west slopes and at lower elevations.

Revegetation failure in treatment sites after fire can result in irreversible dominance by annual species (such as cheatgrass), which prevents the return of well-developed biological soil crust (Kaltenecker 1997; Kaltenecker *et al.* 1999). If annual species increase, fire may reoccur at a quicker rate of return and re-burn some of the same sites. This rate of fire return increases the potential for soil erosion, soil nutrient loss, and the effects to and loss of biological crust. However, because annual species occur in LCGMA only in trace amounts, they would not be expected to increase post-treatment.

Prescribed fire would only be used where it: (1) aids in restoring upland soil productivity; (2) invigorates shrub, forb, and grass components; and (3) enhances on-site vegetation growth (SEORMP FEIS, page 464). To protect soil characteristics during prescribed fire applications, restrictions based on seasonal and moisture conditions would be incorporated into burn plans.

Some soil impacts would be expected during the drilling phase of any land treatment project. However, few adverse effects are expected because of minimal slopes and relatively low precipitation within the project area. The impact of rangeland drilling equipment would loosen and displace the top two to three inches of the soil within the furrows which are usually twelve inches apart. This disturbance is temporary however, as furrows act as moisture traps and new plants would begin to stabilize soil within the first year following drilling. Wind and water erosion rates would decrease after seedling establishment. Treatment areas that contain CU 76 and 76L soils are conducive to rangeland seeding but are limited by shallow depth to parent material. Drilling in CU 76L soils can also be limited by the amount of stones found throughout the profile.

Regardless of the vegetation treatment method used, over the short term, water quantity from precipitation events and overland flow would increase in treated areas, which may result in increased erosion and a temporary increase in sedimentation from high intensity summer storms. This sediment transport may impact water quality over the short term in drainages associated with these treatments. However, erosion caused by snowmelt and gentle rainfall would be limited. Erosion from treatment areas is not expected to be of consequence because physical indicators for erosion, such as flow patterns, rills, gullies, wind scour, and deposition of sediment and litter, were not observed on upland areas during the assessment of Rangeland Health Standard 1 (LCGMA Evaluation). Increased water yield from treated areas would occur for many years, but would diminish each year as herbaceous regrowth occurs. A shift in vegetation

cover from sagebrush overstory to herbaceous species would reduce raindrop interception and decrease snowpack accumulations for 1 to 2 years following treatment. Areas that receive brushbeating treatment would retain some sagebrush canopy which would eventually regrow and lessen the effects of raindrop impact and snow scour.

Upland vegetation treatments may also impact adjacent riparian areas. In Antelope and Field creeks where RCA's along stream channels would not be corridor fenced, short-term impacts may occur from increased overland runoff and sediment transport into streams and riparian/wetland areas. These short-term land treatment impacts would be mitigated through the establishment of upland vegetation buffers between treatment areas and susceptible riparian/wetland areas. Buffer widths would depend on slope and contour and would provide filter strips for sediment reduction to live streams (SEORMP FEIS, page 470). Buffer widths for all treatment areas would be at least 100 feet between the edge of the treated area and non-riparian drainage channels, or 100 feet between the treated area and the outward edge of the RCA. Potential adverse impacts to RMO's and water quality should be less in RCA's in Proper Functioning Condition. In general, however, adverse impacts to riparian areas from land treatment would not be expected because the areas to be treated areas are relatively small, mostly flat, contribute little to no runoff to streams, and had no indicators of physical soil and hydrologic impairment when assessed for Rangeland Health Standard I.

Temporary fence would be placed around the vegetation treatment area in Starvation Brush Control Pasture for at least two growing seasons to ensure that adequate new root growth has been established and to further mitigate any potential adverse effects to stream flow and water quality. Short-term soil compaction may occur around temporary fencelines from livestock trailing along the perimeter. Once the fence is removed, compacted trail areas and any effects to soils or vegetation should disperse. Any future temporary fence construction needed to protect new vegetation and root growth for short periods of time (1-3 years), such as during vegetation rehabilitation after wildfire, would have similar effects to the soil (SEORMP FEIS, Appendix S, page 392).

Impacts from the proposed increase in livestock grazing use in this alternative could cause some erosion in new treatments and upland areas from utilization of new plants. Improvement in treated areas would be contingent upon the degree of disturbance, revegetation success, and proper timing of livestock grazing use. Increased herbaceous cover and forage in open areas created by vegetation manipulation prescriptions could draw wildlife and livestock from streams and riparian/wetland areas. Reduced livestock concentrations along stream channels would increase abundance and diversity of riparian vegetation, increase channel stability, reduce sediment, and allow progress toward attaining RMO's

To benefit water quality and riparian/wetland area and facilitate livestock production opportunities, this alternative emphasizes construction of riparian corridor fences and water gaps for livestock watering along thirty-one miles of RCA's (SEORMP FEIS, page, 465; Appendix R, page 376-387). Corridor fencing would occur along Deer, Jack, Field, Pole, Tent and Antelope creeks, which would remove livestock from drainage channels except where water gaps exist to allow livestock watering. Because water gaps areas would allow livestock movement through drainages to access acreage in entire pastures riparian vegetation use would continue at current

levels. Where corridor fence is constructed around perennial water stream segments and potholes, fencing would aid the expansion of riparian vegetation and wetted perimeters. As woody and herbaceous riparian vegetation improves, existing bare ground and raw channel banks would diminish, providing additional areas for water storage. Expanded riparian areas would buffer peak stream flow, thereby moderating scour events and lessening sediment transport from melting snowpack runoff and intense summer thunder showers. With increased water storage, perennial segments should lengthen and provide water to new areas that currently contain drought-tolerant riparian species that only develop during early season periods of moisture. Where moisture begins to persist into summer, more riparian-obligate species would replace drought-tolerant species. In addition, increases in riparian vegetation would lower stream temperature, and reduce *E. coli*[2] and sediment levels in perennial stream systems.

Implementation of increased livestock grazing use and higher vegetation utilization in uplands and along stream channels and riparian/wetland areas could result in long-term adverse effects to water quality and RCA's unless streams are corridor fenced. To allow continuation of livestock grazing, proposed grazing schedules would incorporate changes such as season-of-use, corridor fencing, and water gaps. Existing adverse effects to riparian/wetland areas (described in LCGMA Evaluation, Chapter 2) would decrease after corridor fencing provides sufficient rest for maintenance and recovery of beneficial uses and attainment of water quality, PFC, and RMO's. Corridor fencing along RCA's would not be required in pastures with grazing schedules that allow mid-summer and fall regrowth of riparian vegetation in wetted areas. In these areas, objectives for the maintenance, protection, or attainment of water quality, PFC, and RMO's would be met, but at a slower rate than in RCA's with corridor fencing.

Disturbance to biological crusts would increase in all allotments except Ambrose Maher due to the proposed increase in livestock use. Maximum livestock utilization would be reduced to 40% in all native pastures except in those pastures with rest-rotation and deferred grazing systems. In all allotments except Ambrose Maher, cumulative adverse disturbance to biological crusts would occur from proposed rangeland projects and increased grazing use. Conducting vegetation manipulations with prescribed fire would allow surface disturbance from wind erosion and raindrop impact and would increase disturbance to biological soil crusts which could require many years for recovery. Short-term surface disturbance from construction of 137 miles of fence (including temporary fence), 32 miles of water pipelines, 24 additional stock troughs, two stock

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[2] Oregon Department of Environmental Quality's (ODEQ) water quality standards for *E. coli* are quantitative and qualitative (*State-Wide Water Quality Management Plan, Beneficial Uses, Polices, Standards, and Treatment Criteria for Oregon*; OAR, Chapter 340, Division 041, 2003). Two of the listed criteria for bacteria apply to standards for rangeland livestock grazing and are as follows: "340-041-0009; Bacteria (1) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent filtration using a representative number of samples) may not exceed the criteria described in paragraphs (a) and (b) of this paragraph. (a) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters: (A) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples; (B) No single sample shall exceed 406 *E. coli* organisms per 100 ml. (3) Animal Waste: Runoff contamination with domesticated animal wastes must be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State. Any *E. coli* levels that are presently elevated as a result of existing grazing systems would diminish when new grazing systems incorporate corridor fencing or reduce the season-of-use. Corridor fencing would provide a large filtering buffer between uplands and riparian/wetland areas. Grazing systems that reduce actual days of use within pastures would directly affect the quantity of *E. coli* possible that could enter waters of the State."

wells, and reconstruction/relocation of 19 developed springs would also affect biological soil crust.

An alternative that permittees could choose for their ranching operations is a change of class of livestock from cow-calf pairs to yearlings. Yearlings have a tendency to disperse within pastures in smaller groups, range further from water sources, and graze in areas that are less accessible or desirable to cow-calf pairs. These behaviors would lessen livestock impacts to uplands and riparian/wetland areas.

The stream channel at the mouth of Field Creek (Reach #1) was assessed as Nonfunctioning for Rangeland Health Standard 2. This reach contains remnants of riparian herbaceous species but contributing stream flow is negatively affected immediately upstream by irrigation diversion on private land. Field Creek at Reach #1 drains into a non-riparian reach of Pole Creek. Because Reach #1 has been influenced by a private water right diversion for decades and has no reliable source of water during summer months, it would be managed as non-riparian.

Alternative I would have the largest potential for development of rangeland projects for the enhancement of livestock grazing. Short-term surface disturbances from project construction in RCA's would adversely impact water quality and riparian/wetland areas. These surface disturbances would be associated with 137 miles of permanent and temporary fence, 32 miles of water pipelines, 24 troughs, two stock wells and reconstruction/relocation of 19 developed springs. Localized, long-term, adverse cumulative effects would occur with the addition of the new troughs. Soil compaction, increased vegetation utilization, and localized interception of overland runoff would be caused by concentrated livestock use in the immediate vicinity of the troughs. The total area of increased disturbance around the 24 troughs would be extremely low (1 to 2 acres at each site) and would vary by number of livestock, timing of use, landscape, and proximity to existing disturbance, such as roads. An increase of less than 50 acres of trough disturbance would be minuscule when compared to the approximately 530,000 acres within the GMA.

In addition, long-term, localized soil compaction and limited interception of overland runoff would occur from concentrated livestock use around pipelines, corridor fences, and new pasture division fences (SEORMP FEIS, page 466). Livestock trailing along new corridor and division fences would occur mostly where these fences intersect existing trails that historically lead to water sources in stream channels. Adverse affects to biological crusts from proposed rangeland projects would occur where soils are disturbed for construction of pipelines, repositioning of spring troughs, or new fences.

Nineteen of the 28 spring developments in LCGMA are located within wet meadows or are in need of redevelopment and trough relocation. All spring developments within wet meadows would be reconstructed and troughs relocated. Five of the 28 spring developments would be abandoned, with troughs and exposed pipes removed, headboxs removed or filled with mixed soil and gravels, and surrounding areas rehabilitated. Most of the remaining spring sources would be fenced and troughs relocated to xeric uplands adjacent to the meadows. Overflow pipelines would be routed back to drainage channels. Routing the overflow to the channel would result in no net loss of water to each drainage system (USDI-BLM 2001).

These off-site water sources would benefit riparian/wetland areas but areas around proposed new and existing wells, pipeline and spring troughs would encounter more adverse long-term impacts from concentrated livestock use. These impacts include compression of the soil profile, increased overland runoff, and heavier utilization of vegetation. As livestock migrate outward from these areas, impacts lessen and become negligible (SEORMP FEIS, page 466). No new reservoirs (off-stream water sources) for livestock watering are proposed in any of the alternatives presented here, including Alternative I. Development of reservoirs requires acquisition of permits and water rights from Oregon's Water Resource Division. Water rights are increasingly difficult to obtain because of large demands for limited State-owned water and more restrictive Oregon water laws.

Rehabilitation of existing Exchange Spring and Coffee Pot Spring pipelines (approximately 2 miles) would arrest accelerating erosion in the wet meadows. Rehabilitation of the pipeline trenches would halt channel downcutting and would allow meadow areas to rehydrate, increasing the existing wetted perimeter and improving riparian herbaceous vegetation cover. Approximately 2 miles of corridor fencing would be placed around the two rehabilitated meadows to protect riparian/wetland vegetation.

Effects from proposed repair to the road to Jeff's Reservoir through Three Week Spring and New Road Spring drainages would be localized and short term. Presently the road crosses both drainages through a wet meadow. At Three Week Spring, the crossing interferes with and diverts stream flow, which would be remedied by maintenance and raising of the road bed. In New Road Spring drainage, vehicle use and livestock utilization have produced large ruts, numerous crossings, and a migrating headcut through the wet meadow immediately below the main road crossing area. To alleviate these impacts, an on-gradient, rocked water crossing is proposed. The new rocked crossing would be placed on the headcut, stopping its migration upstream. This hardened crossing would be constructed level to the stream gradient with large, angular rock as a base and fine, angular gravels added to fill interspaces. This type of crossing would allow high stream flows to pass over the structure and low flows to percolate through the rock. Any short-term impacts from repairing Three Week Spring and New Road Spring road crossings would be diminished or avoided by application of site-specific prescriptions, surface reclamation, and Best Management Practices (BMP's) for road repair prior to, during, and after all proposed phases of operations (SEORMP FEIS, Appendix O, pages 339-341).

New stock water wells are proposed for Tristate (Willow Creek Butte well) and South Tent Creek (Twin Buttes well) pastures. Geologic formations found at these two sites consist of a mostly thin, vesicular basalt flow over strata that are partly to densely welded tuffs and rhyolite. Underlying these two relatively thin strata is a thick basalt flow projected to extend over 1000 feet in depth (Walker and Repenning1966). There are no wells developed in these formations throughout the entire GMA, so it is not known if these well sites would prove to be viable sources of water. These wells would not be likely to reduce water at surface springs and wetlands because of the depth of the strata.

This alternative proposes constructing three new pipelines and three pipeline extensions. The approximate 32 miles of new pipelines or pipeline extensions would occur at Twin Buttes, Willow Creek Butte, Exchange Spring, Rawhide Spring, Sacramento Hill, and Tent Creek. Water necessary to charge new pipelines at Twin Buttes and Willow Creek Butte would be supplied from new groundwater wells (see previous paragraph). The new Tent Creek pipeline

would be supplied from either a new groundwater well or from an existing livestock reservoir adjacent to Tent Creek.

The proposed Tent Creek livestock water pipeline would involve pumping from Cow Camp Pit (Water Right R-78329; 4.27 ac.ft.) to a water storage tank and troughs or, alternatively, developing a new well near Cow Camp Pit, which is recharged from a spring on private land. This spring also supplies water to Tent Creek, which flows for approximately 2000 feet downstream before disappearing subsurface. Presently this reach is severely utilized by livestock because it is the only reliable water source in the surrounding area. Starting at the private land boundary, this entire segment of Tent Creek would be corridor fenced to protect riparian/wetland areas. Riparian/wetland areas would benefit from the corridor fence, but stream flow could be reduced by the quantity needed to supply the pipeline system. Ground disturbances from construction of livestock water projects, including pipelines and cattleguards, usually produce only short-term localized adverse impacts to soils and overland runoff when BMP's are applied and projects are developed properly (SEORMP FEIS, Appendix O, pages 339-341; Appendix S, page 392).

The remaining three pipeline projects would be extensions of two existing systems that are supplied from either Exchange Spring/Coffeepot Spring or from Rawhide Spring. These proposed extensions would negatively impact riparian areas by reducing the volume of natural flows available for wetlands, meadows, and streams, but compared to the amount of water already diverted by existing pipeline systems, additional reductions caused by these extensions would be minimal. The only actual loss to the stream would be that quantity necessary to charge the pipeline extension and initial water storage in the tank and troughs. Evaporation of stream flow occurs naturally and the daily livestock consumption from troughs would be equivalent to consumption directly from the stream. Pipelines and troughs would only be charged when livestock are present during authorized pasture use periods, and the net volume lost from stream flow to properly maintained pipeline systems would be very low. However, evaporation from large troughs could minimally exceed natural evaporation from streams because solar heating would be greater in tanks.

Spring source HH1 would be developed with an exclusion fence to protect the wet meadow area and a short pipeline buried to a trough outside of the fence to provide water to livestock. Spring sources HH2-HH5 would only be corridor fenced to protect the meadow areas (USDI-BLM 2001).

Toppin Butte Reservoir in North Pasture and Freeway Reservoir in South Tent Creek Pasture (neither reservoir holds water) would be abandoned and the sites rehabilitated. Short-term surface disturbance would occur from rehabilitation and temporary fence construction around these two reservoirs, but the rehabilitated areas would provide long-term benefits to soil stabilization and vegetation cover.

Another alternative to off-stream water is development of water gaps when corridor fencing is constructed. Long-term localized negative impacts to these small watering areas caused by increased livestock congregation include rutting of soft and saturated ground, trampling of stream banks, alteration of channel vegetation, and increased sediment load to streams

(SEORMP FEIS, page 466). In addition, potential new livestock trails along corridor fence lines near these water gaps sites could result in long-term, negative cumulative effects caused by interception of overland water runoff by the hardened trail. These effects would diminish with distance from the water gap or corridor fences. Water gaps would be designed to encompass the smallest area possible for livestock needs, and BMP's (Appendix O, SEORMP FEIS) would be applied during construction to minimize effects on stream channels and riparian/wetland area vegetation.

At a watershed scale, because almost seventy stream miles of impacted riparian/wetland vegetation would be excluded from grazing use, long-term, beneficial cumulative effects would occur to riparian/wetland areas and water resources. Management objectives for riparian/wetland and water resources would be met at a very rapid rate in corridor-fenced areas.

New wells, pipelines, and troughs in this alternative would require road access for construction and maintenance, and these roads may cause short-term adverse effects to upland soils. Major effects from vehicle use include rutting of soft and saturated ground, soil compaction, introduction of invasive weed species, and increased potential for erosion and sediment transport.

New road construction at a maximum would occur along approximately 21 miles of new water pipelines and extensions in Tristate, Louse Canyon, Sacramento Hill, South Tent Creek, North Tent Creek and Pole Creek Seeding pastures. Few adverse effects to water quality and riparian values in RCA's would occur because these new roads would be located in uplands and developed only to a level necessary for construction and maintenance of the pipelines. Where possible, pipelines would be constructed along existing roads (as in South Tent Creek and Tristate pastures) to reduce negative effects from soil disturbance. Also, many pipelines could be constructed without creating functional new roads. After pipelines are constructed, disturbed areas and vehicle tracks would be rehabilitated and pipeline routes would only be used for pipeline maintenance. The application of aquatic resource standards and BMP's for soil disturbance would reduce most road-related, short-term and long-term adverse impacts within RCA's.

The ICBEMP Roads Analysis (ICEBMP, Chapter 2, page 44) identified LCGMA and its environs as an area with low road density, and where new roads are rarely constructed in watersheds that already have few or no roads. In order to construct new roads in this area, a decision-making process that determines future road needs in the larger watershed context would be necessary. The twenty-one miles of new roads proposed for pipeline construction and maintenance would not be consistent with the low road density emphasis identified in ICEBMP (and, subsequently, the SEORMP ROD) for LCGMA. New road construction within the GMA would create minor cumulative impacts in the form of soil compaction. Where possible the proposed pipelines would be located adjacent to existing roads to lessen negative effects from soil surface disturbance and new road mileage. Also, many pipelines could be constructed without creating functional new roads. After pipeline construction, disturbed areas and vehicle tracks would be rehabilitated and pipeline routes would only be used for pipeline maintenance.

Under Alternative I, soil and water resources and riparian/wetland area objectives would be met, although disturbance to biological crusts would increase.

Alternative II—Soil, Water Resources, and Riparian/Wetland Areas
Upland vegetation manipulation projects and pipeline extensions would not occur in this alternative.

Livestock grazing impacts to uplands, stream channels and banks, and riparian/wetland areas identified through Rangeland Health assessments for Standards 1 (Watershed Function—Uplands), Standard 2 (Riparian), Standard 4 (Water Quality), and Standard 5 (Special Status Species) would continue in this alternative. Impaired riparian/wetland areas would continue to be impacted by livestock grazing systems and vehicle use at drainage crossings. Where class of livestock is changed from cow-calf pairs to yearlings, impacts to uplands and riparian/wetland areas would continue but be lessened as described for all alternatives.

Rangeland projects would be reconstruction of 17 and abandonment of 6 spring developments. Surface disturbance from relocation of troughs (and associated pipeline rerouting) to adjacent upland sites would be localized and as described in Alternative I. Relocating troughs from riparian/wetland areas would lessen trampling and hoof shearing in moist areas around springs and meadows, allowing areas to rehydrate. Long-term concentrated use from livestock around new trough locations would occur. Impacts from rehabilitation of road crossings in New Road Spring and Three Week Spring drainages in Louse Canyon Pasture would be the same as in Alternative I.

Rehabilitation of existing Exchange Spring and Coffee Pot Spring pipelines (approximately 2 miles) would arrest accelerated erosion in the wet meadows. Rehabilitation of the pipeline trenches would halt channel downcutting, and would allow meadow areas to rehydrate, increasing the existing wetted perimeter and improving riparian herbaceous vegetation cover. Approximately 2 miles of corridor fencing would be placed around the two rehabilitated meadows to protect riparian/wetland vegetation.

Under current management, Starvation Brush Control, South Tent Creek, Louse Canyon, Horse Hill, Steer Canyon Seeding, and Pole Creek Seeding pastures do not meet Rangeland Health Standard 2, Standard 4, and Standard 5. Stream channels, riparian/wetland areas, and aquatic habitat would not be expected to improve under the rangeland/grazing use management outlined in this alternative. Surface disturbance to stream and riparian areas associated with current grazing management would not allow for protection or improvement of riparian areas. Impacts would include physical degradation of streambanks and wet areas, reduction of stream channel vegetative and shade cover, continuation of elevated water temperatures, decreased saturation of riparian/wetland areas, and reduced spring source discharge and channel flow. Continued degradation of these areas is inconsistent with Rangeland Health requirements.

Water resource and riparian/wetland area management objectives would not be met under this alternative and are inconsistent with Rangeland Health requirements.

Cumulative and long-term adverse impacts to stream channels, water quality, and riparian/wetland vegetation in areas identified in the Evaluation (Chapter 2) would continue. Impacts from rangeland improvement projects would be limited to short-term disturbance from spring trough relocations and long-term impacts from concentrated livestock use around new

troughs in adjacent uplands. Water resource and riparian/wetland area management objectives would not be met, and this alternative would be inconsistent with Rangeland Health requirements.

<u>Alternative III</u>—Soil, Water Resources, and Riparian/Wetland Areas
Impacts from vegetation treatment (either prescribed fire, brushbeating, or chemical methods may be used) would be the same as Alternative I, except that treatment would occur on only 3500 acres in Starvation Brush Control Pasture, <20% of the acreage proposed in Alternative I. Soil classification and vegetation type are uniform throughout the treatment site. The treatment would have short-term adverse effects on soils, water quality and quantity, and RCA's. Upland treatments aimed at enhancing forage production and increasing desirable herbaceous species would not be expected to alter existing watershed runoff and erosion characteristics (SEORMP FEIS, page 478; Appendix S, page 391).

Because riparian corridor fencing would not occur along Antelope Creek in Starvation Brush Control Pasture, upland vegetation treatment may cause short-term adverse impacts to this stream from overland runoff and sediment transport. These impacts would not likely occur since livestock grazing use is unchanged and upland vegetation buffers would be established adjacent to riparian areas. RCA buffer areas would aid in the protection and recovery of existing riparian vegetation and perform as filter strips for sediment reduction to live streams (SEORMP FEIS, page 470). In general, negative impacts to riparian areas from land treatment would not be expected because the area to be treated is relatively small, mostly flat, contributes little to no runoff to streams, and had no indicators of physical soil and hydrologic impairment when assessed for Rangeland Health Standard 1. Improvement in treated uplands would be contingent upon the degree of disturbance, revegetation success, and proper livestock grazing use.

Temporary fence would be placed around the vegetation treatment area in Starvation Brush Control Pasture for at least two growing seasons to ensure that adequate new root growth has been established and to further mitigate any potential adverse effects to stream flow and water quality. Short-term soil compaction may occur around temporary fence lines from livestock trailing along the perimeter. Once the fence is removed, compacted trail areas and any effects to soils or vegetation should disperse. Any future temporary fence construction needed to protect new vegetation and root growth for short periods of time (1-3 years), such as during vegetation rehabilitation after wildfire, would have similar effects to the soil (SEORMP FEIS, Appendix S, page 392).

To improve riparian resources, grazing schedules (e.g. timing, seasons-of-use) instead of riparian corridor fencing would be emphasized. Without corridor fencing along impaired riparian/wetland areas to exclude use by livestock, attainment of water quality, PFC, and RMO's would occur at a slower rate than in Alternative I. Changes in livestock use and timing in pastures that contain RCA's in which water quality, PFC, and RMO's are impaired would allow for vegetation regrowth and recovery (SEORMP FEIS, page 481; Appendix R, pages 376-387).

At a watershed scale, because almost seventy stream miles of impacted riparian/wetland vegetation would have new livestock grazing systems, long-term, beneficial cumulative effects would occur to riparian/wetland areas and water resources.

Livestock grazing schedules proposed for Horse Hill (North and South), Louse Canyon (Lower, Middle, and Upper), and South Tent Creek pastures would improve riparian/wetland areas and water quality and quantity by providing a reduced period of livestock use during the critical growing period for herbaceous vegetation (SEORMP FEIS, page 481; Appendix R, pages 376-387). These pastures contain approximately 85-90 percent of the accessible stream water and perennially wetted riparian/wetland areas in LCGMA. Existing permitted use varies by pasture from a 90- to 165-day continual use period.

Livestock use in Horse Hill Pasture (both North and South) is currently permitted from August 1 through October 31. This use would be altered so that 20 percent of permitted livestock numbers would graze for up to 90 days (April 15 – July 15) and the entire herd would graze for only 45 days (June 1 – July 15). Actual days used by the smaller herd would depend on climatic conditions. Because this pasture is located at high elevation (around six thousand feet), access on April 15 would be contingent on snowpack. If spring temperatures are cool and snow persists late in the season, livestock entry would be delayed until forage is range ready. Therefore, in most years, the pasture would be grazed for *less* than 90 days. All livestock would be removed from Horse Hill Pasture by July 15 to allow regrowth and recovery of wetted riparian/wetland areas and water quantity and quality. Reduced grazing adjacent to springs such as HH1-HH5 would enhance vegetation production and rehydration of meadow areas. In addition, increases in riparian vegetation would lower stream temperature, and reduce *E. coli*[3] and sediment levels in perennial stream systems.

Livestock use in Upper and Lower Louse Canyon pastures is currently permitted from April 15 through October 31 (about 165 days). Lower Louse Canyon Pasture would be divided into two pastures of nearly equal acreage with grazing schedules that utilize each pasture for only 45 days. Livestock would graze the proposed Middle Louse Canyon Pasture from June 1 - July 15, then move into Lower Louse Canyon Pasture from July 16 - August 31. In Middle Louse Canyon Pasture, this early use would allow recovery, regrowth, and expansion of wetted riparian/wetland areas to occur from mid-summer through early autumn. Lower Louse Canyon Pasture, which would be grazed later in the season, has fewer perennial waters and wetted riparian/wetland areas than the Middle pasture; most riparian areas there would be fenced, preventing livestock access and allowing year-round recovery. Water for livestock would be provided by existing reservoirs, one pipeline, and two water gaps. The proposed livestock grazing system for Upper Louse Canyon Pasture would allow utilization from June 1 - July 31, the first year, and from June 1 - June 30, the second year. This sizeable reduction in livestock period-of-use would permit regrowth and recovery of perennial wetted riparian/wetland areas and aid in temperature, *E. coli*[2], and sediment reduction in perennial stream systems.

Livestock use in South Tent Creek Pasture is currently permitted from June 1 - September 30 (about 150 days) each year. Under Alternative III, a second, smaller pasture (Southwest Tent Creek) would be partitioned from South Tent Creek Pasture and designated a riparian pasture. The new Southwest Tent Creek Pasture would contain approximately 90 percent of all riparian areas presently in South Tent Creek Pasture. The new pasture would be utilized by fewer livestock and for only one month (July 1 - July 31) every other year, receiving total rest for 23 months before the next use period. This sizeable reduction in livestock period of use would have

[3] See Footnote 2

the same benefits to riparian resources as in Lower Louse Canyon Pasture. The rest of South Tent Creek Pasture would be grazed from August 1 - September 30. To protect the only perennial wetted riparian/wetland area in South Tent Creek Pasture, a livestock exclusion corridor fence would be constructed along 1 mile of Tent Creek to allow riparian regrowth and recovery of this impaired area. Fencing this perennial stream segment would eliminate a historic source of livestock water. Livestock would obtain water from existing reservoirs and a proposed new pipeline in the vicinity of Tent Creek.

Pole Creek Seeding and Steer Canyon Seeding pastures would receive corridor or pasture division fencing to protect isolated perennial wetted riparian/wetland areas along Pole and Field creeks, respectively. By corridor fencing Pole Creek (1.5 stream miles; 3.0 miles of fencing) and grazing Field Creek from May 1 - May 31, riparian/wetland species in these areas would flourish, aiding recovery of impaired stream channels and improving water quality and quantity.

Adverse effects to biological crusts from livestock would be less in this alternative due to the proposed grazing systems, although potential rate of recovery from disturbance and recolonization rates of crust are not known. The target for maximum livestock utilization would be reduced to 30%, but utilizations could range within the "slight" category of 20-40% in all native pastures.

Refer to the Pasture Moves maps (Maps 3-6) for each permittee's livestock move dates and sequence of pasture use. In north and east LCGMA, livestock turn out in February 15 or March 1 is in drier, lower elevation pastures (5000 feet) that only receive 8-10 inches precipitation annually. In many years, soils in these pastures can be frozen or snow covered until late March or mid April. Although biological crusts in lower elevations are more vulnerable to disturbances, at this time period crusts on frozen ground are resistant to disturbance from livestock (USDI, 2001) and impacts to crust may be less.

Biological crusts in lower and mid elevation pastures with rest-rotation systems (e.g., Sacramento Hill) that are grazed April through June would be impacted by livestock grazing, but the intensity of disturbances would be lessened by rest every other year. Because livestock would be removed before the end of the wet season, regrowth of crust organisms would occur prior to the extended summer drought.

Mid to upper elevation pastures (Horse Hill, and Middle and Upper Louse Canyon) would receive livestock use starting June 1. Implementation of new grazing systems would reduce the total amount of time livestock stay in these pastures by 40 to 60 percent, and thereby reducing disturbance to biological crusts from livestock grazing. The new grazing systems would keep livestock grazing utilization at current levels. Livestock would use these pastures during the beginning and into the mid portion of the dry season, when crusts are less vulnerable to impacts.

Livestock would utilize South Tent Creek Pasture August 1—September 30, which is the end of the grazing season in this allotment. Implementation of this new grazing system would decrease the amount of time livestock graze this pasture by 50 percent, reducing disturbance to biological crusts from livestock grazing.

Approximately one-third of the South Tent Creek Pasture would be subdivided into the new Southwest Tent Creek Pasture. This pasture would be utilized July 1— July 31 in year two of the proposed grazing system and rested for 23 months before the next use. Compared to the existing permitted grazing system, the proposed system in this pasture would reduce grazing time by 90 percent over a two year period. Additionally, only one operator would utilize this pasture instead of the current two. Therefore, total livestock numbers that use this pasture would decrease by 60 percent. By reducing livestock numbers and time of use, disturbance to biological crusts would be greatly reduced and time would be allowed for recovery.

This alternative proposes to graze North Stoney Corral Pasture from June 1—July 31 every year. Although the time of use this pasture would be reduced by one-third, utilization would occur in the period that biological crusts transition from wet season into dry season conditions, a period when crusts are susceptible to damage. However, North Stoney Corral Pasture is over 57,000 acres in size, and would have stocking levels of only 600 cows for the two month use period. This low stocking rate would allow for greater livestock dispersal, less concentration, and shorter duration of use and would result in less potential disturbance to biological crusts.

Livestock in three of the five allotments end the grazing season in crested wheatgrass seedings that were developed in the 1960's. These seeded areas were plowed or disked and drilled, thus disturbing and altering existing soils and biotic crust composition. Biological crust abundance varied greatly within each seeding, and abundance of biological crusts would be expected to remain at present levels (see Soil, Water Resources And Riparian/Wetland Areas, Biological Crusts, Assumptions Common to All Alternatives, above). Crusts may increase very slowly in seedings that are being recolonized by sagebrush because shrubs provide some level of protection to crusts from livestock disturbance.

Disturbance to crusts by livestock would not increase in Ambrose Maher Allotment over existing levels because an increase in grazing use would not occur in this allotment.

Cumulative adverse disturbance to biological crusts would occur in Alternative III from proposed rangeland projects and grazing use. Proposed grazing systems would have some level of disturbance to biological crust, although disturbance would be less than existing conditions. Because biological crusts on fine-textured soils are less susceptible to disturbance when crust is dry (USDI, 2001), livestock grazing in pastures during the summer and early fall would affect crusts less than grazing during late spring. Grazing during high moisture conditions in mid- to late-spring would have the greatest potential to disturb crust, although many pastures would be in a rest/rotation system that would allow some recovery from disturbance. Because biological crusts are less vulnerable to disturbance in all soil types when soils are frozen or snow covered (USDI, 2001), crusts occurring in turn-out pastures (Feb-Mar) would be the least affected by livestock grazing while these climatic conditions exist. Biological crusts in pastures with crested wheatgrass seedings would continue to receive disturbance from livestock grazing equal to historic rates. The three highest elevation pastures would receive a reduction of grazing time ranging from 40 to 90 percent.

Seventeen of the 28 spring developments in LCGMA are located within wet meadows or are in need of redevelopment and trough relocation. All spring developments within wet meadows

would be reconstructed and troughs relocated. Five of the 28 spring developments would be abandoned, with troughs and exposed pipes removed, headboxes removed or filled with mixed soil and gravels, and surrounding areas rehabilitated. Most of the remaining spring sources would be fenced and troughs relocated to xeric uplands adjacent to the meadows. Overflow pipelines would be routed back to drainage channels. Routing the overflow to the channel would result in no net loss of water to each drainage system (USDI-BLM 2001). Ground disturbances from spring and pipeline project reconstruction would produce only short-term, localized negative effects, as described in Alternative I.

Alternative III proposes development of rangeland projects for the augmentation of livestock grazing. The short- and long-term impacts to riparian/wetlands from proposed rangeland projects would be similar in manner but less than in Alternative I, due to fewer projects being proposed. Adverse effects to water quality and riparian/wetland areas from new rangeland projects in RCA's would include short-term surface disturbances from construction of fences (approx. 58 miles) and water pipelines (approx. 12.25 miles), 9 additional stock troughs, and reconstruction/relocation of 17 spring projects. Concentrated livestock use around the 17 springs would cause continued but reduced long-term, localized soil compaction and interception of overland runoff. Localized, long-term, adverse cumulative effects would occur with addition of the new troughs. Soil compaction, increased vegetation utilization, and localized interception of overland runoff would be caused by concentrated livestock use in the immediate vicinity of the troughs. The total area of increased disturbance around the troughs would be extremely low (1 to 2 acres at each site) and would vary by number of livestock, timing of use, landscape, and proximity to existing disturbance, such as roads. An increase of less than 20 acres of watering trough disturbance would be minuscule when compared to the approximately 530,000 acres within the GMA.

In addition, long-term, localized soil compaction and interception of overland runoff would be caused by concentrated livestock use around projects such as pipelines, corridor fences, and new pasture division fences (SEORMP FEIS, page 480). Corridor fencing would occur along 3.5 miles of Pole and Tent Creek RCA's. Water quality and riparian/wetland areas would benefit from these corridor fences and from off-stream water sources which remove livestock from drainage channels. Corridor fence construction along Pole and Tent creeks would have the same impacts as described in Alternative I for corridor fencing.

In stream corridor-fenced areas, water resource and riparian/wetland area management objectives would be met at a rapid rate under this alternative. Riparian areas that are not fenced would improve at a slower rate through the implementation of new livestock grazing systems which would result in long-term, beneficial cumulative effects on a watershed scale. Abandonment and rehabilitation of 6 spring projects and two reservoirs would provide long-term beneficial effects to soil stabilization and vegetation cover.

New pipelines or pipeline extensions for Sacramento Hill Pasture, Rawhide Spring, White Trails Well, and Tent Creek would negatively impact riparian areas in the manner described in Alternative I.

Adverse affects to biological crusts from proposed rangeland projects would occur where soils are disturbed for construction of pipelines, new fences, and relocation of spring troughs.

Disturbance to crust would occur only in linear areas that are necessary to complete projects. Disturbances to crust from proposed rangeland projects would be fewer than in Alternative I.

Surface disturbances caused by rehabilitation, reconstruction, relocation, or abandonment of existing spring projects would have the same impacts on riparian areas as described in Alternative I.

Rehabilitation of Exchange Spring and Coffee Pot Spring pipelines (approximately 2 miles) would have the same impacts as described in Alternative I, although the fence around these meadow areas would be temporary (3-5 years).

Spring source HH1 would be rested for 3-5 years with a temporary exclusion fence to protect the wet meadow area and allow recovery before livestock use could reoccur.

An alternative to the proposed construction of certain livestock water pipeline systems would be hauling water to new trough locations. A series of troughs would be placed along existing roads or in seasonal reservoirs and disturbed areas that are easily accessed. Hauling water to troughs would reduce total ground disturbance produced by pipeline and water storage tank construction while reducing the amount of water diverted from reservoirs, springs, or streams. However, hauling water to troughs with heavy tank trucks would degrade road conditions over time. Because the main access road to troughs in South Tent Creek and North Tent Creek pastures consists mainly of compacted soil, the road would deteriorate from numerous hauling trips unless upgraded with a gravel cap, which would be costly. In addition, a water hauling requirement would place additional work time and economic burden upon permittees.

Toppin Butte Reservoir in North Pasture and Freeway Reservoir in South Tent Creek Pasture (neither reservoir holds water) would be abandoned and the sites rehabilitated. Surface disturbing impacts from this action would be the same as described in Alternative I.

Riparian/wetland areas would benefit from off-site water sources. However, areas around proposed and existing wells, pipelines, and spring troughs would encounter adverse long-term impacts from concentrated livestock use, as described in Alternative I (SEORMP FEIS, page 480). Ground disturbances from construction of these projects, including cattleguards and pipelines, usually produce only short-term localized adverse impacts to soils and overland runoff when BMP's are applied and projects are developed properly (SEORMP FEIS, Appendix O, pages 339-341; Appendix S, page 392).

Road access for construction and maintenance for new wells, pipelines, and troughs in this alternative may result in increased short-term adverse effects to upland soils as described in Alternative I. New road construction would occur only along approximately 6 miles of new water pipeline extensions in Sacramento Hill, Tristate, South Tent Creek, and Pole Creek Seeding pastures. Proposed road construction mileage is approximately one-fourth of that proposed in Alternative I and would be more consistent with the low road density emphasis identified in ICEBMP for this area (ICEBMP, Chapter 2, Roads Analysis, page 44). Adverse effects to water quality and riparian values in RCA's would be similar to those described in Alternative I. Effects from proposed repair to the road to Jeff's Reservoir through Three Week

Spring and New Road Spring drainages would be localized and short term, as described in Alternative I. The application of aquatic resource standards and BMP's (SEORMP FEIS, page 481; Appendix O, pages 339-341) for soil disturbance would reduce most road-related, short-term and long-term negative impacts within RCA's.

Soil and water resources and riparian/wetland area objectives would be met under Alternative III.

Disturbance to biological crusts in Alternative III would be reduced compared to the existing condition.

Alternative IV—Soil, Water Resources, and Riparian/Wetland Areas

Impacts from vegetation treatment projects would be the same as Alternative I, except effects would be on only 3500 acres in Starvation Brush Control Pasture. Because riparian corridor fencing would not occur along Antelope Creek, upland vegetation manipulation may cause short-term adverse impacts to this stream from overland runoff and sediment transport. Impacts would be expected to be minor because upland vegetation buffers would be established adjacent to riparian areas. RCA buffer areas would aid in the protection and recovery of existing riparian vegetation and perform as filter strips for sediment reduction to live streams (SEORMP FEIS, page 470). Because livestock AUM's would be cut by one-third in this alternative, grazing would be less intense in the vegetation treatment area and environs. In general, adverse impacts to riparian areas from land treatment would not be expected because the treated area is relatively small, mostly flat, and contributes little to no runoff to Antelope Creek. Improvement in treated uplands would be contingent upon the degree of disturbance, revegetation success, and proper livestock grazing use (SEORMP FEIS, page 481, Appendix R, page 376-387).

Impacts from temporary fencing around the vegetation treatment area in Starvation Brush Control Pasture would be the same as described in Alternative I.

Implementation of Alternative IV would result in minimal rangeland project development for enhancement of livestock grazing. Adverse effects to water quality and riparian/wetland areas in RCA's would be short-term surface disturbances from construction of 5.5 miles of fence (< 2% increase over existing fence miles) and 17 spring project rehabilitations, and the continued but reduced long-term, localized soil compaction and interception of overland runoff from concentrated livestock use around these projects. Because relatively few miles of new fence would be constructed, long-term, negative, cumulative effects from fence line livestock trailing near historic water sources would be minimal. Any adverse effects from soil compaction and interception of overland water runoff would diminish rapidly with distance from water sources and fence lines.

Rangeland grazing schedules proposed in this alternative would be similar to Alternative III, except AUM's would be reduced by approximately one-third and emphasis would be placed on recovery and maintenance of woody and herbaceous riparian cover and the productivity of perennial upland vegetation**.** By providing a period of rest and reducing the period of use in riparian pastures, over the long term upland range management actions would have beneficial cumulative effects on uplands, stream channels, and RCA's. In addition, this alternative proposes no new pasture division fences, which would allow continued dispersed use in the uplands by

livestock during the shortened grazing period. This action would allow an increase in desirable riparian vegetation, aiding in the stabilization of channels and banks and a reduction in erosion (SEORMP FEIS, page 481; Appendix R, pages 376-387).

At a watershed scale, because almost seventy stream miles of impacted riparian/wetland vegetation would have new livestock grazing systems, long-term, beneficial cumulative effects would occur to riparian/wetland areas and water resources.

Disturbance to biological crusts from livestock grazing would be similar but somewhat less than those described in Alternative III. Alternative IV would provide additional periods of rest for high elevation pastures, a reduced number of rangeland projects, and reduced grazing use.

Cumulative adverse disturbance to biological crusts would occur in Alternative IV from proposed rangeland projects and grazing use. Proposed grazing systems would have some level of disturbance to biological crust, although disturbance would be less than existing conditions. Because biological crusts on fine-textured soils are less susceptible to disturbance when crust is dry (USDI, 2001), livestock grazing in pastures during the summer and early fall would affect crusts less than grazing during late spring. Grazing during high moisture conditions in mid- to late-spring would have the greatest potential to disturb crust, although many pastures would be in a rest/rotation system that would allow some recovery from disturbance. Because biological crusts are less vulnerable to disturbance in all soil types when soils are frozen or snow covered (USDI, 2001), crusts occurring in turn-out pastures (Feb-Mar) would be the least affected by livestock grazing while these climatic conditions exist. Biological crusts in pastures with crested wheatgrass seedings would continue to receive disturbance from livestock grazing equal to historic rates. The three highest elevation pastures would receive a reduction of grazing time ranging from 40 to 90 percent and have rest every other year. Vegetation treatment using prescribed fire would promote wind erosion and raindrop impact and would increase disturbance to biological soil crusts, possibly requiring many years to recover. Short-term surface disturbance from construction of 5.5 miles of fence (including temporary fence) and reconstruction/relocation of 17 developed springs would also affect biological soil crust.

Impacts from proposed rangeland project development would be less than Alternative III, due to fewer projects proposed. Minimal riparian corridor fencing (1.5 stream miles in Pole Creek) and no pipelines would be built in Alternative IV, and only 6 miles of temporary fence would occur. Ground disturbances from restoration, reconstruction, relocation, abandonment, and rehabilitation of spring projects would be the same as described in Alternatives I-III.

Adverse affects to biological crusts from proposed rangeland projects would occur. Disturbance to crust would occur in linear areas that are necessary to construct fences (7.25 miles of riparian and 0.5 miles of upland fencing). Disturbance would occur where soils are intruded upon for relocating 17 spring troughs.

In stream corridor-fenced areas, water resource and riparian/wetland area management objectives would be met at a rapid rate under this alternative. Riparian areas that are not fenced would improve at a slower rate through the implementation of new livestock grazing systems which would result in long-term, beneficial cumulative effects on a watershed scale. Abandonment and

rehabilitation of six spring projects and two reservoirs would provide long-term beneficial effects to soil stabilization and vegetation cover.

Toppin Butte Reservoir in North Pasture and Freeway Reservoir in South Tent Creek Pasture (neither reservoir holds water) would be abandoned and the sites rehabilitated. Surface disturbing impacts from this action would be the same as described in Alternative I.

Impacts from rehabilitation of existing Exchange Spring and Coffee Pot Spring pipelines would be the same as described in Alternative I, although the fence around these meadow areas (approximately 2 miles) would be temporary (3-5 years).

As described in Alternative I, proposed repair to the road crossings in Three Week Spring and New Road Spring drainages would eliminate sediment transport and adverse effects to riparian/wetland herbaceous vegetation. Impacts from construction would be localized and short term.

New road construction for pipeline extensions would not occur in Alternative IV. This alternative would be consistent with the low road density emphasis identified in ICEBMP for this geographic area (ICEBMP, Chapter 2, Roads Analysis, page 44).

Soil, water resources, and riparian/wetland area objectives would be met under Alternative IV.

Disturbance to biological crusts in Alternative IV would be less than in the existing condition.

Alternative IV-a—Soil, Water Resources, and Riparian/Wetland Areas

Impacts from all proposed rangeland projects in this alternative would be the same as Alternative IV. Improvement in treated areas would be contingent upon the degree of disturbance, revegetation success, and proper livestock grazing use (SEORMP FEIS, page 481; Appendix R, pages 376-387).

Implementation of Alternative IV-a would result in minimal rangeland project development for enhancement of livestock grazing. Adverse effects to water quality and riparian/wetland areas in RCA's would be short-term surface disturbances from construction of 5.5 miles of fence (< 2% increase over existing fencing) and 17 spring project rehabilitations, and the continued but reduced long-term, localized soil compaction and interception of overland runoff from concentrated livestock use around these projects. Because relatively few miles of new fence would be constructed, long-term, negative, cumulative effects from fence line livestock trailing near historic water sources would be minimal. Any adverse effects from soil compaction and interception of overland water runoff would diminish rapidly with distance from water sources and fence lines.

Rangeland grazing schedules proposed in this alternative would be much the same as Alternative III, except AUM's would be reduced and emphasis would be placed on recovery and maintenance of woody and herbaceous riparian cover.

In stream corridor-fenced areas, water resource and riparian/wetland area management objectives would be met at a rapid rate under this alternative. Riparian areas that are not fenced would improve at a slower rate through the implementation of new livestock grazing systems which would result in long-term, beneficial cumulative effects on a watershed scale. Abandonment and rehabilitation of six spring projects and two reservoirs would provide long-term beneficial effects to soil stabilization and vegetation cover.

In pastures containing riparian/wetland areas, grazing schedules would be implemented that emphasize the attainment of water quality, PFC, and RMO's at a quicker rate than grazing systems proposed in Alternative III, but at a slightly lower rate than in Alternative IV. Proposed grazing schedules would be similar to Alternative IV, except no rest periods would be prescribed for Horse Hill, Lower Louse Canyon, and South Tent Creek pastures. Without rest periods, uplands would be grazed during critical growing season every year, but to mitigate for this critical growing season use, a maximum of 30 percent utilization on upland vegetation would be prescribed. Over the long term, the reduced period of use in riparian pastures would have beneficial cumulative effects on uplands, stream channels, and RCA's, but to a lesser degree than Alternative IV. As in Alternative IV, this alternative proposes no new pasture division fences, which would allow continued dispersed use in the uplands by livestock during the shortened grazing period. This action would allow an increase in desirable riparian vegetation, aiding in the stabilization of channels and banks and a reduction in erosion (SEORMP FEIS, page 481; Appendix R, pages 376-387).

At a watershed scale, because almost seventy stream miles of impacted riparian/wetland vegetation would have new livestock grazing systems, long-term, beneficial cumulative effects would occur to riparian/wetland areas and water resources.

Disturbance to biological crusts from livestock grazing would be greater than those described in Alternative IV but less than those in alternative III. This alternative would not provide the additional periods of rest for high elevation pastures and would have more grazing use than Alternative IV but less than Alternative III. Adverse affects to biological crusts from proposed rangeland projects would be the same as Alternative IV.

Cumulative adverse disturbance to biological crusts would occur in Alternative IV-a from proposed development of rangeland projects for the enhancement of livestock grazing and grazing use. Proposed grazing systems would continue to have some level of disturbance to biological crust, although disturbance would be less than existing conditions. Biological crusts occurred on all soil types at some level of abundance. Because biological crusts on fine-textured soils are less susceptible to disturbance when crust is dry (USDI, 2001), livestock grazing in pastures during the summer and early fall would affect crusts less than grazing during late spring. Because of high moisture conditions in mid- to late-spring, grazing during this period would have the greatest potential to disturb crust, although many pastures would be in a rest/rotation system that would allow some level of recovery from disturbance. Because biological crusts are less vulnerable to disturbance in all soil types when soils are frozen or snow covered (USDI, 2001), crusts occurring in turn-out pastures (Feb-Mar) would be the least affected by livestock grazing while these climatic conditions exist. Biological crusts in pastures with crested wheatgrass seedings would continue to receive disturbance from livestock grazing equal to

historic rates. All three pastures at the highest elevations would receive a reduction of grazing time ranging from 40 to 90 percent. Conducting vegetation manipulations with prescribed fire would present potential for surface disturbance from wind erosion and raindrop impact and would increase disturbance to biological soil crusts which could require many years to recover. Short-term surface disturbance from construction of 5.5 miles of fence including temporary fence and reconstruction/relocation of 17 developed springs would also affect biological soil crust.

Soil and water resources and riparian/wetland area objectives would be met under Alternative IV-a.

Disturbance to biological crusts in Alternative IV-a, would be less than in the existing condition.

Alternative V—Soil, Water Resources, and Riparian/Wetland Areas
Impacts to soil and water resources and riparian/wetland areas in Alternative V would be primarily from restoration of abandoned rangeland projects and conversion of seedings to native vegetation. Livestock grazing season-of-use would be reduced in pastures that contain riparian/wetland areas. Grazing would not be allocated in certain pastures that include:

- substantially intact habitat of sagebrush-dependent species, using sage-grouse as an indicator species;
- stream segments that provide habitat for stronghold populations of redband trout;
- management corridors of two National Wild and Scenic River segments.

Soil and water resources and riparian/wetland areas would be expected to improve rapidly under the rangeland grazing management proposed in this alternative. Removing livestock grazing from these areas would maximize the functionality of upland and riparian/wetland areas, and subsequently, over 100 stream miles would be eliminated from grazing. Positive benefits to upland soils, riparian/wetland areas and stream channels would occur.

Because this alternative emphasizes functioning natural systems and natural values, all crested wheatgrass seedings in LCGMA would be converted to perennial native vegetation communities. Crested wheatgrass seedings occur in Starvation Seeding, Steer Canyon Seeding, and Pole Creek Seeding pastures, which have similar vegetation and stony, shallow-textured soils. Impacts from vegetation conversion projects, including short-term adverse effects on soils, water quality and quantity, and RCA's, would be greater than those described in Alternative I and would occur on more acreage (24,300 acres). Impacts from prescribed fire or chemical treatments are described in Alternative I. Deep plowing would disturb entire landscapes, increasing susceptibility to weed and cheatgrass invasion. After treatment, pastures would be reseeded with native perennial species. Sagebrush would be reseeded or allowed to recolonize naturally from perimeter areas. Sagebrush recolonization may take twenty to thirty years before a mature stand would exist throughout entire converted pastures. Improvement in treated areas would be contingent upon the degree of disturbance, revegetation success and proper livestock grazing use (SEORMP FEIS, page 470). The proposed decrease in grazing use would lighten grazing in the vegetation treatment area and environs.

Implementation of new rangeland grazing schedules and the proposed vegetation treatment project would result in long-term beneficial, cumulative effects on a watershed scale, both for uplands and riparian/wetland areas, as long as weeds and cheatgrass do not colonize converted seedings. Deep plowing in particular could prepare a medium for weed and cheatgrass invasion. Prescribed fire would increase potential surface disturbance from wind erosion and raindrop impact, and would affect existing biological soil crusts which require many years to recover.

New grazing schedules for pastures containing riparian/wetland areas would be implemented with emphases on the attainment of water quality, PFC, and RMO's. New rangeland grazing schedules would be similar to Alternative III in pastures allocated for grazing, except AUM's would be fewer in this alternative. Grazing schedules would facilitate recovery and maintenance of woody and herbaceous riparian cover and the productivity of perennial upland vegetation. Over the long term, range management actions would have beneficial cumulative effects on uplands, stream channels, and RCA's by allowing an increase in desirable riparian vegetation, aiding the stabilization of channels and banks and a reduction in erosion (SEORMP FEIS, page 474; Appendix R, page 376-387).

Changes to grazing schedules would restrict grazing use throughout entire pastures and would facilitate recovery and maintenance opportunities of sagebrush-dependent species. Except for those areas not allocated to livestock grazing, new grazing schedules would be much the same as Alternative III and IV. Alternative V excludes almost 390,000 acres from grazing and would result in beneficial cumulative impacts to soil and water resources and riparian/wetland areas.

Disturbance to biological crust from livestock grazing would be least in this alternative compared to the existing condition. Proposed grazing schedules would exclude almost 390,000 acres from livestock grazing and maximum livestock utilization would be set at 30 percent, resulting in minimal adverse disturbance to biological crust over the entire GMA. The most disturbance to crusts from proposed grazing systems would occur in Starvation Brush Control Pasture. The proposed removal of rangeland projects would cause a one-time disturbance to soils and biological crusts, but recovery of crusts from project removal disturbances may require many decades.

Biological crust cover measured in Tristate Pasture, where grazing use would be the same as the existing condition, was the highest in LCGMA. Tristate, Peacock, Twin Springs North, and Steer Canyon Seeding (every other year) pastures would be turn-out pastures on March 1 each year. These pastures are drier, lower elevation pastures (5000 feet) that only receive 8-10 inches precipitation annually. In many years, soils in these pastures can be frozen or snow covered until late March or mid April. Although biological crusts in lower elevations are more vulnerable to disturbances, at this time period crusts on frozen ground are resistant to disturbance from livestock (USDI, 2001) and impacts to crust may be less.

Livestock grazing in Starvation Brush Control Pasture would occur August 1— September 30 the first year, and May 1—July 31 the next year. Disturbance to crusts would occur in the dry season in year one, and in both the wet and dry season in year two. Consequently, the proposed grazing system in Starvation Brush Control Pasture would incur the greatest disturbance to biological crust of any pasture in Alternative V.

Starvation Seeding and Steer Canyon Seeding pastures would be grazed in a manner similar to the existing situation, and disturbance levels to crusts in these seedings would not change.

Adverse affects to biological crusts from proposed removal of rangeland projects would occur, especially in linear areas that are necessary to remove projects such as pipelines and fences. Crusts would be impacted where soils are intruded upon for removal of pipelines, spring troughs, and fences.

Abandonment of 24 developed spring sites and removal of associated troughs, spring boxes, and pipes would greatly improve streams and riparian/wetland areas by diminishing channel downcutting caused by concentrations of livestock. Alternative V would result in long-term potential for increases in riparian/wetland vegetation, streambank water storage, and available discharge. Meadow areas not allocated to livestock grazing would rehydrate at a quicker rate, increase in size, and have increased volume and duration of flows. Short-term impacts to spring sources and wet meadow areas would occur from ground disturbance when springs are abandoned and rehabilitated, but short-term negative effects would be less than in Alternative III or IV because water troughs would not be relocated to xeric vegetation areas or overflow pipes routed back to riparian/wetland areas.

Twenty-one miles of pipeline and associated maintenance roads would be removed from pastures not allocated to grazing. Short-term increases in erosion would be expected from rehabilitation actions, but long-term benefits would include increased natural flow to streams and wetlands from spring sources and, once vegetation cover is reestablished, reduced interception and translocation of snow and rain runoff by pipeline roads.

Toppin Butte Reservoir in North Pasture and Freeway Reservoir in South Tent Creek Pasture (neither reservoir holds water) would be abandoned and the sites rehabilitated. Surface disturbing impacts from this action would be the same as described in Alternative I.

Rehabilitation of the Exchange Spring and Coffee Pot Spring pipelines sites after abandonment (approximately 2 miles) would arrest accelerated erosion in the wet meadows. Ground disturbing impacts from rehabilitation efforts for these two pipelines would be the same as described in Alternative I. Application of BMP's to proposed projects before, during, and after construction and rehabilitation would aid in reducing any adverse affects to soils and water (SEORMP FEIS, Appendix O, page 339-341;Appendix S, page 392).

Effects from proposed repair on road crossings to Jeff's Reservoir through Three Week Spring and New Road Spring drainages would be localized and short term, and would be the same as described in Alternative I.

The potential for positive, long-term effects is greater in Alternative V than in Alternative III or IV because of emphasis on native species and natural processes, reduced grazing use, the removal of livestock grazing from a larger proportion of riparian/wetland areas, and the restoration of natural hydrologic regimes through spring restoration.

Soil and water resources and riparian/wetland area objectives would be met and rapidly achieved

under Alternative V. Short- and long-term impacts may result from surface-disturbing management activities, such as vegetation conversion in seedings and spring restoration, but most of these impacts could be minimized or eliminated through application of BMP's and mitigation. Impacts to resources would be less than in Alternatives I—IV-a. The emphasis on natural processes and diverse upland plant communities would allow progress toward overall watershed health.

Alternative VI—Soil, Water Resources, and Riparian/Wetland Areas

Impacts to soil and water resources and riparian/wetland areas in Alternative VI would be primarily from restoration of abandoned rangeland projects and conversion of seedings, and would be similar to Alternative V. Impacts from converting non-native seedings to native grass species would be greater then those described in Alternative I and the same as in Alternative V.

Soil and water resources and riparian/wetland areas would be expected to improve rapidly under the rangeland grazing management proposed in this alternative. Pastures would not be grazed May 1-September 30 and, consequently, over 200 stream miles would be eliminated from grazing during this time period. Stream access areas (water gaps) that presently provide livestock water in Starvation Brush Control, Louse Canyon, and South Tent Creek pastures would be eliminated.

Changes to grazing schedules would be implemented by restricting grazing use throughout entire pastures to facilitate recovery and maintenance of riparian/wetland areas during spring and summer. From May 1—September 30, this alternative excludes the maximum allotment and pasture acreage from grazing for recovery of riparian/wetland areas, and would result in beneficial cumulative impacts to soil and water resources and riparian/wetland areas during the growing season.

Proposed grazing schedules for winter/early spring use (October 1—April 30) would cause short- and long-term adverse effects to riparian/wetland areas and natural water sources if constant herding of livestock does not occur. At higher elevations, harsh climatic conditions between February and April would limit available forage. Also, at higher elevations, grazing during snowmelt and thawing of frozen ground would cause deep hoof prints in moist upland soils and spring areas and bank shearing along stream channels.

Disturbance to biological crust from livestock grazing would be reduced in this alternative. Proposed grazing use in late fall/winter/early spring (October 1—April 30) and a proposed reduction of use would result in minimal to existing levels of adverse disturbance to biological crusts. Crusts on all soil types are least vulnerable to disturbance when soils are frozen or snow covered (USDI, 2001). In late fall and early spring during wet seasons, light to moderate grazing intensities would reduce grazing and trampling impacts on crusts. At higher elevations, harsh climatic conditions between December and March would limit available forage, and soils would be frozen or snow-covered. Because disturbance to crusts in seedings would remain unchanged, existing biological crust cover in pastures containing crested wheatgrass seedings would remain unchanged. Existing crusts have either survived mechanical disturbance of soils during seeding preparation or have recolonized under current livestock grazing management.

Abandonment of 29 developed spring sites, including removal of associated troughs, spring boxes and pipes, would result in the same short- and long-term impacts as described in Alternative V, except that more sites would be rehabilitated in Alternative VI. Therefore, short-term negative effects caused by ground disturbance and long-term benefits to riparian/wetlands would be greater than in all other alternatives.

All pipelines (45 miles) and associated maintenance roads would be removed from pastures not allocated to grazing. Impacts would be as described in Alternative V, but would apply to twice the area because pipeline mileage would be greater in Alternative VI. Impacts and benefits of rehabilitation of the Exchange Spring and Coffee Pot Spring pipelines sites after abandonment would be the same as described in Alternative V.

Adverse affects to biological crusts from proposed removal of rangeland projects would occur. Disturbance to crust would occur in linear areas that are necessary to remove projects such as pipelines and fences. Crusts would be impacted where soils are intruded upon for removal of pipelines, spring troughs, and fences.

The proposed decrease of livestock grazing use in Alternative VI would reduce disturbance to biological crusts. The proposed removal of rangeland projects would cause a one-time disturbance to soils and biological crusts, but recovery of crusts from project removal disturbances may require many decades.

Toppin Butte Reservoir in North Pasture and Freeway Reservoir in South Tent Creek Pasture would be abandoned and the sites rehabilitated. Surface disturbing impacts from this action would be the same as described in Alternative I.

Livestock grazing season-of-use and utilization would be reduced based on the following criteria:

- All riparian/wetland areas assessed as Functioning at Risk or Nonfunctioning would be rested for five years and, thereafter, no hot season livestock grazing (July, August, and usually September) would occur. Resting impaired riparian areas for five years would require entire exclusion of Horse Hill, Steer Canyon Seeding, Pole Creek Seeding, Louse Canyon, and South Tent pastures because of the numerous riparian/wetlands areas each contain.

- Livestock grazing would not occur in native grass uplands during the critical growing season (May 1-June 30). All crested wheatgrass seedings (about 24,300 acres or 4% of LCGMA) would be converted to native vegetation. Adjacent riparian areas would coincidentally not be grazed during this time period.

- Removing livestock grazing from native grass uplands and adjacent riparian areas between May 1-September 30 would maximize the physical and biological functionality of upland and riparian/wetland areas. Over the long-term, this period of nonuse would have beneficial cumulative effects on uplands, stream channels, and RCA's by increasing plant cover, reducing erosion, and stabilizing channels and banks.

- Removal of livestock from a pasture would be triggered by a 35% upland utilization limit, a bank trampling standard of ≤ 5% (measured on livestock-accessible stream reaches), and a six inch stubble height around riparian/wetland areas during the non-growing season (October 1- April 30).

Fully implementing Alternative VI would limit grazing schedules and season-of-use to October 1- April 30, and removal of all water gaps, pipelines, and troughs would limit livestock watering to existing reservoirs, natural springs, and stream channels. Fewer water sources would decrease livestock distribution throughout pastures and concentrate utilization around reservoirs and natural waters, which are usually not reliable sources of water in October and November. Over the long term, grazing standards and the restricted period of use would concentrate livestock at fewer water sources, demand constant range riding when climatic conditions dictate, and reduce available acreage for forage. Applying the bank trampling and stubble height standards for protection of riparian areas would reduce the period of time livestock could graze these areas. Therefore, the period that livestock could actually utilize riparian areas would be two to three weeks in the fall. Any pasture that contains riparian/wetland areas would be extremely limited for livestock forage utilization.

Harsh winter conditions November through February severely limit livestock movement, herding opportunity, watering sources, and access to forage, and ranching operations at higher elevation pastures can be especially influenced by climatic conditions between February and April. In many years, snow accumulation in these higher elevations restricts the acreage of each allotment that could be grazed. As snowmelt and thawing of frozen ground occurs, trampling in soft, wet ground causes deep hoof prints in upland soils and spring areas and bank shearing along stream channels (SEORMP, FEIS, Appendix R, page 376-387). Therefore, soil and water resources and riparian/wetland areas would be expected to be negatively impacted during October - April grazing. Other impacts to riparian areas could occur if riparian vegetation is cropped during the dormant months of the year. Plant growth utilized during the fall, winter, and early-spring months would reduce vegetation protection needed for channels and banks during spring runoff.

Because pasture division fences would be removed from all allotments in this alternative, proposed grazing schedules would utilize only one large pasture per allotment. Removing pasture fences would eliminate fence line vegetation contrast and trailing and allow revegetation to occur, thereby diminishing interception of runoff from snowmelt and rainfall. Pastures without cross-fencing would encourage livestock concentration at existing reservoirs and natural water sources.

An alternative that permittees could choose for their ranching operations is a change of class of livestock from cow-calf pairs to yearlings. Benefits would be the same as described in Alternative I.

Effects from proposed repair on road crossings to Jeff's Reservoir through Three Week Spring and New Road Spring drainages would be localized and short term, as described in Alternative I.

The potential for positive, long-term effects is greater in Alternative VI than in other alternatives because of the emphasis on native species and natural processes; the removal of livestock

grazing in riparian/wetland areas from May 1 to September 30; the stubble height and bank trampling standards that would result in minimal (2-3 weeks) grazing use from October 1 to April 30; and the restoration of natural hydrologic regimes through spring and road restoration and pipeline and fence removal.

Soil and water resources and riparian/wetland area objectives would be met and rapidly achieved under Alternative VI.

WILDLIFE AND WILDLIFE HABITATS; SPECIAL STATUS ANIMAL SPECIES
Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5 (2003). The following mid-scale objectives are excerpted from SEORMP ROD (2002):

Wildlife and Wildlife Habitat SEORMP ROD Objective 1: *Maintain, restore, or enhance riparian areas and wetlands so they provide diverse and healthy habitat conditions for wildlife.*

Wildlife and Wildlife Habitat SEORMP ROD Objective 2: *Manage upland habitats in forest, woodland, and rangeland vegetation types so that the forage, water, cover, structure, and security necessary for wildlife are available on the public land.*

Special Status Animal Species SEORMP ROD Objective 1: *Manage public land to maintain, restore, or enhance populations and habitats of special status animal species. Priority for the application of management actions would be: (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered species.*

Special Status Animal Species SEORMP ROD Objective 2: *Facilitate the maintenance, restoration and enhancement of bighorn sheep populations and habitat on public land. Pursue management in accordance with the 1997 "Oregon's Bighorn Sheep Management Plan" in a manner consistent with the principles of multiple use management.*

<u>Alternative I</u>—Wildlife and Wildlife Habitat; Special Status Animal Species
Alternative I would have no effect on LCGMA northern bald eagle winter use. Cottonwood trees often used for winter roosting and hunting activities elsewhere in Malheur County are naturally limited on the Owyhee River by site potential and intense hydrologic scouring events. Consequently, galleries of cottonwood trees will remain absent on the main stem of the Owyhee River regardless of the type of grazing management authorized by BLM. Under this alternative, wintering eagles would continue to roost on cliffs during the winter occupancy period as described in the Evaluation. Other ongoing BLM authorizations, such as early spring river floating, would not be expected to disrupt bald eagle habitat security. Thus, consultation with the U. S. Fish and Wildlife Service regarding northern bald eagles and Section 7 of the Endangered Species Act would not be necessary.

For California bighorn sheep, BLM land management in LCGMA would be consistent with Oregon Department of Fish and Wildlife's existing management plan for sheep. Adequate forage would be available and domestic sheep grazing threats to bighorns would not occur. LCGMA Terrestrial Wildlife Objective 4 for bighorn sheep would be met.

Land treatments proposed in Alternative I would temporarily impact Wyoming and basin big sagebrush communities over about 17,900 acres as a consequence of seeding, prescribed fire, brush beating, or chemical spraying. Habitat values important for meeting the life history needs of most terrestrial wildlife of management importance would be adversely affected due to temporary removal of shrub overstory canopy structure, as follows:

- Native grassland habitat extent would increase in contiguous blocks within Tristate, North Tent Creek, and Starvation Brush Control pastures. Additional increases in grassland extent may occur depending on wildfire occurrence.
- Grassland habitat comprised of crested wheatgrass would increase in Steer Canyon Seeding
- Total LCGMA acres planted with crested wheatgrass would not change.
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *past wildfires, historic treatments, and proposed BLM land treatment* would nearly double, from 21,100 acres (5.3%) (see LCGMA Evaluation, Table 5) to about 39,000 acres (9.9%) after treatments. *The cumulative impacts of land treatments and wildfire would therefore meet LCGMA Terrestrial Wildlife Objective 1, which is to manage for grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) at or below a threshold of 15% of big sagebrush rangeland.*
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *historic and proposed BLM land treatments (and <u>not</u> including past wildfires)* would increase from about 13,900 acres in Starvation Seeding (3.5%) (see LCGMA Evaluation, Table 5) to about 31,800 acres (8.1%). *The cumulative impacts of land treatment would therefore exceed the LCGMA Terrestrial Wildlife Objective 1, which is to limit grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) resulting from BLM actions alone to a level at or below a threshold of 5% of big sagebrush rangeland. Therefore, the LCGMA threshold objective for grasslands resulting from BLM action would be exceeded by about 12,100 acres.*
- Alternative I would not meet the SEORMP ROD objectives and LCGMA Terrestrial Wildlife Objective 1 for wildlife communities because of the amount of land treatments *and* the manner in which land treatments would be completed (contiguous block patterns).
- About 90% of LCGMA would continue to sustain complex sagebrush uplands capable of supporting sage grouse and other species that use sagebrush habitats.

Compared to existing management, Terrestrial Source Habitats (ICBEMP) would be temporarily decreased in extent due to proposed land treatments and gradually degraded in quality over a larger area as a result of intensified livestock grazing use. Proposed land treatments in native Wyoming big sagebrush rangelands would therefore be inconsistent with the conservation and management emphasis for sagebrush uplands recommended in ICBEMP for T Watersheds (USDA-USDI 2000, pages 105-106). ICBEMP management

intent in T watersheds, which comprise all but the non-native seeded areas of LCGMA, is to focus on a short-term (10 years) conservation emphasis which seeks to "maintain or secure" and "recruit more acres" of habitats, such as Wyoming big sagebrush, which are substantially reduced within the interior Columbia Basin.

Land treatments have the potential to adversely impact greater sage-grouse and other sagebrush dependent species. These impacts would vary according to the following treatment types:

1. Prescribed Fire

Fire-induced impacts to greater sage-grouse nesting habitat can be substantial because of the nature of fire disturbance. Fires tend to spread within the highest density grass, forb, and shrub cover areas (i.e. habitats associated with successful greater sage-grouse nesting) and leave behind a low density shrub mosaic, or no shrub canopy at all. Fire temporarily alters the best shrub/grass nesting habitat, and remaining plant communities are either unusable or allow increased vulnerability to predators because of diminished cover. Thus, fire treatment in big sagebrush communities, even with a relatively low proportion of actual blackened area, can substantially reduce nesting success for species such as greater sage-grouse that depend on patches of high density sagebrush cover. Habitat mosaics, often promoted on the basis of expected habitat diversity benefits to wildlife, can actually be harmful for key management species such as greater sage-grouse.

Greater sage-grouse nest site fidelity also plays a role in overall impacts caused by fire in nesting habitat. After selecting the best available sites for nesting and incubating, hens will return annually to the same general area throughout their lifetimes. When preferred nesting locations are altered by fire or other disturbance, hens are forced to seek other habitat nearby which may be of inferior quality or already occupied by nesting birds.

Multi-year research conducted in Idaho has shown that greater sage-grouse population declines following fire disturbance in Wyoming big sagebrush types were caused by the interrelationship of nesting habitat reductions and nest site fidelity (Connelly *et al.* 2000). The impact of disturbance is further compounded for sage-grouse because the species is long-lived, has a low reproductive rate, and recovers slowly from population reductions. In contrast, other upland game bird species, such as California quail, have high reproductive rates and the capacity to recover rapidly from population losses.

Conditioned forage availability following fire treatment would be expected to temporarily attract a wide variety of game and non-game species seeking fall, spring, or summer green-up (SEORMP ROD, Appendix F, page F-3). Burned or mechanically treated sites tend to provide abundant new plant growth that is succulent, nutritious, easily digested, and sought out by virtually all species of plant-eating wildlife. However, these beneficial effects are short-lived (two or three years) and benefits may be more than offset by longer term habitat changes caused by fire disturbance. For instance, studies in mountain big sagebrush communities at Hart Mountain National Wildlife Refuge (HMNWR) indicate that greater sage-grouse nest and forage only in areas where at least 20 years have elapsed after fire disturbance.

Fire effects may or may not improve herbaceous plant composition and abundance. Vegetative response to fire disturbance depends on pre-fire plant composition and subsequent grazing practices. Some research shows that grasses and forbs in many sagebrush types may simply be more visible after a fire, not necessarily more abundant (Montana Department of Fish, Wildlife and Parks 1995). In addition, paired plot studies demonstrated that fire causes indirect negative effects to greater sage-grouse nesting and brood rearing habitat by diminishing insect food sources (especially ants and beetles) important to chicks. Crawford *et al*. (2004) reported little evidence that fire will enhance habitat in Wyoming big sagebrush-dominated communities where there already is a balance of native shrubs, grasses, and forbs.

Prescribed fire in lower elevation Wyoming sagebrush types in LCGMA would be expected to increase risk of cheatgrass expansion (USDI-BLM 2003). Although cheatgrass is currently very limited in LCGMA, its existence still presents a potential long-term threat to wildlife habitat integrity. Tristate Pasture supports extensive pure salt desert communities with shadscale along with very dry Wyoming big sagebrush / salt desert community complexes, both of which are very susceptible to cheatgrass invasion in response to disturbance. Starvation Brush Control Pasture is also vulnerable because of its location near existing cheatgrass seed sources in Jackies Butte and Rattlesnake GMA's.

2. Mechanical Treatment Impacts

Mechanical control methods would allow a more predictable and wildlife-friendly land treatment outcome compared to prescribed fire treatments. Even with strict precautions taken prior to ignition, fires may escape and result in a disturbed area much larger than what may be desired or anticipated. The possibility of these unintended consequences could be eliminated or reduced substantially by using mechanical means, such as brush beating with rubber tired vehicles.

Mechanical habitat manipulation has the added advantage of leaving some young shrub plants in place which escape the blade impact of a brush beater. Consequently, long-term habitat recovery of multiple canopy layers (shrubs and herbaceous plants) can proceed more predictably and rapidly than in burned areas where nearly all shrub cover may be eliminated. Temporary reduction of competition from shrubs may foster conditions which allow for improvement of herbaceous plant vigor.

Mechanical control methods may nevertheless result in sage-grouse productivity decline when conducted within nesting habitat. In Montana, the number of breeding males decreased by 73 percent after only 16 percent of the habitat was plowed (Connelly *et al*. 2000). Nesting habitat impacts from mechanical treatment could be partially avoided by leaving a well distributed mosaic of high density shrub habitat within treatment target areas.

3. Chemical Treatment Impacts

Chemical control treatments would be expected to stimulate grass plant production in a manner similar to prescribed fire or brush beating by reducing shrub competition for moisture and soil nutrients. For several years following chemical treatment, residual dead branches and basal shrub stems would provide at least some woody canopy structure

valuable to wildlife for hiding, nesting, escape, and thermal relief (USDI-BLM 1991, pages 3-54).

Depending on the chemical used and the pattern of application, chemical control could leave a patchy shrub cover arrangement that mimics natural disturbances from insect attacks, disease, or shrub response to prolonged drought (such as leaf drop and the appearance of decadence). Where a patchy chemical treatment is applied, some wildlife habitat shrub structure would be conserved and understory vigor would be enhanced. However, chemical treatment in Tristate and Starvation Brush Control pastures would reduce forbs that are forage for greater sage-grouse and other wildlife (Miller and Eddleman 2000).

From a wildlife habitat management standpoint, mechanical control would be the preferred land treatment option because of more rapid and reliable sagebrush re-colonization and fewer risks when compared to prescribed fire or chemical applications. Mechanical land treatment has been identified as the appropriate management action for wildlife habitat in areas where there is risk of exacerbating cheatgrass / fire cycles (SEORMP ROD, Appendix F, page F-10).

Some wildlife of management importance, including horned larks and pronghorn (species typically associated with grassland conditions or low shrubland vegetative structure) would likely benefit from the results of land treatments. However, net benefits of land treatment to species preferring grassland habitat would be outweighed by the adverse impacts to sagebrush-dependent species. Land treatment impacts to shrub overstory important to wildlife would be expected to linger for a period of 15 to 30 years depending on local environmental factors, including climate, soil characteristics, and wildfire and grazing use following treatment (Paige and Ritter 1999). In Malheur County, sagebrush re-colonization rates following disturbance have been shown to be quite variable. Over the long term, sagebrush re-colonization would occur within most treated areas, with a multi-canopy plant community of shrubs and herbaceous plants gradually becoming re-established. For LCGMA, the time required for sagebrush plants to attain full maturity and provide quality structure for wildlife is not known. However, as noted in the Evaluation, sagebrush plants in crested wheatgrass seedings treated 30 or more years ago have smaller heights and volumes compared to sagebrush in adjacent, untreated sites.

Mature sagebrush in properly grazed or undisturbed rangeland typically provides high quality wildlife habitat (Thomas and Maser 1984; Montana Department of Fish, Wildlife, and Parks 1995). Even when shrub canopy cover is relatively high ($\geq$20%), the presence of mature sagebrush does not necessarily imply unhealthy rangeland ecological status (Welch and Criddle 2003) nor the need for prescriptive management to reduce sagebrush dominance. Sagebrush communities with tall stature and relatively large canopy volume (consistent with site potential) offer both forage and habitat structure necessary for nesting, escape, hiding, and shelter from severe wind, rain, snow, and temperature extremes.

In contrast to mature communities, young sagebrush does not provide enough hiding or nesting cover to be effective habitat for wildlife. Lack of adequate wildlife cover in young sagebrush communities applies to both native and modified rangelands, and is highlighted as a relevant wildlife management consideration in the SEORMP FEIS (Figure 2-1, page 128; Appendix F, page 289) (Thomas and Maser 1984).

In Starvation Seeding, competition from vigorous monoculture grassland conditions may prevent natural sagebrush re-colonization and a return to shrubland conditions for several decades (if ever). Because Starvation Seeding immediately adjoins Starvation Brush Control and Steer Canyon Seeding pastures, the proposed land treatment would place newly created grassland adjacent to large blocks of existing grassland. Consequently, Alternative I would expand and concentrate the impacts of wildlife habitat fragmentation attributable to grassland conditions within a localized area.

Large, contiguous blocks of native or nonnative grassland habitat (e.g. hundreds or thousands of acres) are considered an immediate and long-term threat to sagebrush-dependent wildlife populations of Vale District. Over the last several decades, wildfire has impacted large areas of rangeland in Jordan Resource Area, converting sagebrush communities to either temporary or nearly permanent grasslands.

Seeding native Wyoming or basin big sagebrush rangelands in LCGMA with native grass species would likely result in long-term establishment of shrub/grass communities resistant to cheatgrass occupation. However, there is uncertainty as to whether cheatgrass would be fully excluded from land areas impacted by rangeland drills because the targeted areas are not highly resistant to establishment of invasive species including cheatgrass. Cheatgrass seed sources are nearby proposed land treatment areas in Jackies Butte and Rattlesnake GMA's and southwestern Idaho. The treatment strategy with least risk of expanding the distribution of invasive plants (especially cheatgrass) within Terrestrial Source Habitats would be using mechanical treatment to enhance existing herbaceous plant vigor and avoiding rangeland drill disturbance altogether.

According to Vale District Geographic Information System (GIS) data, about 411,500 acres have burned within Jordan Resource Area, with several locations burning repeatedly between 1980 and 2002. Because this burned acreage does not include grasslands created by disturbances prior to 1980, the GIS acreage data actually underestimates the landscape level impact of fires and land treatments to sagebrush-dependent wildlife (see Map 1—GMA's, Land Treatments, and Fire Impact Areas). When land treatments are proposed, cumulative effects of fires and treatments within Jordan Resource Area cause concern among federal and state wildlife biologists.

Large block grassland patterns are detrimental for wildlife, particularly in Wyoming big sagebrush communities, because these grasslands are (1) unsuitable for sagebrush-dependent wildlife until shrub cover has become reestablished and attains an appropriate size and maturity; and (2) they fragment habitat continuity which can increase impacts of predation and lead to population isolation.

Natural Wyoming big sagebrush canopy recovery time is typically lengthy because sagebrush seedling establishment depends on presence of seed-producing shrubs and climatic conditions conducive to production of viable seed. Even under ideal conditions, recovery tends to occur sporadically and slowly. The larger the grassland area, the slower the expected rate of shrub layer recovery, and the greater the long-term impact to sagebrush-dependent animals. Knick (1996, 1995) refers to fragmentation in sagebrush habitat (especially cheatgrass dominated areas)

and describes why grasslands are labeled "hostile" environments for sagebrush-dependent landbirds.

Large block grassland conditions may be particularly problematic for wide ranging sagebrush-dependent species such as greater sage-grouse, which travel on foot throughout large home ranges (especially during spring and early summer brood rearing periods when chicks are small and vulnerable) while pursuing their seasonal life history needs. Sagebrush communities with extensive canopy continuity provide essential security cover during seasonal movements and enable grouse to travel among habitats while remaining safe from predators.

Large contiguous blocks of sagebrush habitat, abundant in the west prior to European settlement, have diminished in extent due to the combined impacts of wildfires, land treatments, and other disturbances. Populations of sagebrush-dependent wildlife likely expanded and contracted locally in response to fire or other natural disturbances. Now, however, there is a shrinking pool of sagebrush habitat left for grouse, and disturbances, especially in nesting and winter habitat, are becoming more pronounced in their effects on a species which has declined substantially over a large area (see SEORMP FEIS, Chapter 2, page 89, regarding cumulative impacts to sage-grouse). Extensive, well connected sagebrush habitat areas, such as occur in LCGMA, will likely be considered greater sage-grouse strongholds and play an important role in long-term conservation strategies currently being drafted at state and national levels.

In Alternative I, adverse environmental consequences to wildlife habitat structure, continuity, and cover caused by land treatment would be partially offset because:

- Existing native shrub communities on the western edge of Steer Canyon Seeding would be preserved and would continue to contribute towards sagebrush habitat connectivity among the pastures considered for treatment.
- Land treatment proposed in Tristate Pasture is spatially separated from other LCGMA treatments so the cumulative, "large block" shrub cover fragmentation impacts would be partially avoided.

Nevertheless, as stated previously, *the total amount of BLM treated acres* in Alternative I would exceed the 5% threshold for big sagebrush rangeland by 12,100 acres [4]

Sagebrush structure, forage, and cover values important to wildlife would be maintained in formerly treated areas including Pole Creek Seeding and most of Starvation Brush Control pastures. Crested wheatgrass habitats with ≥10% canopy cover of mid- to late-maturity sagebrush (as observed in Pole Creek and Rawhide Seedings) provide multi-layered plant cover which supports large and small mammal use as well both sagebrush and grassland landbirds (McAdoo 1989; Holmes and Barton 2003). Consequently, the SEORMP ROD (Appendix F)

[4] This illustrates the nature of SEORMP ROD multiple scale management for wildlife which considers: (1) the overall extent of grassland habitat within Jordan Resource Area, which is limited under the FEIS to 30% or less for all Wyoming, basin, and mountain big sagebrush communities; (2) the overall extent of grassland allowable within each GMA, so that the Jordan Resource Area 30% threshold is not exceeded; and (3) the extent of grassland allowable within each individual livestock management pasture. In combination, these three land-based screens permit a meaningful cumulative effects analysis of fires and land treatments. Conformance with the SEORMP FEIS *and* Rangeland Health Standard 5 may then be determined.

specifies that most seedings should sustain shrub cover capable of supporting sagebrush-dependent wildlife over at least 25% to 50% of the pasture.

Existing crested wheatgrass seedings that did not incorporate a forb component in the original seed mix (e.g. Starvation Seeding) offer little or no herbaceous food and cover compared to adjoining native rangeland in similar soil types and elevations. This forb limitation is likely due to decades of historic grazing during the critical growing season that resulted in depletion of the native understory (Heady and Bartolome 1977).

For wildlife management purposes, restoration of depleted rangeland with native species is preferred over non-native species (SEORMP ROD, Appendix F, page F-10). Regarding grasses, wildlife values differ for native and non-native species (especially crested wheatgrass) in LCGMA as well as the rest of Malheur County. For instance:

- Where native grass and crested wheatgrass plants co-occur and have initiated new growth, wintering mule deer typically prefer the native grasses as forage. On the other hand, fecal studies conducted on Vale District have shown that where crested wheatgrass is the only green plant available (as occurs in much of the Rome Seeding complex of Jackies Butte GMA), wintering mule deer will forage upon it.
- Native grasses typically provide higher quality structural values than non-native species. For example, bluebunch wheatgrass (native) provides better lateral hiding cover and nest concealment for landbirds, including greater sage-grouse, in contrast to Fairway crested wheatgrass (non-native) because bluebunch wheatgrass offers superior plant height and volume.
- Native grasses typically provide a longer period of green forage availability for wildlife compared to crested wheatgrass and are more likely to survive the stresses of prolonged drought.

As a rule, the most diverse, productive, and desirable sagebrush shrubland wildlife habitat is associated with plant communities where multiple species of native forbs and grasses are growing in the herbaceous understory (SEORMP FEIS, Appendix F, page 289). These complex shrubland conditions, which are prevalent in LCGMA, are associated with rangelands classified as mid, late, or potential natural community ecological status (as described in Natural Resource Conservation Service site guides). However, it is important to note that valuable sagebrush steppe wildlife habitat is not restricted to mid, late, or potential natural community status. Rangelands that may have comparatively weak understories or dense shrub canopy cover (often classified as early ecological status) can still provide important functions and value for wildlife habitat. For example:

- Black-tailed jackrabbits, often found at lower elevations in early ecological status (e.g., the southern end of Starvation Brush Control Pasture), play an important role in sagebrush steppe food chains. Jackrabbits influence raptor population abundance and occurrence (Craighead and Craighead 1969). When jackrabbits are available as an alternate food source for predators, their presence may help to balance potential impacts of mammalian or avian predation on species such as greater sage-grouse.

- Mule deer in eastern Oregon seek heavy mountain shrub and sagebrush shrub cover types (30% to 50% canopy cover) for escape, security, and fawning activity (Trainer *et al.* 1981).
- Based on Weiss and Verts (1984) and recent Lakeview, Oregon, investigations, pygmy rabbit burrows are typically found in tall, high density shrub patches (Todd Forbes, Lakeview BLM, personal communication, 4/2004).
- Landbird population sampling funded by BLM in Oregon and Washington (Holmes and Barton 2003), has shown that "Wyoming and basin big sagebrush sites with shrub cover in the 20-30% cover range provide valuable habitat for several sagebrush obligate bird species (sage thrasher, sage sparrow, Brewer's sparrow, gray flycatcher) even when they do not support much herbaceous vegetation in the understory."

Therefore, it can be important for BLM to conserve a certain amount of early ecological status sagebrush habitat within land treatment areas unless compelling reasons for total shrub canopy elimination are indicated (such as imminent expansion of noxious weeds). Shrub cover alone can account for most if not all of the wildlife habitat value found in rangeland; in treated areas, the remnants of early condition habitats provide seed sources for long-term habitat recovery

Proposed land treatments could result in minor habitat benefits to big game species, such as pronghorn or bighorn sheep, because these species tend to avoid tall sagebrush cover and may be temporarily attracted to the resulting conditioned forage. However, in LCGMA, preferred pronghorn habitat is associated with low sagebrush communities south of the proposed treatment areas and bighorn sheep typically occupy canyons and landforms adjacent to Owyhee and West Little Owyhee River corridors. Benefits of land treatment to mule deer habitat would also be incidental. Mule deer in open rangeland away from agricultural development tend to occupy complex mountainous topography, draws with tall vegetative cover, and riparian habitats where water and succulent, nutritious forage are available most of the year. These habitats are generally absent in proposed treatment areas. In addition, mule deer do not winter within any proposed treatment areas, so adverse impacts to mule deer winter habitat would be avoided.

Greater sage-grouse leks (locations used by grouse for breeding and display activities) are widely distributed within LCGMA and it is highly probable that nesting activity is also well distributed throughout suitable big sagebrush habitats. Because there are no studies within LCGMA that identify preferred nesting sites or distances hens may travel from leks to nest sites, the BLM has no site-specific data to help select land treatment areas that avoid impacts to nesting habitat. However, published literature which describes greater sage-grouse nesting behavior is helpful when considering the impacts of land treatment.

On average, greater sage-grouse nests are located within about 4 miles of leks, but hens may travel over 12 miles from breeding grounds to nesting locations (USDI-BLM 2000, page 2-3; Connelly 2000). Wakkinen *et al.* (1992) reported that the "distribution of sage grouse nests was random with respect to lek location." In other words, leks do not establish some highly predictable pattern or location of likely nesting activity; it is the habitat character which extends out from leks that determines where nest site selection is likely to occur. Because of this unpredictable nest selection behavior and the lack of a detailed, fine scale habitat map for LCGMA, proposed treatments in Tristate and Starvation Brush Control pastures may reduce

overall greater sage-grouse nesting success in treated areas for several decades. The anticipated grouse population impacts following treatment would likely be similar to those already described by Connelly (2000) for grouse in Wyoming big sagebrush habitats.

Mitigation or avoidance of proposed land treatment impacts to greater sage-grouse nesting habitat may be accomplished in the following ways:

- Conduct radio tracking hen nesting surveys within treatment areas prior to treatment so that BLM may either avoid habitat used for nesting or show that nesting activity would not be affected (SEORMP ROD, Appendix F, page F-10).
- Locate land treatment areas at least two to four miles from existing leks so that most, but not all, adverse nesting habitat impacts may be avoided (USDI-BLM 2000).

Avoidance of impacts based on data from nesting surveys would be the most conservative mitigating pre-treatment action. However, either of these mitigating options would lower impacts to a level consistent with Oregon/Washington BLM Special Status Species policy and Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines (USDI-BLM 2000). These guidelines direct the BLM to avoid authorizing actions which may contribute towards the need for protective listing of wildlife under the federal Endangered Species Act.

Land treatments of any sort would decrease the amount of available grouse winter range. However, based on the wide distribution of sagebrush cover and the abundance of grouse fecal pellet groups observed during the assessment process, it is likely that the amount of greater sage-grouse winter habitat loss for LCGMA would not be substantial. There would very likely be ample opportunity for wintering grouse to secure sagebrush forage and cover in nearby untreated rangelands even during heavy snowfall years.

Impacts of land treatment on pygmy rabbit habitat are uncertain because surveys to detect their presence have not been conducted in proposed treatment areas. Based on intensive surveys jointly funded by BLM and ODFW in Lake and Harney counties (Oregon), the most productive pygmy rabbit habitat in LCGMA is probably in low sagebrush / big sagebrush transition communities where dense patches of sagebrush often occur. These transitional habitats occur at elevations higher than the proposed land treatment areas so there is a possibility the project would completely avoid potential adverse impacts to pygmy rabbits.

Given this uncertainty and the fact that the species is currently being petitioned for federal listing, BLM has approved and funded a pre-treatment survey for pygmy rabbits that will be completed by qualified contractors in 2004 or 2005. Based on the information gathered BLM will then be able to avoid adverse impacts by either adjusting the boundary of the proposed project or proceeding on the basis of field data that show pygmy rabbits do not occupy the proposed treatment area. In either case, BLM would demonstrate conformance with state and national special status species policies to avoid actions which may contribute towards the need for listing species under the ESA.

The grazing use proposed in Alternative I would generally be expected to maintain adequate forage quality and quantity necessary to support ODFW big game management objectives or

benchmarks for mule deer, pronghorn, and California bighorn sheep. Big game species are highly mobile and generally able to adapt to the scattered, localized grazing use impacts that would be typical of Alternative I.

Compared to current management, the cumulative effects of increased stocking levels, new pasture/exclosure fencing, pipeline extensions, and additional livestock watering troughs would have much greater adverse impacts to habitats currently supporting greater sage-grouse and other sagebrush steppe land birds. Intensified livestock grazing use within pastures that have been reduced in size (due to additional fencing) would compound overall livestock grazing impacts on wildlife habitat. Conflict between livestock grazing and sagebrush-steppe landbirds is likely exacerbated because livestock frequently prefer to graze on the same gentle slopes and micro-habitats which provide important nesting habitat for greater sage-grouse and other landbirds.

Alternative I would result in a much greater area influenced by heavy grazing use. Compared to current management, upland grazing utilization levels greater than 30% to 40% [5] , which would be required to implement this alternative, would likely weaken the vigor of important native grasses (e.g., bluebunch wheatgrass, Idaho fescue) and generally cause long-term gradual decline in the integrity and function of sagebrush-steppe plant communities over a larger area. Bluebunch wheatgrass plants and perennial forbs that contribute towards quality lateral hiding cover for greater sage-grouse nesting would decrease in volume and extent over time. Reductions in plant cover would likely occur during low precipitation years and would be most evident in Horse Hill South, Horse Hill North, Middle Louse Canyon, Lower Louse Canyon, South Tent Creek, and Southwest Tent Creek pastures. These pastures provide the most abundant, high quality upland and riparian wildlife habitat in LCGMA.

Alternative I grazing use would also be expected to cause more replacement of deep-rooted perennial grasses (such as bluebunch wheatgrass) with herbaceous species of lesser value (such as Sandberg's bluegrass) for wildlife food and cover. Reduction of herbaceous nesting and hiding cover would be expected to diminish the opportunities for greater sage-grouse nesting success. Holechek (1988, 1999) has reported that "heavy stocking consistently caused a downward trend in ecological condition." Livestock or wild herbivore grazing that significantly reduces the herbaceous understory in breeding habitat can have negative impacts on greater sage-grouse populations (Connelly *et al*. 2000; Miller and Eddleman 2000; Beck and Mitchell 2000; Crawford *et al.* 2004; USDI-BLM 2000; SEORMP FEIS, Volume 3, page 47). Connelly and Braun (1997) implicated livestock grazing as one of three wide-ranging factors (fire and weather patterns were also listed) associated with widespread declines of sage- grouse through habitat deterioration, loss, and fragmentation.

Increased grazing use in crested wheatgrass seedings would likely have fewer adverse impacts to herbaceous wildlife forage than in native range because of the limited value of crested wheatgrass to wildlife. However, negative impacts to shrub structure that occurs in seedings would probably occur.

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[5] According to Holechek (1988), rangeland in good condition and/or grazed during the dormant season can withstand the 40% utilization level, while those in poor condition or grazed during active growth should receive the 30% utilization level.

Areas unallocated to grazing within upland and riparian exclosures (e.g. study plots, livestock management fences) would provide high quality cover, structure, forage, and security for wildlife within the larger matrix of grazed LCGMA rangelands and would function as wildlife habitat reserves. Disturbances to wildlife, such as landbird nest trampling or shrub structure alteration associated with grazing use, would be avoided. Relatively large excluded areas, such as West Little Owyhee Riparian Pasture, would provide the most substantial benefits to upland and riparian wildlife habitat. Although small exclosures (≤10 acres) typically supply good quality habitat, especially in riparian areas, their highest value often lies in the information they provide to BLM on long-term plant community change in the absence of grazing disturbance.

Domestic horse grazing would impact wildlife habitat in a similar way as cattle grazing. However, horses are more efficient grazers than cattle because of their upper incisors and ability to closely crop forage plants, and can consume a higher volume of forage.

Even though livestock grazing can substantially influence wildlife habitat quality and productivity, grazing is not the only limiting factor, a point emphasized to the public during the comment period for the SEORMP (FEIS, Volume 3, BLM response #178). Other factors, such as disease, drought, insect attacks on vegetation, weather, accidents, predation, wildfire, habitat loss in other regions (e.g. impacts to neotropical migratory birds), and natural population cycles, all influence wildlife communities of LCGMA (SEORMP FEIS, Chapter 2, page 68). For example, although livestock grazing was eliminated in Oregon's Hart Mountain National Wildlife Refuge in the mid 1990's, long term sage grouse nesting success and productivity studies are showing variable sage grouse population responses, indicating that other limiting factors are at play. A definitive link has not been made between removal of livestock grazing and sage-grouse population success on HMNWR (Mike Gregg, HMNWR, personal communication, July 2002). On rangeland in the Montana Mountains of northern Nevada, public land supports both moderate grazing and one of the most productive greater sage-grouse populations in the west, suggesting that livestock grazing need not be eliminated in order to meet wildlife habitat requirements. These findings appear to support the assertion that has already been made SEORMP FEIS wildlife narratives (FEIS Chapter 2, page 68-69) that conservative grazing stewardship which sustains the health of native rangeland plants can be expected to result in conditions which will normally support most wildlife habitat needs on public land.

Other factors being equal, proper grazing stewardship which sustains the health of native rangeland plants can result in conditions which support most wildlife habitat needs including greater sage-grouse. On rangeland in the Montana Mountains of northern Nevada, public land supports both moderate grazing and one of the most vigorous sage-grouse populations in the west, suggesting that livestock grazing need not be eliminated in order to meet wildlife habitat requirements. This finding supports

Alternative I would likely be inconsistent with Western Association of Fish and Wildlife Agencies (WAFWA) management guidelines (Connelly *et al*. 2004) for grazing use in nesting and brood rearing habitat as well as Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines (USDI-BLM 2000) for greater sage-grouse habitat.

Greater sage-grouse nesting success would be more likely in pastures grazed or used for trailing after the peak of nesting activity (May) because nest abandonment would not be as easily triggered and cover around nests would be retained. However, nesting success would decrease if grazing or trailing occurs before nesting (March through May) because reduced herbaceous plant cover and physical disturbances from cattle would disrupt habitat security. Trailing alone would cause intense, site-specific adverse impacts because of heavy livestock concentrations within a relatively narrow band of nesting habitat.

Compared to current management, conversion to yearling cattle would result in fewer negative grazing impacts to wildlife habitat because yearlings tend to disperse, move more often, and range out over larger areas compared to cow/calf pairs. Cow/calf pairs linger for prolonged periods around water sources and preferred upland locations and have greater negative influences on wildlife forage, cover, and structure. Grazing impacts to wildlife habitat from yearling herds would likely be similar to those associated with active herding of cow/calf pairs.

Installation of water troughs associated with new pipelines, pipeline extensions, or temporary watering along existing roads would cause fewer impacts to wildlife habitat than installation in native range. Although some negative effects from livestock concentrations around the troughs would be expected, existing roads have been used for livestock travel (including trailing) for decades, and grazing impacts already exist and are ongoing. Placing new troughs along roads may be preferable to other locations because greater sage-grouse nesting success is higher away from roads, and predator travel corridors would not be increased. According to U. S. Fish and Wildlife Service's finding for petition to list greater sage-grouse (USDI-USFWS 2004), successful sage-grouse hens in Wyoming nested further from the nearest road (mean distance = 1,138 meters) than did unsuccessful hens (mean distance = 268 meters).

Similarly, water troughs placed within existing reservoir locations regularly disturbed by grazing use would not increase adverse impacts to wildlife habitat, provided stocking rates remain generally similar to past rates. Where water trough placement in existing reservoirs is associated with expanded use and intensified livestock stocking rates, reductions in wildlife forage and structure over wider areas would be expected.

Installation of new troughs and pipelines on native range (and not along existing roads or reservoirs) would cause short-term impacts from human activity and habitat disturbance. Over the long term, new roads associated with pipeline maintenance would increase the potential for cheatgrass expansion within Terrestrial Source Habitat and possibly reduce greater sage-grouse nesting success.

New livestock water sources would generally provide supplemental water for wildlife species, such as pronghorn and landbirds, perhaps including sage-grouse, but this additional water would not be natural and the benefits would be limited. More importantly, installation of new troughs, wells, and pipelines would sequester greater volumes of water for livestock consumption compared to current management, and thereby decrease water resources important to the function of wetlands and riparian habitats. Existing water developments, such as Exchange Spring pipeline, have diminished the natural distribution, abundance, and summer/fall growth of green forage important for wildlife.

All things considered, any benefits to wildlife that may be gained by additional water provided by livestock facilities would be outweighed by loss of water from natural sources and impacts to wildlife habitat from concentrated grazing near new water sources and in adjacent native uplands. Under the SEORMP ROD (Appendix F, page F-3), "maintenance of currently un-grazed native range conditions by avoiding new water developments, salting, and fencing is considered a beneficial mitigating measure for the protection of wildlife habitat values [6]." Proposed livestock water pipeline installation in Sacramento Hill, North Tent Creek, and South Tent Creek pastures, and native portions of Pole Creek Seeding would be expected to increase the extent and likelihood of adverse grazing impacts on greater sage-grouse nesting success.

Installation of water trough escape ramps would greatly reduce small animal entrapment and drowning. Some limited wildlife mortality would likely continue even with escape ramps, but the levels of mortality would be similar to those already foreseen in the SEORMP ROD and BLM policy (USDI-BLM 1990), which recommends that the BLM "install escape ramps in open water troughs and tanks to protect water quality and to reduce wildlife loss."

In riparian areas, proposed stream corridor and exclosure fencing would prevent livestock access, and recovery of habitats negatively affected by past grazing use would proceed as rapidly as site capability would allow. Diversity, structure, and distribution of riparian vegetation would be maximized. For small wildlife species (e.g. songbirds) and large mammals (e.g. pronghorn), herbaceous cover and forage in perennially wet meadows would improve. In meadows that dry early in the year and do not re-saturate until winter snowmelt, wildlife habitat may improve somewhat, but not as much as in perennially wet meadows. Cover in wet meadows within exclosures may eventually become dense, with accumulation of dead plant material, and be less desirable as food sources for species such as greater sage-grouse. Water gaps resulting from stream corridor fencing would adversely impact riparian habitat in site-specific areas because of concentrated grazing use. However, overall long-term habitat benefits derived from excluded stream segments would far outweigh the localized trampling impacts from livestock expected around water gaps.

Due to natural site potential limitations, woody riparian plant species would continue to be sparse or absent in upper stream reaches. In mid to lower elevation stream reaches where soils are deeper and site potential allows, woody riparian plant cover and structure would expand in extent and volume, thus benefiting species (including yellow-breasted chat, yellow warbler, and mule deer) that prefer dense, shrubby riparian habitats.

Livestock trough relocation and spring project restoration actions, such as restoration of Exchange and Coffeepot Springs, would be expected to yield some wildlife habitat benefits by reducing localized grazing pressure in wetlands and improving riparian function. These actions would help prolong green forage availability for wildlife in the summer/fall period and likely enhance forage quality and abundance. Temporary disturbances to wildlife resulting from spring

[6] From a wildlife habitat management perspective, maintaining existing high quality native rangeland by avoiding development of new livestock water is preferable to: 1) building protective exclosures which are expensive and difficult to maintain; or 2) creating new special management areas (e.g. ACEC's) with grazing use constraints which lack the support of the Malheur County government, evidenced in SEORMP FEIS protests. Vale District already manages some of the most highly developed livestock grazing allotments in the western U.S.

project restoration would be short-lived and inconsequential in the long term. Based on findings from spring/stream exclosure studies in Malheur County, additional wildlife drinking water may be available after impacts of concentrated grazing around natural water sources are reduced.

Reservoir abandonment and rehabilitation to natural conditions would not have substantial adverse or beneficial impacts to LCGMA wildlife. Heavy equipment operations may cause some direct mortality to small terrestrial wildlife such as reptiles, but anticipated impacts would be localized and inconsequential. Pipeline removal would likely benefit wildlife habitat quality by reducing the area affected by grazing. Disturbances to wildlife associated with pipeline removal would be minimal and temporary.

Potential for adverse impacts to wildlife as a result of temporary and permanent fence construction would increase under this alternative. Anticipated fence-related impacts may include the following:

- Fence building during the peak of nesting season (May) may result in some sage-grouse nest abandonment.
- Fence construction across canyons or draws would likely pose the highest risks to big game, such as mule deer, because steep topographic relief increases the difficulty for big game to negotiate fences.
- Predators such as coyotes may increase their success rates by learning to use fences for cornering and seizing prey.
- Collisions, injuries, or entanglement of big game species with fences along roads (e.g. Star Valley Road) would likely increase; big game, fearful of approaching vehicles, frequently collide with or jump through fences. When not disturbed by vehicles, deer and antelope tend to go under fences and thereby avoid injuries.
- Raptors and sage-grouse may also become entangled and/or killed by fence collision.
- Sudden and deep snowfall can make otherwise passable fences an obstacle to big game movement and may ultimately result in mortalities or injuries.
- Wooden fence posts or other fence components that offer hunting perches for birds of prey may increase the incidence of raptor-related grouse mortality, especially when fences are installed near leks or wetland habitats.

Wildlife mortality or injury would be avoided by using the following conservation measures consistent with the SEORMP ROD (Appendix F, page F-2) and USDI-BLM (2000):

- Install fences outside of the strutting and nesting season (March-May).
- Locate fences ¼ mile or more from away from leks.
- Install raptor roosting deterrents on wooden fence posts or rock jacks where fencing must be located close to leks or wetland/riparian habitats likely to be visited by grouse.
- Avoid fence construction within identified big game movement corridors.

Use of these mitigating measures would avoid most short- and long-term effects of fence construction on wildlife. BLM fence construction specifications would substantially limit, but not totally eliminate, most threats and barriers to wildlife movement. Following application of

mitigating measures, residual impacts of wildlife and fence conflicts would be consistent with those foreseen in the SEORMP/ROD and long-standing BLM policies.

Fence construction for the purpose of isolating crested wheatgrass seedings from native rangeland (such as in Pole Creek Seeding) would help conserve any remaining native herbaceous vegetation.

New road construction and maintenance associated with proposed pipelines would eliminate less than 100 acres of existing sagebrush habitat and would not be a substantial loss of upland habitat. Most wildlife would temporarily vacate the vicinity of road building or maintenance sites because of vehicle activity, noise, and human presence (SEORMP FEIS, Appendix F, page 284). Small wildlife species, such as sagebrush lizards and desert horned lizards, could suffer direct mortality as a result of road blading. However, these short-term and direct impacts from road construction would not be a threat to LCGMA wildlife communities. As discussed previously, new roads constructed near sage-grouse nesting sites may decrease nesting success due to disturbances that trigger nest abandonment. However, to date, nest site locations have not been identified in LCGMA and proximity to proposed road locations is unknown.

The combined effects of road construction, water development, and increases in grazing use would likely result in invasion of cheatgrass or other weedy species to sites where they do not presently occur. Weed invasion would be most likely within the driest Wyoming big sagebrush types, and, may, in the long term, contribute towards a decline in Terrestrial Source Habitat quality in specific areas.

Alternative I would likely diminish upland wildlife habitat quality and quantity in Upper West Little Owyhee, Owyhee River Canyon, and Lookout Butte WSA's, and all upland Special Feature wildlife would be adversely impacted over the long term. The most adverse impacts would be in relation to greater sage-grouse nesting and brood rearing habitat. However, substantial benefits would accrue to wildlife species dependent on quality riparian and wetland habitats.

Resident wildlife species considered to be Special Features within the three WSA's include California bighorn sheep, mule deer, pronghorn, river otter, white-tailed jackrabbit, beaver, mountain lion, bobcat, Canada goose and other waterfowl, greater sage-grouse, chukar, and raptors. Because there are no wildlife habitat improvement projects, such as big game guzzlers, proposed for LCGMA, opportunities for potential beneficial effects to wildlife would be foregone and adverse impacts to wilderness values resulting from construction of improvements would be avoided.

Alternative I would meet Wildlife and Wildlife Habitat SEORMP ROD Objective 1 (riparian habitat) and Special Status Animal Species SEORMP ROD Objective 2 (bighorn sheep). LCGMA objectives tiered to these ROD objectives would also be met.

Alternative I would not meet Wildlife and Wildlife Habitat SEORMP ROD Objective 2 (upland habitat) and Special Status Animal Species SEORMP ROD Objective 1 (special status species). LCGMA objectives tiered to these ROD objectives would not be met.

Alternative II —Wildlife and Wildlife Habitats; Special Status Species
LCGMA authorized actions would have no effect on northern bald eagle winter use as described in the Alternative I analysis.

For California bighorn sheep, BLM land management in LCGMA would be consistent with ODFW's existing management plan for sheep. Adequate forage would be available and domestic sheep grazing threats to bighorns would not occur. LCGMA Terrestrial Wildlife Objective 4 for bighorn sheep would be met**.**

Existing shrub canopy structure conditions would continue to influence habitat values important for meeting the life history needs of most terrestrial wildlife of management importance, as follows:

- Native grassland extent may change, and would be caused by wildfire occurrence.
- Grasslands comprised of crested wheatgrass would be limited to Starvation Seeding.
- Total acres of crested wheatgrass habitat would not change.
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *past wildfire and historic BLM land treatments* would remain at about 21,100 acres (5.3%) (LCGMA Evaluation, Table 5) *The cumulative impacts of historic land treatments and wildfire would therefore meet LCGMA Terrestrial Wildlife Objective 1, which is to manage for grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) at or below a threshold of 15% of big sagebrush rangeland.*
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *historic BLM land treatments (and not including past wildfires)* would remain at about 13,900 acres (3.5%) (LCGMA Evaluation, Table 5). *The cumulative impacts of land treatment would therefore meet the LCGMA Terrestrial Wildlife Objective 1, which is to limit grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) resulting from BLM actions to a level at or below a threshold of 5% of big sagebrush rangeland.*
- Existing land treatment impacts would meet SEORMP ROD objectives and LCGMA objectives for Special Status Animal Species and upland habitats.
- More than 94% of LCGMA would continue to sustain complex sagebrush uplands capable of supporting sage-grouse and other species that use sagebrush habitats.

LCGMA grazing allotments would continue to maintain the most well-connected and extensive tracts of generally good quality Wyoming big sagebrush habitat in Jordan Resource Area. Even where herbaceous understory conditions are relatively weak, multiple species of native forbs and grasses would be present.

Based on fire history over the last 30 years, LCGMA wildlife habitat would be resistant to large or repeated wildfire disturbance because of limited cheatgrass presence and landscape and weather patterns.

Over the long term, sagebrush re-colonization would progress in Pole Creek Seeding, Steer Canyon Seeding, and Starvation Brush Control pastures, thus providing complex shrubland

communities at mid to late maturity in formerly treated (chemically sprayed or seeded) areas. Sagebrush structure, forage, and cover values important to wildlife would be maintained.

Due to site conditions and vigor of crested wheatgrass plants in Starvation Seeding, re-colonization of shrubland communities may not occur for decades and Starvation Seeding would continue to offer little or no herbaceous food and cover for wildlife compared to adjoining native rangeland. However, this impaired wildlife habitat is isolated and constitutes a small fraction of the entire LCGMA. BLM and ODFW wildlife biologists have determined that Starvation Seeding does not warrant restoration to native grasses and shrubs.

General impacts to wildlife habitat values as a consequence of grazing authorizations and projects would be similar to those described and analyzed under Alternative I.

The combined influences of ongoing livestock grazing (including trailing) and existing facilities (fences, pipelines, water troughs, spring developments, reservoirs, and exclosures) would continue to limit forage and cover values for wildlife around water sources and in upland sites where livestock use is concentrated (e.g. terrace uplands near Chipmunk Basin and Deer Creek). Because relatively little upland habitat is currently affected by concentrated grazing, wildlife forage, cover, and structure values for a large portion of LCGMA would be maintained. Concentrated grazing is avoided under current management because upland water sources are scarce and unreliable, current stocking rates are comparatively low on native rangelands, and pastures are large, allowing dispersal of livestock.

Livestock grazing and trailing impacts have occurred within LCGMA for decades, and the effects of grazing and trailing on greater sage-grouse nesting success would not change. Anticipated impacts would be consistent with those described in the Alternative I.

A slight increase in fence-related conflicts with wildlife would occur from exclosure fencing during spring project restoration.

Riparian habitat quality would continue to be adversely impacted by livestock where summer and fall grazing occurs annually. Some sites, such as Dry Canyon and the upper reaches of Antelope Creek, would sustain high quality woody and herbaceous plant communities due to limited livestock access and minimal grazing disturbance. However, streams and isolated spring sources accessible to livestock would continue to be devegetated and trampled during summer and fall grazing, herbaceous forage available for wildlife would be limited, and riparian habitat function provided by grasses, sedges, and forbs would be impaired. In addition, woody plant canopy cover and willow and aspen recruitment would be suppressed where summer livestock grazing is concentrated. Consequently, Alternative II would not meet the SEORMP ROD wildlife objective for riparian habitats. Big game mammals would also impact riparian/wetland quality and function, but their effects would continue to be minimal compared to the intensity, duration, and overall impacts of domestic cattle and horses.

ICBEMP Terrestrial Source Habitat values identified in the Assessment would be maintained in a high quality state throughout most of LCGMA.

Alternative II would sustain a relatively high level of upland habitat quantity and quantity in Upper West Little Owyhee, Owyhee River Canyon, and Lookout Butte WSA's. Special Feature upland wildlife would have sufficient forage and habitat, but Special Feature riparian wildlife habitat would continue to be adversely impacted. Impacts of wildlife habitat improvement projects on WSA's would be the same as described under Alternative I.

Alternative II would meet Wildlife and Wildlife Habitat SEORMP ROD Objective 2 (upland habitat) and Special Status Animal Species SEORMP ROD Objective 2 (bighorn sheep). LCGMA objectives tiered to these ROD objectives would also be met.

Alternative II would not meet Wildlife and Wildlife Habitat SEORMP ROD Objective 1 (riparian habitat), and Special Status Animal Species SEORMP ROD Objective 1 (special status species). LCGMA objectives tiered to these ROD objectives would not be met.

Alternative III —Wildlife and Wildlife Habitats; Special Status Species
LCGMA authorized actions would have no effect on northern bald eagle winter use as described in the Alternative I analysis.

For California bighorn sheep, BLM land management in LCGMA would be consistent with ODFW's existing management plan for sheep. Adequate forage would be available and domestic sheep grazing threats to bighorns would not occur. LCGMA Terrestrial Wildlife Objective 4 for bighorn sheep would be met**.**

Land treatments in Alternative III would temporarily impact Wyoming and basin big sagebrush communities over about 3,500 acres as a consequence of seeding, prescribed fire, brush beating, or chemical spraying. Habitat values important for meeting the life history needs of most terrestrial wildlife of management importance would be adversely affected due to temporary removal of shrub overstory canopy structure, as follows:

- Native grassland extent would increase in Starvation Brush Control Pasture, but shrub cover leave areas would be incorporated into the land treatment layout so some wildlife habitat connectivity with adjoining big sagebrush communities would be maintained following treatment.
- Grassland habitat comprised of crested wheatgrass would not change.
- Total LCGMA acres planted with crested wheatgrass would not change.
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *past wildfires, historic treatments, and the proposed BLM treatment* would increase from 21,100 acres (5.3%) (LCGMA Evaluation, Table 5) to about 24,600 acres (6.2%) after the proposed treatment. *The cumulative impacts of land treatments and wildfire would therefore meet LCGMA Terrestrial Wildlife Objective 1, which is to manage for grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) at or below a threshold of 15% of big sagebrush rangeland.*
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *historic and proposed BLM land treatment (and not including past wildfires)* would increase from about 13,900 acres in Starvation Seeding (3.5%) to about 17,400 acres (4.4%) after the proposed treatment. *The cumulative impacts of land treatment would therefore meet the LCGMA Terrestrial Wildlife Objective 1, which is to limit grassland*

conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) resulting from BLM actions alone to a level at or below a threshold of 5% of big sagebrush rangeland.

- Alternative III would meet the SEORMP ROD objectives and LCGMA Terrestrial Wildlife Objective 1 for wildlife communities because of the amount of land treatment *and* manner in which the land treatments would be completed. The treatment would avoid contiguous grassland patterns and would incorporate sagebrush leave areas into the treatment design. More than 80% of Starvation Brush Control Pasture would remain as complex shrubland habitat following treatment, which would conform to the SEORMP ROD (Appendix F, page F-6) for native rangelands.
- Slightly less than 94% of all remaining big sagebrush rangelands in LCGMA would remain as complex shrubland habitat capable of supporting greater sage-grouse and other sagebrush-dependent species.

Mechanical treatment, as described in Alternative I, would be the preferred method for land treatment to minimize impacts on wildlife habitat.

Starvation Seeding would continue to offer little or no forage and cover for wildlife compared to adjoining native rangeland. However, this impaired wildlife habitat is isolated and constitutes a small fraction of the entire LCGMA.

General impacts to wildlife habitat values as a consequence of grazing authorizations and projects would be similar to those described and analyzed under Alternative I.

Compared to current management, the cumulative impacts of proposed stocking levels, altered grazing schedules (including trailing), new pasture/exclosure fencing, pipeline extensions, and troughs would adversely affect wildlife forage, cover, and structure on native range in areas of concentrated use. These impacts would likely be most substantial in Horse Hill South, Horse Hill North, Middle Louse Canyon, Lower Louse Canyon, South Tent Creek, and Southwest Tent Creek pastures. These pastures provide the most abundant, high quality upland and riparian wildlife habitat in LCGMA. As described in Alternative I, upland habitats would be the most vulnerable to adverse effects from intensified grazing. By reducing pasture size without reducing livestock numbers, more concentrated livestock grazing would result.

However, compared to Alternative I, livestock grazing proposed in Alternative III would have more moderate effects on wildlife habitat because of rest periods and grazing utilization standards. Although new areas of grazing impacts would occur under this alternative, most herbaceous habitats important for greater sage-grouse and other wildlife would be protected. Alternative III would generally be consistent with the desired habitat conditions for sage-grouse and terrestrial wildlife communities described in the SEORMP (SEORMP FEIS, Chapter 2, page 68-69; SEORMP ROD, Appendix F, page F-3). This alternative would also be consistent with WAFWA management guidelines for grazing use in nesting and brood rearing habitat as well as Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines (USDI-BLM 2000) for greater sage-grouse habitat.

ICBEMP Terrestrial Source Habitat in Starvation Brush Control Pasture, which was chemically treated but not seeded, would be slightly degraded due to proposed land treatment, with results similar to those described in Alternative I. However, land treatment impacts would be moderated because of shrub cover leave areas and the relatively large amount of shrubland habitat remaining within the pasture.

Early season grazing proposed in Alternative III for riparian areas would allow herbaceous re-growth later in the season and would increase willow and aspen cover because most woody growth would occur after mid-July when livestock would be absent. Wildlife habitats dependent on riparian community composition, distribution, and structure would gradually improve over the long term.

For small wildlife species (e.g. songbirds) and large mammals (e.g. pronghorn), herbaceous cover and forage in perennially wet meadows would gradually improve. Due to natural site potential limitations, woody riparian plant species would continue to be sparse or absent in upper stream reaches and meadows. In mid to lower elevation stream reaches with deeper soils and where site potential allows, woody riparian plant cover and structure would expand in extent and volume, thus benefiting species (including yellow-breasted chat, yellow warbler, and mule deer) that prefer complex, mature woody plant canopies. Where stream corridor and exclosure fencing would prevent livestock access, recovery of habitats negatively affected by past grazing use would proceed as rapidly as site capability would allow, resulting in benefits to wildlife as described in Alternative I.

As a consequence of proposed fencing, short- and long-term impacts to wildlife habitat would increase compared to existing management, and impacts would be similar to those described in Alternative I. Use of design standards and mitigating measures cited in Alternative I would result in impacts to wildlife consistent with those already considered and analyzed in the SEORMP ROD.

Alternative III would continue to maintain a high level of upland wildlife habitat quality and quantity in Upper West Little Owyhee, Owyhee River Canyon, and Lookout Butte WSA's, and Special Feature upland wildlife would be provided with sufficient forage, cover, and security. Habitat limitations for Special Feature riparian wildlife would improve gradually over time because riparian function problems associated with late season grazing would be corrected. Impacts from wildlife habitat improvement projects would not occur, as described under Alternative I.

Alternative III would meet all Wildlife and Wildlife Habitat and Special Status Animal Species SEORMP ROD objectives. LCGMA objectives tiered to these ROD objectives would also be met.

<u>Alternative IV</u> —Wildlife and Wildlife Habitats; Special Status Species
LCGMA authorized actions would have no effect on northern bald eagle winter use as described in the Alternative I analysis.

For California bighorn sheep, BLM land management in LCGMA would be consistent with ODFW's existing management plan for sheep. Adequate forage would be available and domestic sheep grazing threats to bighorns would not occur. LCGMA Terrestrial Wildlife Objective 4 for bighorn sheep would be met**.**

Impacts of land treatments proposed in this alternative on wildlife and effects of treatments on the attainment of management objectives would be identical to those described under Alternative III. Cumulative impacts to wildlife habitat and rangeland community composition would be the same as described in Alternative III. As in Alternative I, mechanical treatment would be the preferred method for land treatment to minimize impacts on wildlife habitat.

General impacts to wildlife habitat values as a consequence of grazing authorizations and projects resulting from this alternative would be similar to those that have already been described and analyzed under Alternative I, except that pastures would not be subdivided and rest periods would occur. Unlike current management, this alternative would implement rest from grazing in alternate years coupled with conservative grazing utilization level standards (30% in uplands). This grazing regime would provide good quality wildlife habitat with a higher level of protection from potential grazing impacts and allow more rapid improvement where wildlife habitat would benefit from reduced livestock use. Benefits to wildlife habitat from rest periods would be particularly substantial in Louse Canyon, Horse Hill, and South Tent Creek pastures because of the quality and quantity of riparian and upland habitat within their boundaries.

By avoiding subdivision of Horse Hill, Louse Canyon, and South Tent Creek pastures, Alternative IV would continue to maintain quality wildlife habitat conditions reported in the Evaluation because grazing use would generally be unconfined and dispersed. In addition, avoidance of new fence construction would maintain a relatively low level of conflict between wildlife and fences as described in the Evaluation. Wildlife conflicts resulting from cumulative effects of grazing and range improvement projects tend to be much lower where pasture are large and stocking rates are relatively conservative, conditions that exist under current management. In Alternative IV, potential conflicts between fences and wildlife would increase, but slightly and mainly due to riparian exclosure fencing.

Alternative IV would be consistent with the desired habitat conditions for sage-grouse and terrestrial wildlife communities described in the SEORMP, WAFWA management guidelines for grazing use in nesting and brood rearing habitat, as well as Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines (USDI-BLM 2000) for greater sage-grouse habitat.

In contrast to current management, woody and herbaceous riparian plant community composition, distribution, and structure would improve at an accelerated pace over the long term, especially in pastures where annual, late season grazing was previously authorized.

Alternative IV would maintain and improve upland wildlife habitats in Upper West Little Owyhee, Owyhee River Canyon, and Lookout Butte WSA's, and Special Feature upland wildlife would be provided with sufficient forage, cover, and security. Habitat limitations for Special Feature riparian wildlife would improve at an accelerated pace because riparian function problems associated with late season grazing would be corrected. Impacts from wildlife habitat improvement projects would not occur, as described under Alternative I.

Alternative IV would meet all Wildlife and Wildlife Habitat and Special Status Animal Species SEORMP ROD Objectives. LCGMA objectives tiered to these ROD objectives would also be met.

Alternative IV-a—Wildlife and Wildlife Habitats; Special Status Species
LCGMA authorized actions would have no effect on northern bald eagle winter use as described in the Alternative I analysis.

For California bighorn sheep, BLM land management in LCGMA would be consistent with ODFW's existing management plan for sheep. Adequate forage would be available and domestic sheep grazing threats to bighorns would not occur. LCGMA Terrestrial Wildlife Objective 4 for bighorn sheep would be met**.**

Impacts of land treatments on wildlife would be identical to those described in Alternative IV.

Because Alternative IV-a does not incorporate year-long rest in riparian pastures, the grazing utilization level standards described in Alternative IV (necessary to protect wildlife habitat values when grazing systems do not include rest nor deferment until after the critical growing period), would be expected to protect wildlife habitat. Grazing impacts on both upland and riparian wildlife habitat would be nearly identical to Alternative III.

Impacts of fence construction and cumulative effects of grazing use and range improvement projects would be the same as described in Alternative IV.

Relationships between WSA's and habitat for Special Feature wildlife would be the same as described in Alternative IV. Impacts of wildlife habitat improvement projects would not occur.

Alternative IV-a would meet all Wildlife and Wildlife Habitat and Special Status Animal Species SEORMP ROD Objectives. LCGMA objectives tiered to these ROD objectives would also be met.

Alternative V—Wildlife and Wildlife Habitats; Special Status Species
LCGMA authorized actions would have no effect on northern bald eagle winter use as described in the Alternative I analysis.

For California bighorn sheep, BLM land management in LCGMA would be consistent with ODFW's existing management plan for sheep. Adequate forage would be available and domestic sheep grazing threats to bighorns would not occur. LCGMA Terrestrial Wildlife Objective 4 for bighorn sheep would be met**.**

General impacts to wildlife habitat values as a consequence of grazing authorizations and projects would be similar to those that have already been described and analyzed under Alternative I.

Land treatments proposed in Alternative V would temporarily impact Wyoming and basin big sagebrush communities over about 24,300 acres as a consequence of seeding, prescribed fire, brush beating, or chemical spraying. Habitat values important for meeting the life history needs of most terrestrial wildlife of management importance would be adversely affected due to temporary removal of shrub overstory canopy structure, as follows:

- Native grassland habitat would increase in contiguous blocks within Starvation, Pole Creek, and Rawhide seedings. Additional increases in native grassland extent may occur depending on wildfire occurrence.
- Non-native grasslands (crested wheatgrass) within LCGMA would be eliminated.
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *past wildfires, historic treatments, and proposed BLM land treatment* would increase from 21,100 acres (5.3%) (see LCGMA Evaluation, Table 5) to about 31,400 acres (8%) after treatments. *The cumulative impacts of land treatments and wildfire would therefore meet LCGMA Terrestrial Wildlife Objective 1, which is to manage for grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) at or below a threshold of 15% of big sagebrush rangeland.*
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *historic and proposed BLM land treatments (and <u>not</u> including past wildfires)* would increase from about 13,900 acres (3.5%) to about 24,200 acres (6.1%). *Although Alternative V would eventually influence more than 19,700 of habitat, restoration would proceed over a 15 to 30 year period, depending upon the pace of sagebrush canopy recover. This lengthy period would ensure that the grassland threshold of 5% directed by LCGMA Terrestrial Wildlife Objective 1, which limits grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) resulting from BLM actions alone, would not be exceeded. This conservative pace of land treatment would allow BLM to meet the wildlife habitat objective over the long term.*
- Alternative V would meet the SEORMP ROD and LCGMA Terrestrial Wildlife Objective 1 for wildlife communities. Treatment would require 15 to 30 years in order to retain some habitat connectivity and allow natural recolonization from shrub patches left intact after treatment.

As in Alternative I, mechanical treatment would be the preferred method for land treatment to minimize impacts on wildlife habitat.

Seeding native grasses and forbs into land currently supporting crested wheatgrass / shrubland habitat would improve overall habitat quality over the long term, as described in Alternative I. Because crested wheatgrass seedings would be removed, their inadequacy as forage and cover for wildlife would be eliminated. However, despite the potential long-term benefits of proposed crested wheatgrass-to-native grasses restorations, the Evaluation did not recommend restoration of existing seedings. Crested wheatgrass seedings are not automatically a wildlife habitat threat

that warrant restoration, and other locations exist in Jordan Resource Area (especially Jackies Butte, Soldier Creek, and Cow Creek GMA's) where crested wheatgrass restoration actions would be better justified on the basis of wildlife habitat conflicts. In fact, Wildlife Recommendation 8 (LCGMA Evaluation, Chapter 4, page 2) is to expend limited federal restoration dollars elsewhere in Jordan Resource Area. The SEORMP ROD does allow for seeding restorations where wildlife habitat values would greatly benefit (ROD, Appendix F, page F-10).

Seed drilling or other surface disturbance necessary to replace crested wheatgrass with native plants could easily result in invasion of cheatgrass into areas where it is now sparse or absent. Foregoing treatment in crested wheatgrass / shrubland habitats such as Pole Creek and Rawhide seedings would keep cheatgrass expansion in check and retain complex shrubland habitat currently used by sagebrush-dependent species. No treatment would be preferable to: (1) incurring risk of invasive weed expansion; or (2) eliminating sagebrush canopy cover that has matured substantially over the last 30 years.

Restorative seeding would increase the amount and quality of Terrestrial Source habitat, accompanied by risks of invasive weeds described above.

Although livestock grazing at conservative levels and with periods of year-long rest or deferment is considered compatible with many wildlife habitat needs (SEORMP FEIS, page 68), grazing influences are not needed to sustain the health of wildlife habitat in LCGMA. Livestock grazing may benefit wildlife in certain situations, such as conditioning upland forage on elk winter range, conditioning meadow forage, increasing palatability of rank crested wheatgrass seedings, or reducing fuel loads in cheatgrass areas, but these situations do not apply to LCGMA wildlife habitat at the present time.

Alternative V would result in a very high level of improvement in riparian and upland wildlife habitat quality (especially riparian areas) due to the amount of land no longer impacted by livestock grazing and, over the long term, most native rangeland would progress towards an ecological status at or near site potential. However, without management intervention such as seeding, some early and mid succession range sites would probably retain their current ecological status because historic grazing use has likely permanently altered herbaceous plant composition, distribution, and density.

Although Alternative V would be desirable from a wildlife habitat management perspective and would fully meet SEORMP wildlife objectives, it would be far more conservative than what is considered necessary to meet the habitat objectives of species of management importance. WAFWA and Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management guidelines for grazing use in sage-grouse nesting and brood rearing habitat would be fully met. However, these guidelines do not recommend elimination of grazing as the centerpiece of greater sage-grouse habitat conservation. Rather, the guidelines promote moderated grazing utilization, exercising caution when selecting land treatment areas, mitigation of impacts from structures such as fences, and seasonal restrictions on authorized uses to protect wintering and breeding activities.

Removal of interior and boundary fences would eliminate conflicts with wildlife over a large area.

Termination of livestock grazing in most of LCGMA could increase wildfire impacts to wildlife habitat because of more abundant fine fuels. However, landscape rockiness, low sagebrush inclusions, and weather characteristics such as low lightning frequency would likely prevent the occurrence of catastrophic fires now so common at lower elevations of the interior Columbia Basin. Patchy and relatively minor fire impacts consistent with those reported in the Evaluation (Chapter 2, page 24) would likely continue to occur within most of the GMA. Over the years, livestock stocking rates in many upland habitats have generally been conservative enough to allow accumulation of fine fuels that could support catastrophic fires if LCGMA were prone to them, but LCGMA wildlife habitats do not show evidence of impacts by large fires.

Elevated fire risks to wildlife habitat may occur at lower elevations within Star Valley Community Allotment, especially in high moisture years that favor cheatgrass growth. However, cheatgrass distribution is currently limited and major fires have not occurred.

Natural influences on wildlife habitats and populations, such as disease, drought, and insects, would continue to affect LCGMA wildlife.

Alternative V would provide a very high level of upland and riparian habitat quality and quantity for Upper West Little Owyhee, Owyhee River Canyon, and Lookout Butte WSA's. Nearly all Special Feature wildlife upland habitat qualities would be maximized due to livestock grazing removal. Riparian habitat recovery would occur at a rate limited only by site capability. Impacts from wildlife habitat improvement projects would not occur.

Alternative V would meet all Wildlife and Wildlife Habitat and Special Status Animal Species SEORMP ROD Objectives. LCGMA objectives tiered to these ROD objectives would also be met.

<u>Alternative VI</u> —Wildlife and Wildlife Habitats; Special Status Species

LCGMA authorized actions would have no effect on northern bald eagle winter use as described in the Alternative I analysis.

For California bighorn sheep, BLM land management in LCGMA would be consistent with ODFW's existing management plan for sheep. Adequate forage would be available and domestic sheep grazing threats to bighorns would not occur. LCGMA Terrestrial Wildlife Objective 4 for bighorn sheep would be met**.**

General impacts to wildlife habitat values as a consequence of grazing authorizations and projects would be similar to those described and analyzed under Alternative I. Impacts that differ from those in Alternative I are as follows:

Habitat values important for meeting the life history needs of most LCGMA terrestrial wildlife of management importance would be adversely affected due to temporary removal of shrub overstory canopy structure.

- Native grassland habitat extent would increase in contiguous blocks within Starvation, Pole Creek, and Steer Canyon seedings. BLM actions would remove sagebrush canopy in Pole Creek and Steer Canyon seedings. Additional increases in native grassland extent may occur depending on wildfire occurrence.
- Non-native grasslands (crested wheatgrass) within LCGMA would be eliminated.
- The total amount of Wyoming and basin big sagebrush rangeland converted to grassland from *past wildfires, historic treatments, and proposed BLM land treatment* would increase from 21,100 acres (5.3%) (see LCGMA Evaluation, Table 5) to about 31,400 acres (8%) after treatments. *The cumulative impacts of land treatments and wildfire would therefore meet LCGMA Terrestrial Wildlife Objective 1, which is to manage for grassland conditions (Class 1 and 2 habitats identified in SEORMP ROD, Appendix F) at or below a threshold of 15% of big sagebrush rangeland.*
- Assuming that Alternative VI restoration actions would be completed for all seedings at the same time[7], the total proportion of Wyoming and basin big sagebrush communities converted to grassland from *historic and proposed BLM land treatments (and not including past wildfires)* would total 24,300 acres (about 13,900 acres in Starvation Seeding, 6,300 acres in Steer Canyon Seeding, and 4,000 acres in Pole Creek Seeding or 6.1%. *The cumulative impacts of BLM initiated land treatments resulting in grassland conditions within big sagebrush rangeland would therefore exceed the 5% (19,700 acres) GMA threshold objective for terrestrial wildlife communities by about 4,600 acres. However, Alternative VI could potentially meet the LCGMA Terrestrial Wildlife Objective 1 if restoration actions are completed sequentially as described in Alternative V.*
- About 92% of all remaining LCGMA big sagebrush rangelands would continue to provide complex shrubland habitat capable of supporting greater sage-grouse and other animals that occupy sagebrush habitats.

Proposed crested wheatgrass-to-native grasses restoration would be expected to improve herbaceous plant quality and structure over the long term compared to existing management. Advantages of native grasses over introduced species have been described in Alternative I.

Risks associated with potential cheatgrass invasion into treated areas would be the same as described in Alternative V.

The failure of Alternative VI to meet the 5% grassland threshold objective for terrestrial wildlife communities illustrates how restoration actions can actually aggravate habitat fragmentation problems in sagebrush steppe if they do not:

- Incorporate shrub leave areas so locally adapted shrubs may become re-established following treatment. Success in artificially seeding sagebrush into treated or burned areas of Vale District has been extremely limited to date.
- Recognize the value of healthy crested wheatgrass / shrubland habitats for wildlife and their inherent resistance to invasion by cheatgrass.

[7] The sequence or treatment was not specified by Committee for Idaho's High Desert in their alternative submitted to BLM.

- Avoid treatments in large, contiguous blocks.

As described in Alternative V, higher priority areas for wildlife habitat restoration work exist outside of LCGMA in other GMA's within Jordan Resource Area.

In the long term, all LCGMA sagebrush habitats would eventually become ICBEMP Terrestrial Source Habitats due to crested wheatgrass replacement with native grass species. Substantial disturbances would be limited to those associated with wildfire and other natural events as described in Alternative I. Fire impacts to LCGMA would continue to be limited by climate, landform, and vegetation characteristics, as described in Alternative V.

Grazing impacts on upland wildlife forage, cover, and structure would be much less than under existing management. Potential adverse impacts to rangeland health and wildlife habitat caused by grazing during the critical growing season would be avoided.

Grazing utilization standards proposed under this alternative would be consistent with the desired wildlife habitat conditions for sage-grouse and communities of terrestrial wildlife described in the SEORMP (SEORMP FEIS, Chapter 2, page 68; SEORMP ROD, Appendix F, page F-3). Alternative VI would also be consistent with WAFWA management guidelines for grazing use in sage-grouse nesting and brood rearing habitat and the Oregon/Washington Interim management guidance for management of sage-grouse habitat.

Placing grazing utilization limits on all lands (including those very close to livestock water sources where concentrated grazing occurs) after the growing season would result in far more lightly grazed and ungrazed habitat than under existing management. Because grazing impacts close to water sources would occur within a period of a few weeks or less, cattle would be removed from pastures sooner than in other alternatives. Diligent livestock herding would further decrease impacts of concentrated livestock use in upland habitats and riparian areas. Grazing impacts may be expected to be similar to those of yearling herds.

Elimination of salting areas would decrease concentrated grazing use areas and expand slightly grazed and ungrazed habitats. Grazing suitability based on distribution of natural water sources would also reduce grazing impacts to wildlife habitat.

Potential impacts to wildlife as a result of fencing would be similar to those under current management.

Alternative VI would maintain and substantially improve upland habitat quality and quantity in Upper West Little Owyhee, Owyhee River Canyon, and Lookout Butte WSA's. Special Feature wildlife upland habitat quality would be nearly maximized due to lack of grazing during the critical growing period. Riparian habitat used by Special Feature wildlife would improve substantially over time and at an accelerated pace due to a five-year period of grazing rest. Impacts from wildlife habitat improvement projects would not occur.

Alternative VI would meet Wildlife and Wildlife Habitat SEORMP ROD Objective 1 (riparian habitat) and Special Status Animal Species SEORMP ROD Objective 2 (bighorn sheep). LCGMA objectives tiered to these ROD objectives would also be met.

Alternative VI could meet the Wildlife and Wildlife Habitat SEORMP ROD Objective 2 (upland habitat) and Special Status Animal Species SEORMP ROD Objective 1 (special status species) if the sequence of restorative land treatments is adjusted to meet LCGMA Terrestrial Wildlife Objective 1 thresholds for wildlife.

AQUATIC SPECIES AND HABITATS

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5(2003). The following mid-scale objective is excerpted from SEORMP ROD (2002):

SEORMP ROD Objective: *Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of fishes and other aquatic organisms.*

Alternative I --Aquatic Species and Habitats

Localized aquatic habitats would be expected to improve under the rangeland/grazing use management outlined in Alternative I. Emphasis would be placed on the construction and maintenance of rangeland projects, primarily fencing and water development, which mitigate livestock impacts to riparian areas and improve livestock distribution. These riparian fencing projects would be designed to improve upland and riparian vegetation and reduce physical degradation of streambanks and wet areas, such as springs, in order to attain water quality standards and PFC. Riparian fencing projects would only be built in pastures (Horse Hill, Chipmunk, Cavietta, Pole Creek, Lower Louse Canyon, Upper Louse Canyon, South Tent Creek) that have at-risk riparian areas combined with hot season grazing use.

Structural range improvement projects, such as fences, have the potential for short-term negative effects on aquatic habitat through surface disturbance and the possibility of erosional inputs to streams or wetlands. Long-term negative effects could occur if livestock movement patterns parallel to the fence line create pathways denuded of vegetation and prone to ablation. Adverse impacts to aquatic habitats would be minimized or eliminated through imposition of adequate buffer distances and construction outside of Riparian Conservation Areas. Fences would be constructed in xeric vegetation beyond the wetted perimeter of the wetland or stream, and would be sufficiently distant from water sources as to allow for expansion of riparian areas. An exception would be portions of fence exclosures that cross streams. Here, congregating livestock could increase erosion of the stream channel and banks, and degrade water quality. Exclusion of livestock from wetland riparian areas and 31 stream miles would promote rapid, long-term improvements to aquatic habitats, and would especially benefit native fish populations in perennial reaches of Antelope and Pole creeks. Due to site potential limitations, woody plant communities would continue to be sparse or absent in some reaches, but would expand in extent and volume where site potential allows. However, because eight water gaps would be necessary to provide livestock water along streams, localized negative impacts would occur when cattle concentrate. These impacts would include loss of riparian vegetation, streambank trampling, and

decreased water quality due to sedimentation and fecal input. Because Alternative I focuses on riparian area management rather than entire watersheds, broad scale hydrologic improvements that would increase water storage and soil moisture capacity may be slow to achieve.

Increased grazing use and stocking rates may contribute to surface disturbance and could adversely affect aquatic or riparian habitat by altering timing and amount of surface runoff, increasing erosive energy, loss of ground cover, and entrainment of fine sediments. Any action that contributes to surface disturbance could adversely affect aquatic or riparian habitat. In Alternative I, surface disturbance would be associated with increased livestock stocking rates, vegetation treatments, and to some extent, construction of riparian fences. By altering timing and amount of surface runoff, surface disturbance could result in increased erosive energy, loss of ground cover, and increase in fine sediments. For aquatic habitat, impacts would include degradation of spawning areas, reduction of overhead cover, decreased habitat complexity (e.g., undercut banks, scour pools, substrate diversity, riparian vegetation), higher water temperatures, reduced discharge, and declines in invertebrate production. These impacts would be mitigated by establishment of adequate buffers in addition to exclusion of livestock along some stream corridors.

Trailing livestock at end of season can cause ground disturbance in riparian areas because of high concentrations of animals for short periods of time. Trailing by Campbell and Louse Canyon permittees passes through Disaster Spring, Bell Spring, and along portions of Antelope Creek and West Little Owyhee River, and has the potential to reduce riparian vegetation and compact wet soils at these localized sites. Impacts would occur every year regardless of grazing season-of-use in those pastures.

Rehabilitation of Exchange Spring and Coffee Pot Spring pipelines would improve aquatic habitat by halting channel down-cutting and allowing meadow areas to rehydrate and increase in size, primarily benefiting amphibians, garter snakes, and aquatic invertebrates. However, 37 miles of additional pipeline would negatively impact aquatic habitat by reducing the volume of natural flows available for wetlands and streams and thereby decreasing habitat area. The new Twin Buttes and Willow Creek Butte pipelines would be supplied with water by wells, which, by tapping ground water, would potentially have less direct affect on surface springs and seeps. However, the pipelines that would utilize Exchange Spring, Rawhide Spring, Steer Canyon Reservoir, and Tent Creek Cow Camp would directly affect volume of surface water available for riparian habitat and wildlife. Similar negative impacts would also result from the development of HH1 spring and piping water to an offsite trough. However, impacts at HH1 would be mitigated through protective fencing of the associated HH1 wetland and using a float valve to minimize water wastage.

Vegetation treatments (in Starvation Brush Control, Steer Canyon Seeding, and Tristate pastures) designed to maximize herbaceous forage production may result in disturbances to aquatic habitats, although impacts are not likely to be direct. Short-term effects from prescribed fire, mechanical vegetation removal, or spraying may include increased erosion and sediment delivery to streams, but these effects would be minimized by leaving appropriately-sized riparian buffers between treated areas and wetlands or streams. However, vegetation treatment may allow nonnative weed species to invade native range and threaten riparian habitats.

Cumulative, short-term impacts may result from several surface-disturbing management actions, such as vegetation treatments, fence building, and spring project restoration, but most of these impacts could be minimized or eliminated through riparian buffers. Cumulative long-term negative impacts could result from dewatering by new pipelines, inadvertent invasion of weeds after vegetation treatments, and new livestock trails along miles of riparian corridor fencing. Water gaps would cause long-term negative impacts to riparian areas, but impacts would be localized and would occur on a small proportion of overall stream length. Long-term improvements to aquatic habitat would be most rapid inside fenced riparian areas, and would occur at a slower rate in unfenced riparian areas where hot season grazing use is avoided. In either case, improvements would occur at a faster rate than under Alternative II.

The SEORMP ROD Aquatic Habitat Objective would be met under Alternative I.

Alternative II—Aquatic Species and Habitats

Because six pastures do not meet Rangeland Health Standard 2 (Riparian), Standard 4 (Water Quality), and Standard 5 (Special Status Species), aquatic habitat in general is not expected to improve under the rangeland/grazing use management outlined in this alternative.

Surface disturbance to aquatic habitats would be associated with current livestock stocking rates and grazing management, which do not allow for protection or improvement of riparian areas. Impacts would include physical degradation of streambanks and wet areas, reduction of overhead cover, higher water temperatures, decreased habitat complexity, reduced discharge, and impairment of fish, amphibian, aquatic invertebrate, and garter snake populations.

Conversely, long-term improvements to aquatic habitat would result from fencing four springs (Disaster #2, Bend, Cairn, and Chipmunk Trib #1), although these benefits would be localized and applicable to only small acreages. The fencing would exclude livestock from wet areas and allow subsequent rehydration and expansion of wet meadows, directly benefiting amphibians, wandering garter snakes, and aquatic invertebrates. Short-term negative impacts may occur to riparian vegetation through ground disturbance from machinery or relocation of troughs, but the effects would be minimized or eliminated through imposition of adequate buffer distances and construction outside of Riparian Conservation Areas. Fences would be constructed in xeric vegetation beyond the wetted perimeter of the wetland, and would be sufficiently distant from water sources as to allow for expansion of riparian areas. Removal or renovation of the remaining 19 spring projects, where exclosure fencing is not involved, would be of limited benefit to riparian areas because livestock numbers and seasons-of-use would not be compatible with riparian improvement and livestock would congregate in wetlands.

Because no rangeland vegetation treatments or pipeline extensions would occur, there would be no possible negative impacts of these actions on aquatic or riparian areas. Rehabilitation and meadow restoration at Exchange and Coffee Pot springs would bring long-term benefits to aquatic habitat, as described in Alternative I.

Compared to Alternative I, few short- or long-term beneficial effects of grazing management on aquatic and riparian habitat would occur, because no stream corridor fencing would be

constructed. Aquatic habitat along Antelope and Pole creeks would be especially affected by livestock. However, livestock use would be distributed along streams where access is possible and not concentrated at water gaps.

The SEORMP ROD Aquatic Habitat Objective would not be met because riparian areas on 58 stream miles and 24 springs would not meet Rangeland Health standards.

Alternative III —Aquatic Species and Habitats

Aquatic habitats would be expected to improve under the rangeland/grazing use management outlined in Alternative III. Implementation of grazing season-of-use revisions, reduction in actual grazing use, stocking level adjustments, livestock exclusion, and rangeland project developments would maintain aquatic resource values while providing a sustained level of livestock use. Specifically, changing grazing schedules so that season-of-use is earlier in pastures with streams and wetlands would allow regrowth and maintenance of riparian vegetation, preventing excessive erosion and break-down of streambanks.

Riparian vegetation communities would be less vulnerable to negative impacts from livestock during this earlier season-of-use for a number of reasons. Spring grazing normally results in better livestock distribution between riparian and upland areas due to flooding of riparian areas and presence of highly palatable forage on the uplands. Also, cooler seasonal temperatures would allow livestock to forage farther from water sources. Opportunities for regrowth of herbaceous species would be present through the remainder of the growing season, providing adequate plant cover to protect banks and floodplains from the hydraulic energy of high spring flows. Most willow species do not initiate palatable foliage growth until late spring, resulting in less willow browse than at other seasons of the year. However, heavy livestock use on wet, finer textured soils in riparian areas with steep gradients may cause soil compaction, streambank hoof shearing, or increased erosion rates.

Upland fences, which would mainly serve to subdivide pastures and facilitate livestock management, have the potential for short-term negative effects on aquatic habitat through surface disturbance and the possibility of erosional inputs to streams or wetlands. Long-term negative effects could occur if livestock movement patterns parallel to the fence line create pathways denuded of vegetation and prone to ablation. Adverse impacts to aquatic habitats would be minimized or eliminated through imposition of adequate buffer distances and construction outside of Riparian Conservation Areas. Fences would be constructed in xeric vegetation beyond the wetted perimeter of the wetland or stream, and would be sufficiently distant from water sources as to allow for expansion of riparian areas. Fence impacts for this alternative would be less than for Alternative I because 44% fewer miles of fencing would be built.

Exclusion of livestock from designated riparian areas would provide rapid, long-term benefits to aquatic habitats. Long-term improvements to aquatic habitat also would result from removal or renovation of 21 spring projects. For 5 of these springs, livestock exclusion from spring areas would allow accelerated rehydration and expansion of wet meadows. Short-term negative effects of ground disturbance caused by fencing would be minimized or eliminated through imposition of adequate buffer distances and construction outside of Riparian Conservation Areas. Fences would be constructed in xeric vegetation beyond the wetted perimeter of the wetland, and would

be sufficiently distant from water sources as to allow for expansion of riparian areas. Other spring areas not fenced would improve more slowly with reconstruction (e.g., moving troughs away from wetted areas) and change in grazing season-of-use. Short-term negative impacts may occur to riparian vegetation through ground disturbance from machinery or relocation of troughs.

Riparian protective fencing along stream corridors, such as Lower Pole Creek, Upper Pole Creek, Lower Guadalupe, and Tent Creek, would prevent livestock impacts to reaches that are in pastures with late season grazing or where grazing season-of-use alone would not be appropriate for riparian management. Livestock impacts would continue on those stream reaches not in public ownership, and impacts may be intensified there because cattle would be concentrated onto smaller lengths of stream. For example, at Lower Guadalupe, livestock would be fenced out of one mile of public land along Pole Creek but would have access to the stream on adjacent private lands.

Rehabilitation of Exchange Spring and Coffee Pot Spring pipelines would improve aquatic habitat by halting channel downcutting and allowing meadow areas to rehydrate and increase in size. However, 16 miles of new pipeline using water from Rawhide Spring, Steer Canyon Reservoir, and Tent Creek Cow Camp Pit would negatively impact aquatic habitat by reducing the volume of natural flows available for wetlands or streams and thereby decreasing habitat area.

Upland vegetation management designed to improve native plant communities may result in disturbances to aquatic habitats, but impacts are not likely to be direct. Short-term effects from prescribed fire, mechanical vegetation removal, or spraying may include increased erosion and sediment delivery to streams, but these effects would be minimized by leaving appropriately-sized riparian buffers between treated areas and wetlands or streams. However, vegetation treatment may allow weed species to invade native range and threaten riparian habitats with the spread of exotics. Acreage of upland vegetation treatments in this alternative would be approximately half the acreage proposed in Alternative I, and consequently impacts would be less.

Cumulative, short-term impacts may result from surface-disturbing management activities (i.e., upland vegetation management, spring reconstruction, fencing) but most of these impacts could be minimized or eliminated through mitigation, such as adequate buffers. Cumulative long-term negative impacts could result from dewatering by new pipelines, inadvertent invasion of weeds after vegetation treatments, and new livestock trails along miles of riparian corridor fencing. Long-term improvements in aquatic habitat under this alternative would occur at a faster rate than under Alternative II. Compared to Alternative I, beneficial effects of grazing management on aquatic habitat would be slower to occur because fewer miles of riparian corridor fence would be constructed, but long-term improvements may be greater because this alternative reduces grazing use and endorses management of watersheds through adjustments in timing of grazing.

The SEORMP ROD Aquatic Habitat Objective would be met under Alternative III.

Alternative IV—Aquatic Species and Habitats
Aquatic habitats would be expected to improve under the rangeland/grazing use management outlined in this alternative. Analysis for impacts of spring improvement projects, pipeline rehabilitation, and early grazing season-of-use are the same as in Alternative III. Implementation of substantial stocking level reductions and incorporation of rest in riparian pastures would further benefit aquatic resources by accelerating regrowth and proliferation of riparian vegetation while providing some level of livestock use. This grazing system would, in addition, reduce the amount of fencing needed to protect riparian areas, requiring less than half the fencing proposed in Alternative III. Less fencing would moderate the erosion caused by cattle movement along fence lines and subsequent degradation of upland vegetation and sediment inputs to aquatic habitats. In Alternative IV, the Upper Pole Creek and Tent Creek exclosures would not be built, but other areas, such as HH1 and Cairn springs, would be fenced, either permanently or temporarily, to speed up the rate of riparian improvement.

Benefits of exclusion of livestock from designated riparian areas (springs) would be the same as for Alternative III and would provide rapid, long-term benefits to aquatic habitats. Because no new pipelines would be built, negative impacts of pipeline developments to natural hydrologic regimes would not occur. Rehabilitation of Exchange Spring and Coffee Pot Spring pipelines would improve aquatic habitat by halting channel downcutting and allowing meadow areas to rehydrate and increase in size.

Impacts of upland vegetation management on aquatic habitats would be the same as in Alternative III because the type and location of treatment would be the same.

The SEORMP ROD Aquatic Habitat Objective would be met under Alternative IV. Short-term impacts may result from surface-disturbing management activities (i.e., vegetation management, spring reconstruction) but most of these impacts could be minimized or eliminated through mitigation, and would be less than in Alternative III. Long-term improvements in aquatic habitat under this alternative would occur at a faster rate than under Alternative III due to reduced grazing use and implementation of rest in riparian pastures.

Alternative IV-a—Aquatic Species and Habitats
This alternative is similar to Alternative IV because it does not include major range projects, such as permanent cross fencing and pipelines, and it provides early-season grazing on pastures with sensitive riparian areas. However, pastures would not be rested, although impacts to upland vegetation would be mitigated by a 30% utilization limit to grazing.

Aquatic habitats would be expected to improve under the rangeland/grazing use management outlined in this alternative. Analysis for impacts of spring improvement projects, pipeline rehabilitation, exclusion of livestock from designated riparian areas, upland vegetation treatment, and early grazing season-of-use are the same as in Alternative III. Beneficial effects of reduction in fence miles and elimination of new pipelines would be the same as Alternative IV.

Although livestock would be removed from riparian pastures by 7/15, the lack of rest in these pastures would slow the regrowth and proliferation of riparian vegetation compared to Alternative IV.

The SEORMP ROD Aquatic Habitat Objective would be met under Alternative IV-a. Short-term impacts may result from surface-disturbing management activities (i.e., vegetation management, spring reconstruction) but most of these impacts could be minimized or eliminated through mitigation, and would be less than in Alternative III. Long-term improvements in aquatic habitat under this alternative would occur at a faster rate than under Alternative III due to reduced grazing use and implementation of a grazing utilization cap of 30% in uplands. However, lack of rest in these pastures would slow the regrowth and proliferation of riparian vegetation compared to Alternative IV.

Alternative V—Aquatic Species and Habitats

Aquatic habitats would be expected to improve rapidly under the rangeland/grazing use management outlined in this alternative. Because upland management objectives would be based on the attainment of desired habitat conditions for sagebrush-dependent species, several pastures would be unallocated for livestock, and, subsequently, over 100 stream miles would be eliminated from grazing. Positive benefits to riparian areas and stream channels would occur.

Vegetation manipulation projects in Alternative V would emphasize the conversion of rangelands dominated by nonnative annuals to properly functioning perennial communities, and would involve more acreage than either Alternative III or IV. Therefore, short-term negative effects caused by ground disturbance would be greater than in III or IV, and the potential for weed invasion higher. Short-term impacts would be minimized by leaving appropriately-sized riparian buffers between treated areas and wetlands or streams. Conversely, long-term improvements to aquatic habitat would be greater than in Alternative III or IV because establishment of perennial plant communities may increase soil moisture retention in upper watershed areas and improve livestock distribution.

Abandonment of 28 spring development sites in unallocated pastures and removal of associated troughs, springboxes, and pipelines would greatly improve aquatic habitat by halting channel downcutting and increasing available discharge. These changes would allow meadow areas to rehydrate and increase in size, and would increase stream flows and extend the duration and extent of instream habitat for fish and other aquatic species. Negative impacts from ground disturbance would occur but would be short-term.

In pastures unallocated to grazing, rehabilitation of reservoir pits in playas (e.g., Lookout Lake) by filling and sealing with bentonite would improve the natural functionality of these habitats by increasing the area of inundation and water storage capacity. Species that utilize temporary ponds, such as tadpole shrimp and spadefoot toads, would especially benefit.

Impacts of grazing management on habitats where special status aquatic species do not occur would be similar to Alternative IV, with two exceptions. Both short- and long-term beneficial effects to fish habitat would be greater than in Alternative IV. In stream segments that are part of designated or suitable National Wild and Scenic River corridors and are presently unfenced, no grazing would be allocated and again, greater short- and long-term beneficial effects would occur than in Alternative IV. Segments of West Little Owyhee River that provide habitat "strongholds" for redband trout have already been excluded from livestock grazing due to court

order in 2000.

The SEORMP ROD Aquatic Habitat Objective would be met and rapidly achieved under Alternative V. Short-term impacts may result from surface-disturbing management activities (i.e., vegetation management, spring restoration) but most of these impacts could be minimized or eliminated through mitigation, and would be less than in Alternative III. However, potential for weed invasion prompted by vegetation treatments would be greater than the other alternatives except for VI. The emphasis on natural processes and diverse upland plant communities would progress toward overall watershed health.

The potential for positive, long-term cumulative effects are higher than Alternative III because of greater emphasis on native species and natural processes, and higher than Alternative IV because of less grazing use, removal of livestock grazing from a larger proportion of riparian habitats, and the restoration of natural hydrologic regimes through spring rehabilitation.

Alternative VI—Aquatic Species and Habitats

This alternative proposed by Committee for Idaho's High Desert emphasizes restoration and rehabilitation of riparian areas that provide aquatic habitat. All pastures with riparian areas that are Non-Functioning or Functioning-at-Risk would be rested for a minimum of 5 years, and no hot season grazing use on riparian areas would occur. A 6" stubble height and a 5% bank trampling standard would serve as triggers for removal of livestock from pastures with springs, seeps, streams, playas, and other wetlands. Existing rangeland improvement projects which contribute to de-watering of springs and seeps would be removed. Crested wheatgrass seedings would be rehabilitated to native rangelands.

Aquatic habitats would be expected to improve under the grazing use management outlined in this alternative. Implementation of cold-season grazing only in riparian pastures in addition to extensive rest in pastures with impaired riparian areas would rapidly improve aquatic resource values.

Riparian herbaceous and woody vegetation and, subsequently, aquatic habitats, would be least vulnerable to negative impacts from livestock use during winter season for a number of reasons. Riparian communities tend not to be used by livestock during moderate weather conditions where cold air settles into low-lying areas throughout the majority of the winter. Rapid recovery rates would occur in riparian areas when cold drainage patterns and/or the availability of alternate livestock water keep livestock away from streams. Throughout the winter, frozen soil and streambanks would be more resilient to mechanical damage, thereby minimizing bank shear and resulting in little bank damage. However, negative impacts to riparian vegetation, especially browse species, would occur if livestock concentrate in riparian communities to avoid severe weather conditions or if winter temperatures are moderate and cold air does not settle into low areas. Under these weather conditions, heavy grazing could eliminate the vegetation mat needed to protect streambanks from winter and spring floods or ice events.

Benefits to aquatic habitats through the abandonment of 28 spring development sites and removal of associated troughs, springboxes, and pipelines would be the same as described in Alternative V. In addition, the abandonment and rehabilitation of 45 miles of pipeline would greatly increase discharge and water delivery to streams and springs. These changes would

allow meadow areas to rehydrate and increase in size, and would increase stream flows and extend the duration and extent of instream habitat for fish and other aquatic species. Negative impacts from ground disturbance would occur but would be short-term.

Vegetation manipulation projects would emphasize the conversion of rangelands dominated by nonnative annuals to properly functioning perennial communities. Vegetation management designed to establish or improve native plant communities may result in disturbances to aquatic habitats, but impacts are not likely to be direct. Short-term effects from prescribed fire, mechanical vegetation removal, or spraying may include increased erosion and sediment delivery to streams, but these effects would be minimized by leaving appropriately-sized riparian buffers between treated areas and wetlands or streams. Long-term improvements to aquatic habitat would occur if the establishment of perennial plant communities and improved livestock distribution increase soil moisture retention in upper watershed areas.

The SEORMP ROD Aquatic Habitat Objective would be met and rapidly achieved under Alternative VI. Short-term impacts may result from surface-disturbing management activities (i.e., vegetation management, spring and pipeline abandonment) but most of these impacts could be minimized or eliminated through mitigation, and would be less than in Alternative III. However, potential for weed invasion as a by-product of land treatments would be greater than the other alternatives except for V. The emphasis on natural processes and diverse upland plant communities would progress toward overall watershed health.

The potential for positive, long-term cumulative effects are higher than Alternative III because of greater emphasis on native species and natural processes, and higher than Alternative IV because Alternative VI results in less grazing use. Because of pipeline abandonment, restoration of natural hydrologic regimes and concomitant expansion of riparian, wetland, and instream habitats would be greater than under any other alternative.

WILD AND SCENIC RIVERS (WSR's)

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5(2003). The following mid-scale objective is excerpted from SEORMP ROD (2002):

SEORMP ROD Objective: *Protect and enhance outstandingly remarkable values (ORV's) of designated national wild and scenic rivers (NWSR's), and provide interim protection of ORV's of rivers found suitable for inclusion in the national wild and scenic river system (NWSRS) until Congress acts.*

Alternative I—Wild and Scenic Rivers

Total projects proposed in this alternative include 117 miles of fence, 32 miles of pipeline and 24 troughs. However, within the boundaries of the federally designated Wild Rivers, there would be less than ¼ mile of fence, and no pipelines or troughs. Project design and location must protect and enhance the Outstandingly Remarkable Values for which the rivers have been designated. For West Little Owyhee River, these ORV's are recreation, scenic values, and wildlife. The Main Owyhee River has, in addition, cultural and geologic ORV's.

Geologic values would be essentially unaffected by the proposed projects. Cultural values may be slightly impacted, as described in Cultural Resources for this alternative.

The presence of new projects would initially create a short-term negative impact to scenic values, by adding new, artificial structures which visually contrast with natural background scenery. The contrast would be readily evident close to the projects, but would quickly fade to obscurity when viewed from further away. Extreme canyon topography and vegetative screening would also quickly obscure views of gap fencing with distance. Recreation values would also suffer minor negative impacts from the addition of new obstacles to overland travel and intrusions to natural background scenery, where such intrusions detract from the perception of primitive and unconfined recreation. For the affected WSR's, most recreation is expected to occur within the canyon corridor, where new projects would not be present. Upland travelers would be more affected by these new projects. Deer and antelope movement may be slightly impeded by some fences, but to a very minor degree. Other wildlife species would be mostly unaffected.

On the other hand, longer term impacts from the proposed projects would include a positive effect on both scenic and recreation ORV's. The protection of riparian corridors and natural spring sources would enhance natural vegetation scenery (both health and composition) and create better distribution of livestock, creating a more natural-appearing setting. Wildlife values would also be enhanced. These scenic and wildlife improvements would benefit recreation by providing natural vegetation setting as well as associated wildlife viewing and nature study opportunities. These benefits would likely outweigh any negative impacts to the WSR.

Projects proposed within WSR boundaries under this alternative would provide increased protection and enhancement of ORV's, and would, therefore, be allowed under WSR management policy.

Alternative II —Wild and Scenic Rivers

Proposed projects under this alternative lie outside WSR boundaries. Those few projects close enough to WSR boundaries to be viewed from inside the WSR would have a minimal impact on scenic and, perhaps, recreation ORV's. However, positive long-term benefits from those projects could be expected to create a net enhancement for scenic and recreation ORV's, as well as for the wildlife ORV.

Proposed projects under this alternative would provide increased protection and enhancement of ORV's, and would, therefore, be allowed under WSR management policy.

Alternative III —Wild and Scenic Rivers

Proposed projects within WSR boundaries would include less than ¼ mile of new fencing, consisting primarily of small gap fence segments along the West Little Owyhee River canyon rim. Proposed fence exclosures around springs and riparian areas would be built outside of the WSR, and would have no noticeable impact on ORV's.

The gap fences within WSR boundaries would be constructed and placed so as to minimize visual impacts. Placement in cattle-accessible routes may create minor obstacles for

recreationists and big game movement. However, the resultant exclusion of cattle from sensitive riparian areas should predominantly enhance wildlife, scenic, and recreation ORVs.

Projects proposed within WSR boundaries under this alternative would provide increased protection and enhancement of ORV's, and would, therefore, be allowed under WSR management policy.

Alternative IV—Wild and Scenic Rivers
Proposed gap fences and fence exclosures around springs would be built outside of the WSR and would have no noticeable impact on ORV's.

Proposed projects under this alternative would be allowed under WSR management policy.

Alternative IV-a—Wild and Scenic Rivers
Proposed gap fences and fence exclosures around springs would be built outside of the WSR and would have no noticeable impact on ORV's.

Proposed projects under this alternative would be allowed under WSR management policy.

Alternative V—Wild and Scenic Rivers
No proposed projects would occur within WSR's. Where obsolete fences within WSR boundaries would be removed, scenic, recreation and wildlife ORV's would clearly be enhanced. The removal process would create a very brief, negligible impact to these ORV's while workers dismantle, gather, and haul out old fence materials. No vehicle use would be permitted within the WSR boundary during this process.

Proposed projects under this alternative would provide for net enhancement of ORV's, and would, therefore, be allowed under WSR management policy.

Alternative VI —Wild and Scenic Rivers
No proposed projects would occur within WSR's. Where obsolete fences within WSR boundaries would be removed, scenic, recreation and wildlife ORV's would clearly be enhanced. The removal process would create a very brief, negligible impact to these ORV's while workers dismantle, gather, and haul out old fence materials. No vehicle use would be permitted within the WSR boundary during this process.

Proposed projects under this alternative would provide for net enhancement of ORV's, and would, therefore, be allowed under WSR management policy.

WILDERNESS STUDY AREAS (WSA's)
Interim Management Policy for Lands under Wilderness Review (IMP) Objective: *Manage WSA lands in a manner so as not to impair the suitability of such areas for preservation as wilderness.*

Alternative I—WSA's

Of the new range projects proposed for this alternative, 29.5 miles of new fencing, 2.25 miles of pipeline, and three troughs would be located within WSA's. Affected WSA's include Upper West Little Owyhee, Lookout Butte, and Owyhee River Canyon. Among these WSA's, wilderness characteristics (naturalness, solitude, primitive and unconfined recreation, and special features) are vary somewhat. All three WSA's have outstanding opportunities for solitude, although there may be minor impacts from sights and sounds associated with livestock management operations and occasional recreation-related traffic. Military overflights may also occasionally intrude. The canyon environs of Upper West Little Owyhee and Owyhee River Canyon WSA's add a tremendous sense of seclusion to those areas.

Regarding naturalness, Upper West Little Owyhee and Owyhee River Canyon are both at least 92% pristine (i.e., uninfluenced by unnatural features), while Lookout Butte is 86% pristine, as noted in BLM's Wilderness Study Report (USDI-BLM 1991) Human imprints in the three WSA's include fences, reservoirs, developed springs, pipelines, troughs, windmills, vehicle ways, and a primitive airstrip. Wildlife habitat for riparian species is excellent in the two river WSA's, and the flatter, relatively unbroken terrain of Lookout Butte favors upland species.

The naturalness and solitude of these WSA's contribute to outstanding opportunities for primitive and unconfined recreation in the two river WSA's, but less so for Lookout Butte, which lacks scenic quality and has minimally diverse, challenging terrain. Lookout Butte has patchy sage-grouse habitat, but no other truly special features. All three WSA's offer opportunities to hike, backpack, rock hound, view and photograph nature and wildlife, and hunt big and small game animals. Additionally, the two river WSA's offer fishing, spectacular canyon scenery, higher wildlife and plant diversity (including special status plants), important prehistoric and historic cultural sites, and, in Owyhee River Canyon, bighorn sheep and whitewater floating.

Projects proposed in Alternative I would require at least minimal, localized surface disturbance of vegetation and soil which, on initial consideration, may be expected to degrade wilderness values. Under BLM's Interim Management Policy for Lands under Wilderness Review (IMP), if projects clearly serve to protect or enhance overall wilderness values, they may be conditionally approved for placement in WSA's. Where short gap fences and riparian or spring exclosures substantially improve species health and diversity by excluding livestock impacts, it is possible for naturalness and special features of WSA's to achieve a net enhancement. This would depend on the individual as well as cumulative impacts of these structures. These enhancements may improve opportunities for primitive and unconfined recreation in the WSA's as a whole, and could outweigh the localized negative impacts to upland naturalness and primitive and unconfined recreation which would especially occur in the immediate vicinity of proposed artificial structures

Similarly, strategically placed pipelines and troughs would create a more ecologically beneficial distribution of livestock that could enhance overall riparian naturalness, special features, and primitive and unconfined recreation by drawing livestock and their associated impacts away from sensitive natural water sources. However, these positive effects to riparian areas would be offset by negative impacts to naturalness and primitive and unconfined recreation in upland areas

immediately adjacent to the new pipelines and troughs. Under IMP, these projects could be allowed if the net effect is to protect or enhance those wilderness values.

Road repair or relocation near New Road Spring and Three Week Spring in Upper West Little Owyhee WSA would enhance naturalness once the area is restored to pre-disturbance ground conditions. The mounding of road crossing materials would initially, on close inspection, appear unnatural. However, the long-term effect of decreased erosion and restoration of natural drainage patterns would create a more natural condition than is currently present.

Although individually proposed projects would each contribute toward protection and enhancement of wilderness values**,** the total cumulative intensity of project building within WSA's under this alternative would likely detract from the naturalness and primitive setting to an unacceptable extent. Although projects could be removed and sites rehabilitated if any WSA was designated wilderness, the interim effect of so many human features spread over so much previously undisturbed land would not adhere to non-impairment criteria under IMP.

Alternative II —WSA's

No projects would be built in Lookout Butte or Owyhee River Canyon WSA's. Four springs would be fenced in Upper West Little Owyhee WSA. There would also be road repair or relocation, and relocation of several troughs off riparian areas. These actions would all contribute toward enhancement of wilderness values – particularly naturalness and special features. New fencing would create new, localized visual impacts that would be offset by larger-scale improvement in vegetation structure and composition in riparian areas and spring sources, providing a net enhancement of wilderness values.

Projects proposed under this alternative would meet the non-impairment criteria under IMP, because the projects would be temporary in nature and would clearly enhance wilderness values, even after considering their cumulative visual impacts.

Alternative III—-WSA's

Proposed projects would be built in all three WSA's. Approximately 11.25 miles of new fencing would be installed. Two miles of this total would be temporary fence at Exchange and Coffeepot Springs, located within the Upper West Little Owyhee WSA. Gap fences (totaling about 1.5 miles) would be mainly in Owyhee River Canyon and Upper West Little Owyhee WSA's, while spring and riparian exclosures (totaling about 4.75 miles) would be located in the Upper West Little Owyhee WSA. Also, three miles of exclosure fence and 0.25 miles of new pipeline with a single trough would be built in the Lookout Butte WSA.

As in Alternative I, scenery, naturalness, and primitive and unconfined recreation in a few small, localized areas within WSA's would be slightly impacted by the presence of new artificial structures. However, the number and intensity of projects proposed under this alternative are substantially less than those proposed for Alternative I. Impacts would be mitigated to some extent through careful selection of construction materials and methods, and judicious placement intended to maximize vegetative and topographic screening. Under IMP, if any project clearly serves to protect or enhance wilderness values, it may be conditionally approved for placement in WSA's. Where short gap fences and riparian or spring enclosures substantially improve

species health and diversity by excluding livestock impacts, naturalness and special features of WSA's could experience a net enhancement. These enhancements may improve opportunities for primitive and unconfined recreation in the WSA's as a whole, and could outweigh the localized negative impacts to upland naturalness and primitive and unconfined recreation which would especially occur in the immediate vicinity of the proposed artificial structures.

Proposed road relocation or repair (New Road Spring and Three Weeks Spring), removal of troughs from riparian areas, and abandonment and rehabilitation of Toppin Butte Reservoir would all be expected to enhance wilderness values by improving naturalness and biological and scenic special features.

Proposed projects under this alternative are substantially fewer in number with fewer potential negative impacts than those of Alternative I. Even after considering cumulative impacts, the net benefits of these projects would be expected to outweigh the minor, localized negative impacts to wilderness values of naturalness and primitive and unconfined recreation. Therefore, this alternative would be expected to meet the non-impairment criteria under IMP.

Alternative IV —WSA's

Proposed projects would be located in both Owyhee River Canyon and Upper West Little Owyhee WSA's. Gap fences (less than 0.25 miles) would be mainly in Owyhee River Canyon WSA, as would the abandonment and rehabilitation of Toppin Butte Reservoir. Spring exclosures (totaling 2 miles of temporary fence) would be located in Upper West Little Owyhee WSA, along with the road repair and relocation near New Road Spring, and relocation of troughs off riparian areas.

As in Alternative I, scenery, naturalness, and primitive and unconfined recreation would be slightly impacted in small, localized areas by the presence of new artificial structures within WSA's. Impacts could be mitigated to some extent through careful selection of construction materials and methods, and judicious placement intended to maximize vegetative and topographic screening. Under IMP, if any of the projects clearly serve to protect or enhance wilderness values, they may be conditionally approved for placement in WSA's. Where short gap fences and riparian or spring enclosures substantially improve health and species diversity by excluding livestock impacts, naturalness and special features of WSA's would be expected to experience a net enhancement. These enhancements would also translate to enhanced primitive and unconfined recreation in the WSA's as a whole, even though primitive values are degraded in the immediate vicinity of the projects. These overall benefits for projects proposed under Alternative IV would outweigh the localized negative impact to naturalness and the potentially slight negative impact to primitive and unconfined recreation.

The proposed road relocation or repair, removal of troughs from riparian areas, and abandonment and rehabilitation of Toppin Butte Reservoir would all be expected to enhance wilderness values by improving naturalness and biological and scenic special features.

Projects proposed under this alternative, while creating minor, localized negative visual impacts, would be temporary in nature and would have the net effect of enhancing wilderness values

within the affected WSA's. This alternative would, therefore, meet the non-impairment criteria under IMP.

Alternative IV-a —WSA's
Impacts under this alternative are similar to those for Alternative IV. However, impacts to naturalness would be somewhat greater than under Alternative IV due to the lack of year long grazing rest periods. This change in grazing pattern would create a slightly greater impact to solitude and opportunities for primitive and unconfined recreation in areas being grazed.

As in Alternative IV, proposed projects in this alternative would meet the non-impairment criteria under IMP. The slightly greater impacts to wilderness values would be derived from the lack of grazing rest periods; the projects themselves would still enhance naturalness and scenic and biological special features.

Alternative V—WSA's
No range improvement projects would be built in WSA's. Removal of obsolete fences and spring developments would enhance naturalness, primitive and unconfined recreation, solitude, and scenic and biological special features. Rehabilitation of abandoned reservoirs would have a similar effect. Proposed road relocation and repair would enhance naturalness over the long term, thereby outweighing short-term impacts from heavy equipment.

Proposed projects under this alternative would clearly enhance wilderness values and meet the non-impairment criteria of IMP.

Alternative VI—WSA's
No range improvement projects would be built in WSA's. Removal of obsolete fences and spring developments would enhance naturalness, primitive and unconfined recreation, solitude, and scenic and biological special features. Rehabilitation of abandoned reservoirs would have a similar effect. Proposed road relocation and repair would enhance naturalness over the long term, thereby outweighing short-term impacts from heavy equipment.

Proposed projects under this alternative would clearly enhance wilderness values and meet the non-impairment criteria of IMP.

CULTURAL RESOURCES

Fine-scale objectives that conform to the ROD and that are specific to LCGMA are described in LCGMA Standards of Rangeland Health Evaluation, Chapter 5(2003). The following mid-scale objectives are excerpted from SEORMP ROD (2002):

Cultural Resources SEORMP ROD Objective 1: *Protect and conserve cultural and paleontological resources.*

Cultural Resources SEORMP ROD Objective 2: *Consult and coordinate with American Indian groups to ensure their interests are considered and their traditional religious rites, landforms, and resources are taken into account.*

Alternative I—Cultural Resources

Vegetation treatment proposed on four upland sites, Starvation Brush Control, Steer Canyon Seeding, Tristate, and North Tent Creek pastures, could have a limited adverse effect on cultural resources. Soil surface disturbances inherent in treatments can destroy the integrity of archaeological sites by moving artifacts from their original locations. Vegetation treatment would require Class III cultural resource inventories of 100% of the treated area, and identified cultural resources would be avoided.

Utilizing prescribed fire to conduct vegetation treatment presents potential for long-term soil surface disturbance. The loss of vegetation and litter from fire would subject soils to enhanced wind and water erosion, which will affect cultural resources. After fire, natural factors, such as wind erosion, would be more likely to move cultural resource artifacts located on the surface from original positions, potentially compromising the integrity of archaeological sites. The greatest impacts to cultural resources are expected to occur in the first year, when vegetative cover is minimal and erosion is most prevalent, but most soil surface characteristics should return to pre-fire conditions within three growing seasons. The reestablishment of stable soil surfaces would prevent further disturbance to cultural resources, but the effects of the first three years would be permanent and irreversible. To protect soil characteristics and thus the integrity of cultural resource sites during prescribed fire applications, seasonal and moisture condition restrictions would be incorporated into burn plans.

Revegetation failure in treatment sites after fire can result in further adverse effects to the integrity of cultural resource sites. Irreversible dominance by annual species (such as cheatgrass) prevents the return of well-developed biological soil crust. If annual species increase, fire may reoccur at a quicker rate of return and burn some of the same sites. This rate of fire return increases the potential for soil erosion, which can destroy archaeological site integrity. The likelihood of invasion of weedy annual species is low, however, because they presently only occur in LCGMA in trace amounts.

Brush beating would also compromise locational integrity of artifacts, mainly during initial implementation of the action, but because brush beating leaves large amounts of organic litter on the soil surface, influences of wind and water erosion would be reduced over the long term.

Chemical spray would defoliate sagebrush and other large shrubs that normally decrease raindrop impact to soil surfaces. However, rainfall is low in the GMA and raindrop impact would cause only minor erosional effects to soils before herbaceous cover increased. The potential exists that erosion would compromise portions of archaeological sites until herbaceous species are established. Although shrubs would be defoliated, the standing woody material would aid in reducing snow scouring and potential wind erosion (SEORMP FEIS, Appendix S, page 391). Overall, effects to cultural resources would be low to nonexistent with this treatment.

Drill seeding can also adversely impact cultural resources, breaking artifacts or moving them on both horizontal and vertical planes. The impact of rangeland drilling equipment would loosen and displace the top five to eight centimeters of soil within the furrows, which are usually 27 centimeters apart. This soil disturbance is temporary, as furrows act as moisture traps and new plants would begin to stabilize soil within the first year following drilling. The disturbances to

cultural resources would be considered minor to moderate. Artifacts on the ground surface are displaced by natural forces in much the same way, though not on the scale that drilling projects cover.

Temporary fence would be placed around the vegetation treatment area in Starvation Brush Control Pasture for at least two growing seasons. Short-term compaction effects to soils and hence to archaeological artifacts located on the ground surface can occur around temporary fencelines from livestock trailing along the perimeter. Disturbances to cultural resources can consist of displacement of artifacts within the narrow trailing corridor and in areas of cattle congregation. Temporary fence construction would be designed to avoid cultural resources.

In general, impacts from land treatments to cultural resources would be minimal to moderate. Archaeological artifacts are known to move both horizontally and vertically (across the ground surface, and up and down through the soil profile) to some degree from natural forces such as freeze/thaw, sheet wash, wind action, and rodent activity. Any effects to cultural resources, however, are irreversible.

Implementation of this alternative would result in the most extensive development of rangeland projects for the enhancement of livestock grazing. The cumulative impacts of long-term dispersed grazing to cultural resources would increase with increased available AUM's. Displacement of artifacts along livestock trails and congregation areas as well as by individual animals grazing through sites would be likely. Deflation and erosion of soil surfaces due to a general reduction in vegetative cover would also displace artifacts from their original positions, compromising archaeological site integrity. These impacts would be long-term and irreversible, although they might not be tangible or measurable for many years.

Cultural resources frequently occur near water sources. This alternative requires the greatest number of acres fenced along RCA's to meet management objectives for riparian/wetland areas. Spring project renovation would consist of reconstructing nineteen and abandoning five spring developments. Spring project restorations and construction of off-site troughs would benefit cultural resources located at or near springs and wet meadows. Cultural resources located near streams would benefit from corridor fences and off-stream water sources, which remove livestock from drainage channels, allowing reestablishment of vegetative cover. Livestock trampling breaks artifacts and moves them from their original locations. The stabilization of soils by vegetation would protect the surface integrity of cultural resource properties, keeping artifacts in their original positions.

Although riparian areas would benefit from off-site water sources, concentrated livestock use would increase in areas immediately around new wells, pipelines and spring troughs. Placement of these new water sources would avoid all cultural resources and impacts would be minor.

Riparian fence construction would not affect cultural resources. If substantial cultural resources occur within springs, wet meadow, or runoff areas frequented by livestock, those areas would be fenced to avoid future cumulative damage that would otherwise accrue from livestock trampling.

Rehabilitation of existing Exchange Spring and Coffee Pot Spring pipelines would arrest

accelerated erosion in the wet meadows. Cultural resources would not be adversely affected by the pipeline projects, as the project area is previously disturbed. If construction occurs outside previously disturbed areas, cultural resources would be avoided during project construction.

Abandonment and site rehabilitation for Toppin Butte and Freeway reservoirs would incur short-term surface disturbances, but cultural resources would not be adversely affected because the area has been previously disturbed. Site restoration would be limited to those areas of previous disturbance.

The proposed livestock water pipeline, water storage tank, and water supply at Tent Creek would not affect cultural resources, as they would be avoided during project placement and construction. The proposed stream corridor fence on the segment of Tent Creek severely utilized by livestock would benefit any cultural resources present at this location.

Road access for construction and maintenance along 32 miles of new pipelines, new wells, and troughs in this alternative would be unlikely to result in additional impacts to cultural resources. Cultural resources located along those routes will have been previously disturbed by vehicle traffic. Construction and maintenance would avoid cultural resources, or keep within boundaries of previously disturbed areas.

This alternative would meet the SEORMP ROD Cultural Resource Objective 1.

Alternative II—Cultural Resources

No land treatment would occur in this alternative.

With lower utilization and fewer numbers of livestock than in Alternative I, cumulative and dispersed adverse effects to cultural resources would be lower in this alternative. In addition, vegetation treatment projects and pipeline extensions would not occur in the uplands, so negative impacts to cultural resources would not occur. Potential benefits to cultural resources from new spring exclusion fencing would be similar to those described in Alternative I, but would be limited to four spring sites.

Rangeland projects would consist of reconstructing 17 and abandoning 6 spring developments. Surface disturbance from relocation of trough and associated pipeline rerouting to adjacent upland sites would be as described in Alternative I. Cultural resource properties that may be located near the water sources would benefit by moving cattle traffic away from those areas. Reconstruction and relocation of troughs, and associated pipeline re-routings, would be designed to avoid cultural resources.

Cumulative and long-term impacts to streams and riparian/wetland areas would continue, and cultural resource sites in those areas would not be stabilized or protected. Cumulative and dispersed adverse effects to cultural resources from livestock grazing would be lower than in Alternative I, as grazing use would be lower.

Adverse impacts from spring project renovation would not occur, as projects would be limited to previously disturbed areas, would avoid cultural resources, or would require mitigation through

excavation for recovery of available archaeological information. Cultural resources might benefit from the exclusion fencing of four spring sites. If cultural resources are found to be located in those areas, the fences would include the resources within excluded areas.

This alternative meets SEORMP ROD Cultural Resource Objective 1.

Alternative III—Cultural Resources

Impacts to cultural resources from vegetation treatment projects would be the similar to those in Alternative I, except effects would only involve 20% of the acreage that would be treated in Alternative I. Soil surface disturbances inherent in treatments can destroy the integrity of archaeological sites by moving artifacts from their original locations. Vegetation treatment would require Class III cultural resource inventories of 100% of the treated area. Identified cultural resources would be avoided.

The nature of livestock impacts would be the same as described in Alternative I, but less grazing use in this alternative would reduce adverse impacts as compared to Alternatives I.

Adverse impacts from fencing (approximately 58 miles) would not occur because cultural resources would be avoided or included within exclosures.

The short- and long-term impacts and benefits from proposed rangeland project development would be similar to those described in Alternative I, but would occur to a lesser extent because fewer projects are proposed. Proposed pipelines (12.25 miles) would avoid cultural resources during placement and construction. Spring trough developments and reconstructions would benefit any cultural resources located near springs or within existing impact areas. New trough locations and pipeline re-routes would avoid cultural resources.

This alternative meets the SEORMP ROD Cultural Resource Objective 1.

Alternative IV—Cultural Resources

Impacts from vegetation treatment projects would be the same as Alternative III and less than Alternative I. Vegetation treatment would require Class III cultural resource inventories of 100% of the treated area. Identified cultural resources would be avoided.

Reduction of actual grazing use in this alternative would benefit cultural resources in the long term, reducing cumulative dispersed impacts to archaeological sites. The nature of the impacts would be the same as described in Alternative I, but impacts from grazing use in this alternative would be less than Alternatives I—III.

As in alternatives I, II, and III, adverse impacts from fencing would not occur because cultural resources would be avoided or included within exclosures.

The short- and long-term impacts and benefits from proposed rangeland project development would be similar to those described in Alternative I, but less than either Alternative I or III because of fewer projects proposed. There would be no pipeline construction. Spring trough developments and reconstructions would benefit any cultural resources located near springs or

within current impact areas. New trough locations and pipeline re-routes would avoid cultural resources.

This alternative meets the SEORMP ROD Cultural Resource Objective 1.

Alternative IV-a—Cultural Resources
Impacts from vegetation manipulation projects would be the same as Alternative III and IV. Vegetation treatment would require Class III cultural resource inventories of 100% of the treated area. Identified cultural resources would be avoided.

Impacts from AUM's in this alternative would be greater than in Alternative IV because no rest periods would occur. The nature of the impacts would be the same as described in Alternative I.

Adverse impacts from fencing would not occur because cultural resources would be avoided or included within exclosures.

The short- and long-term impacts and benefits from proposed rangeland project development would be the same as Alternative IV. Construction and maintenance including fences, pipelines, and spring reconstruction projects, would avoid cultural resources, keep within boundaries of previously disturbed areas, or require mitigation through excavation for recovery of available archaeological information. Cultural resources would not be adversely affected.

This alternative meets the SEORMP ROD Cultural Resource Objective 1.

Alternative V —Cultural Resources
Impacts to cultural resources from vegetation treatment projects would be similar to those described in Alternative I, but would occur over an area that would be 25% larger than would be treated in Alternative I. Total impacts from vegetation treatment projects would be greater than in Alternatives I— IV-a. Soil surface disturbances inherent in treatments can destroy the integrity of archaeological sites by moving artifacts from their original locations. Vegetation treatment would require Class III cultural resource inventories of 100% of the treated area. Identified cultural resources would be avoided.

Impacts from actual grazing use in this alternative would be less than Alternatives I—IV-a. The nature of the impacts would be the same as described in Alternative I. Less grazing use in this alternative would benefit cultural resources in the long term, reducing cumulative dispersed impacts to archaeological sites.

Negative impacts from fencing would not occur because 98 miles would be removed. Fence removal would not be likely to impact cultural resources. Effects of the action would be a reduction in trailing which would benefit cultural resource sites located along fences.

Because no new rangeland projects would be built, impacts to cultural resources would not occur. Fence removal and abandonment of 24 developed spring sites, and the removal of associated troughs, headboxes, pipeline systems, and maintenance roads, would remove long-term impact agents (e.g. livestock trampling, vehicular traffic, surface disturbance within cultural

sites) and benefit cultural resources. Abandonment of projects would take place in previously disturbed areas and would avoid negative impacts on cultural resources.

This alternative meets the SEORMP ROD Cultural Resource Objective 1.

Alterative VI —Cultural Resources
Vegetation treatment projects would have the same adverse effects on cultural resources as described in Alternative I, but would occur at the same level as in Alternative V.

Impacts from livestock grazing would be the least of all alternatives because grazing use would be the lowest and would benefit cultural resources in the long term, reducing cumulative dispersed impacts to archaeological sites.. Limited water sources in Alternative VI would decrease livestock distribution and concentrate utilization around reservoirs and natural water sources. However, implementation of grazing utilization and bank trampling standards would limit impacts to cultural resource properties near riparian areas which would sustain little or no adverse impacts from livestock

Abandonment of projects would benefit cultural resources, and effects would be similar to those described in Alternative V. Removal of fences would have similar impacts as Alternative V, but benefits would be less because fewer miles of fence would be removed.

Because no new rangeland projects would be built, impacts to cultural resources would not occur. Effects of spring site abandonment would be the same as Alternative V, but benefits from pipeline removal would be greater because more miles would be affected. Abandonment of projects would take place in previously disturbed areas and would avoid negative impacts on cultural resources.

This alternative would meet the SEORMP ROD Cultural Resource Objective 1.

5. CUMULATIVE EFFECTS OF THE ALTERNATIVES

Refer to Table 1(Summary of Alternatives) for a detailed accounting of proposed changes for each alternative, including numbers of range improvement projects and available livestock AUM's.

Alternative I
The cumulative effects of grazing season adjustments, additional livestock watering sources, and fences would result in substantially more (but generally evenly distributed) grazing influences occurring throughout LCGMA rangelands compared to current management. Three proposed land treatments would substantially increase the amount of grass forage production available for grazing use. Upland vegetation health would be protected as a result of season-of-use and utilization limits, and grazing use would be allowed at or near the limits of sustainability. Stream corridor fencing would be employed as the primary method of controlling livestock grazing impacts in riparian/wetland areas.

A high level of livestock management flexibility and a sustained level of forage above that currently available would be provided to permittees. Customary permittee grazing practices would be generally maintained. However, the financial resources necessary to implement the alternative and the added maintenance burden placed on permittees would make this option one which is not viable for either BLM or livestock permittees.

The cumulative effects of management actions would result in the attainment of SEORMP objectives for ACEC's, special status plants, riparian/wetland areas, aquatic species and habitat, Wild and Scenic Rivers, Wilderness Study Areas, and cultural resources because of various mitigating and protective measures. However, compared to current management, terrestrial wildlife objectives would not be met because the combined influences of proposed stocking levels and intensity of use, new pasture/exclosure fencing, new pipelines, pipeline extensions, wells, troughs, new roads, and land treatments, would result in substantially more localized adverse impacts on wildlife populations and habitats.

Alternative II

Rangeland vegetation conditions and grazing use would continue to occur as described in the Evaluation. Healthy upland range conditions would be maintained in most of LCGMA. Ongoing flexibility associated with existing management infrastructure would remain unchanged. Customary permittee grazing practices would be fully maintained and the financial obligations for BLM and permittees would include normal maintenance or reconstruction of existing projects.

The cumulative effects of existing management practices and infrastructure would result in the attainment of SEORMP objectives for ACEC's, special status plants, Wild and Scenic Rivers, Wilderness Study Areas, and cultural resources because of various mitigating and protective measures. However, current management would fail to attain SEORMP objectives for riparian/wetland areas, terrestrial wildlife, and aquatic species and habitat due to adverse impacts on riparian and wetland functions.

Alternative III

The cumulative effects of grazing season adjustments and grazing systems (deferment and rest), additional livestock watering sources, and fences would result in generally evenly distributed grazing influences within LCGMA uplands compared to current management. However, additional livestock water sources would cause some increases in localized disturbance around troughs. The single land treatment proposed would temporarily increase some grass forage production available for grazing use and help to restore plant cover diversity. Upland vegetation health would be protected as a result of season-of-use and utilization limits. Grazing use would be allowed at seasons and intensities consistent with maintenance and protection of upland vegetation. Limitations to grazing use caused by riparian concerns would be accomplished by some stream corridor or exclusion fencing, but riparian concerns would primarily be addressed by new pasture subdivisions, adjustments in seasons of grazing use, and grazing systems which allow for plant regrowth, deferment, and periodic rest.

A reasonable level of livestock management flexibility and sustained forage availability would be provided to permittees. Customary permittee grazing practices would be changed in order to

protect riparian/wetland and upland vegetation health. Permittee project maintenance responsibilities would increase. Financial commitments necessary to implement the alternative would be secured from BLM, permittees, and other organizations such as the Oregon Watershed Enhancement Board (OWEB). The Owyhee Watershed Council (OWC) has passed a resolution of financial support, and would participate with BLM and permittees in a combined grant request for OWEB funding to defray the cost of proposed projects.

The cumulative effects of proposed management actions would result in the attainment of SEORMP objectives for ACEC's, special status plants, soil, water, and riparian/wetland areas, wildlife and wildlife habitats, special status animals, aquatic species and habitat, Wild and Scenic Rivers, Wilderness Study Areas, and cultural resources because of various mitigating and protective measures.

Alternative IV

This alternative would differ greatly from the current situation and result in substantial reductions in forage availability for livestock. Upland vegetation health would be protected as a result of season-of-use and utilization limits. Grazing use would be allowed at seasons and intensities consistent with maintenance and protection of upland vegetation. Limitations to grazing use caused by riparian concerns would be accomplished by some stream corridor or exclusion fencing, but riparian concerns would primarily be addressed by adjustments in seasons of grazing use. The most notable management change would be incorporation of alternating years of yearlong grazing rest in riparian areas currently failing to meet standards.

A diminished level of livestock management flexibility and sustained forage at a much reduced level would be provided to permittees. Customary permittee grazing practices would be changed substantially. A substantial number of livestock operations may cease to exist as viable enterprises.

The cumulative impacts of Alternative IV would result in protection of resource values very similar to what has been described for Alternative III but at a higher level, because of fewer rangeland projects, diminished grazing use influences, and periods of grazing rest in pastures not currently meeting standards.

Alternative IV-a

This alternative would result in impacts on resource values very similar to Alternative III. But because grazing sequence changes related to riparian/wetland management would be implemented without the supporting projects called for in Alternative III, forage available for livestock would be reduced.

Alternative V

The lowest level of livestock management flexibility and the lowest sustained forage availability of any of the alternatives would occur under this alternative. Customary permittee grazing practices would be changed substantially and the number of viable livestock enterprises would likely be reduced.

This alternative would result in a very high level of resource protection due to the removal of most grazing use impacts. Replacement of all crested wheatgrass seedings with native plants would enhance natural values in the long term. However, thirty-year-old existing shrub cover that is important to sagebrush-dependent species would be removed (in all but Starvation Seeding) for about fifteen to thirty or more years.

Alternative VI
This alternative would result in the second lowest level of livestock management flexibility and the second lowest sustained forage availability. Customary permittee grazing practices would be changed substantially, as would the number of viable livestock enterprises. The consequences of this alternative to resource values would be very similar to Alternative V. Replacement of crested wheatgrass seedings with native species would have impacts to wildlife similar to that described under Alternative V.

6. MITIGATING MEASURES

Project development in riparian/wetland areas will follow ROD Appendix O (Best Management Practices) criteria to minimize disturbance and maximize potential for project success. Adequate buffer distances will be implemented to protect riparian areas from potential erosional impacts of land treatments and construction of fences.

Appendix S of the ROD (Standard Implementation Features and Procedures for Rangeland Improvements) will be adhered to.

Cultural artifact and special status plant surveys will be conducted prior to all surface disturbing activities and project installations. Project adjustments necessary to avoid site specific adverse impacts will be accommodated.

Land treatment will incorporate sagebrush leave areas to facilitate natural sagebrush recolonization and maintain some wildlife habitat connectivity with adjoining sagebrush habitats.

Land treatment will completed at least two to four miles from existing leks so that most potential adverse nesting habitat impacts may be avoided.

BLM has obligated funds to complete a survey for presence of pygmy rabbits before land treatment is initiated in Starvation Brush Control pasture. The survey will be completed by qualified contractors. Based on the information gathered BLM will then either avoid adverse impacts to pygmy rabbits by adjusting the treatment boundary of the proposed project or proceed on the basis of field data that show pygmy rabbits do not occupy the proposed treatment area.

Livestock management fences will be constructed to allow freedom of movement for big game and minimize potential for injury or mortality. Fences will be installed with top strands that are no higher than 42 inches from the ground and bottom strands of smooth wire at least 16 inches from the ground. Stays will be installed. New fences will be temporarily flagged with material so big game will be clearly alerted to the presence of new administrative boundaries.

Impacts to WSA's will be mitigated to the extent possible by adherence to the BLM Wilderness Interim Management Policy. Careful selection of construction materials and methods (such as installation of easy panels and use of all green metal fence posts) and judicious placement intended to maximize vegetative and topographic screening will be practiced.

7. PERSONS AND AGENCIES CONSULTED

Chris Bengoa and Dick Harry; Lucky 7 Ranch
Rand Collins, Owyhee Grazing Association L.L.C.
Cheryl Anderson, Anderson Ranch
Gertrude Anderson, Anderson Ranch
Bruce Easterday, Nouque Ranch
Fort McDermitt Indian Reservation Tribal Council
Fort McDermitt Stockmans Association
Kimball Wilkinson, Kimble Wilkinson Ranches
George Wilkinson, Kimble Wilkinson Ranches

Walt Van Dyke, Ontario District Office, Oregon Department of Fish and Wildlife
Wayne Bowers, Oregon Department of Fish and Wildlife
Ray Perkins, Oregon Department of Fish and Wildlife
Jeff Dillon, US Fish and Wildlife Service, Portland Office

Katie Fite, Committee for Idaho's High Desert
Jim Shake, Oregon Natural Desert Association and Western Watersheds Project
Bob Moore, Oregon Natural Desert Association and Western Watersheds Project
Gene Bray, Western Watersheds Project

Jennifer Martin, Owyhee Watershed Council
Carl Hill, Owyhee Watershed Council
Owyhee Watershed Council
Bob Kindschy, retired BLM and Southeast Oregon Resource Advisory Council member
Russ Hursh, Malheur County Judge
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Jon Sadowski, Terrestrial Wildlife and Special Status Terrestrial Wildlife
Natalie Sudman, Cultural Resources
Cynthia Tait, Fisheries and Riparian Resources
Jack Wenderoth, Soils, Riparian Resources, Biological Crusts
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George Buckner, BLM Oregon/Washington State Office, Wildlife Biologist
Wayne Elmore, BLM Prineville, National Riparian Team
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9. TABLES AND MAPS

Table 1 – Summary of Alternatives—Louse Canyon Geographic Management Area
Table 2 – Livestock Stocking Level Calculations for Alternative I

Map 1 – GMA's, Land Treatment, and Fire Impact Areas
Map 2 – Alternative III
Map 3 – Owyhee Grazing Association (Anderson) Pasture Moves for Alternative III
Map 4 – Lucky 7 Ranch (Campbell) Pasture Moves for Alternative III
Map 5 – Kimble Wilkinson Pasture Moves for Alternative III
Map 6 – Nouque Ranch and Fort McDermitt Stockmen's Association. Pasture Moves for Alternative III